Orchid Bees

of

La Gamba

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Foreword

During my frequent trips to tropical countries, and especially to Costa Rica, I recognized the importance and ecological significance of bees. In tropical rainforests, bees are major flower pollinators, even if they are rarely seen. Orchid bees, in particular, are of special importance for the reproduction of many plants, above all orchids. As president of the Association for the Promotion of the Tropical Field Station La Gamba, I took the opportunity to visit La Gamba several times. During these stays, I saw these shiny, metallic "jewels" for the first time, attracted by special scents. Green, blue, red, and orange, they buzzed around chemical baits, collecting scents to enhance their own attractiveness as mates. I was fascinated by this ecological network, which made the importance of preserving intact natural habitats even clearer to me.

The author of this book, Thomas Eltz, has been working with orchid bees for almost 30 years, the latter half also in La Gamba. The forests around the Golfo Dulce and La Gamba offer ideal conditions for finding out more about the life of these dazzling animals. There are said to be 40 species here, more than in many other neotropical regions. As part of his work, Thomas Eltz and his students have been scientifically active in La Gamba since 2010. Not only does he lead student projects on site, he has also organized two international symposia on orchid bees at the field station.

Equipped with knowledge from years of research, we are delighted that this book about the orchid bees of the Golfo Dulce region is now being published in the La Gamba Tropical

Field Station's book series. We invite you to look forward to holding a book in your hands that is unique in the world, a book that pictures in detail all the orchid bee species recorded from the La Gamba region. It will allow students, scientists, and other interested people to delve deeper into the world of orchid bees. It gives you an insight into the life of these animals and, above all, enables you to identify the species of these impressive animals.
We are delighted that the Tropical Field Station La Gamba provides the basis for such an extraordinary scientific work and that this has resulted in such a high-quality book with magnificent photographs for all people interested in nature. We are already looking forward to future findings from the world of orchid bees.

Prof. emer. Dr. Walter H. Rechberger
President of the Association for the Promotion of the Tropical Field Station La Gamba

Acknowledgements

In 2010, after a single morning hike on the Fila trail, I knew La Gamba would be my research site for years. I had observed displaying males of three orchid bee species, within an hour and a few hundred meters from the station! Subsequent trips proved that La Gamba also offered excellent baiting sites, a station garden enriched with bee-attracting plants, and a station manager highly supportive of orchid bee research.
This booklet provides photo-based species descriptions and identification tables for male orchid bees (Euglossini) found in La Gamba and the surrounding forests. It is intended as a quick-start guide for students, facilitating identification in the field, often without the need for capture (e.g., at a chemical bait).
Its compilation would have been impossible without the generous help of many people. Thank you very much! Among them I am especially grateful to Tamara Pokorny, whose color-based guide paved the way. Janosch Dohrs, Florian Etl, Jonas Henske, Tamara Pokorny, Santiago Ramírez, Günter Gerlach and Benjamin Bembé provided specimens, taxonomic expertise and many other valuable insights. Werner Huber and the staff of the field station were instrumental in supporting my research over all these years, cultivating La Gamba‘s unique, hands-on environment.

Thank you all for making this possible!

Thomas Eltz

The Tropical Field Station La Gamba at the edge of the rainforest
(Foto: A. Weissenhofer)

Stanhopea sp. on *Euglossa championi*

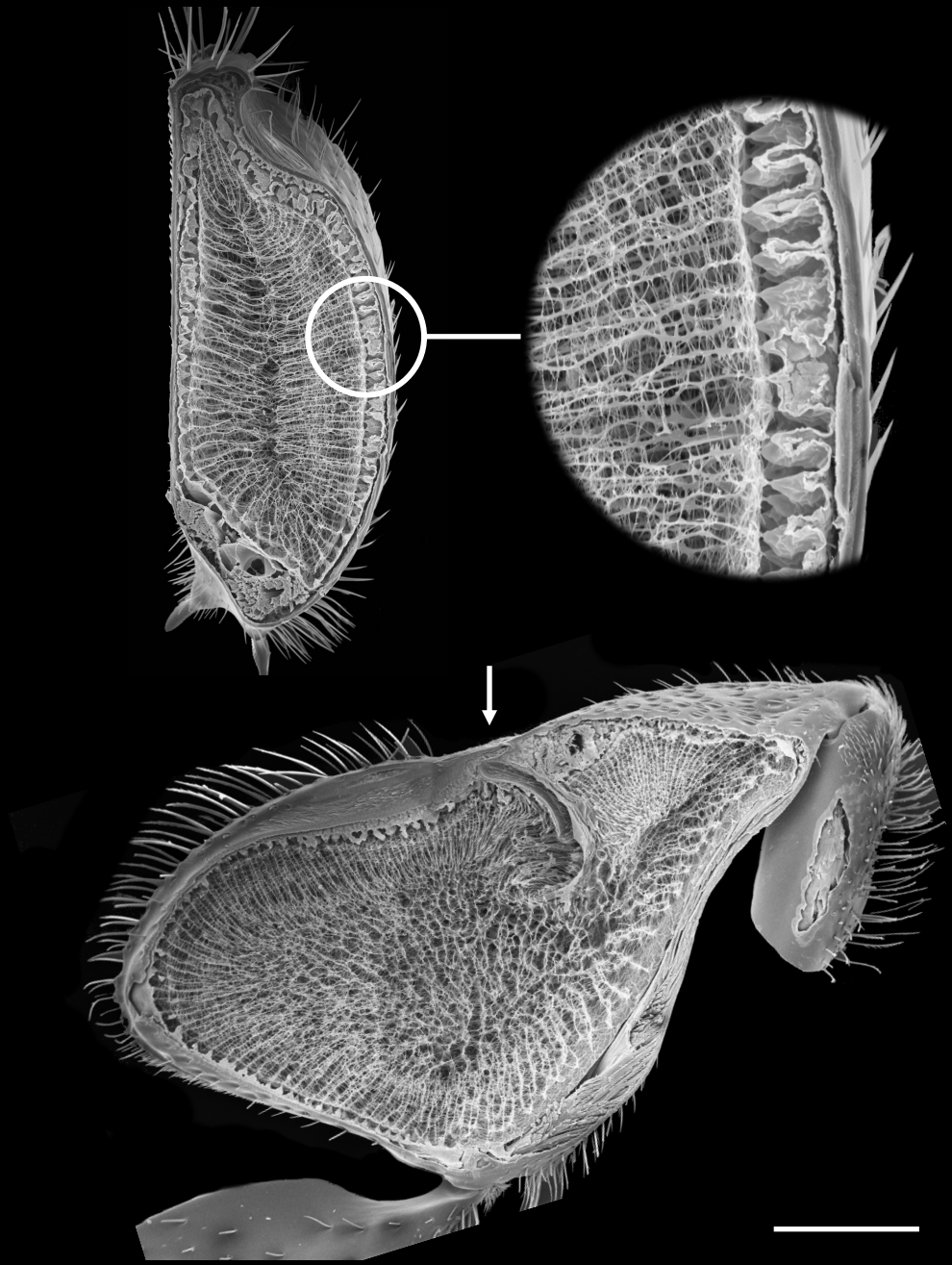
Gongora sp. on *Euglossa hansoni*

Cycnoches cf. *egertonianum*
on *Euglossa hansoni*

Catasetum cf. *maculatum*
on *Eulaema cingulata*

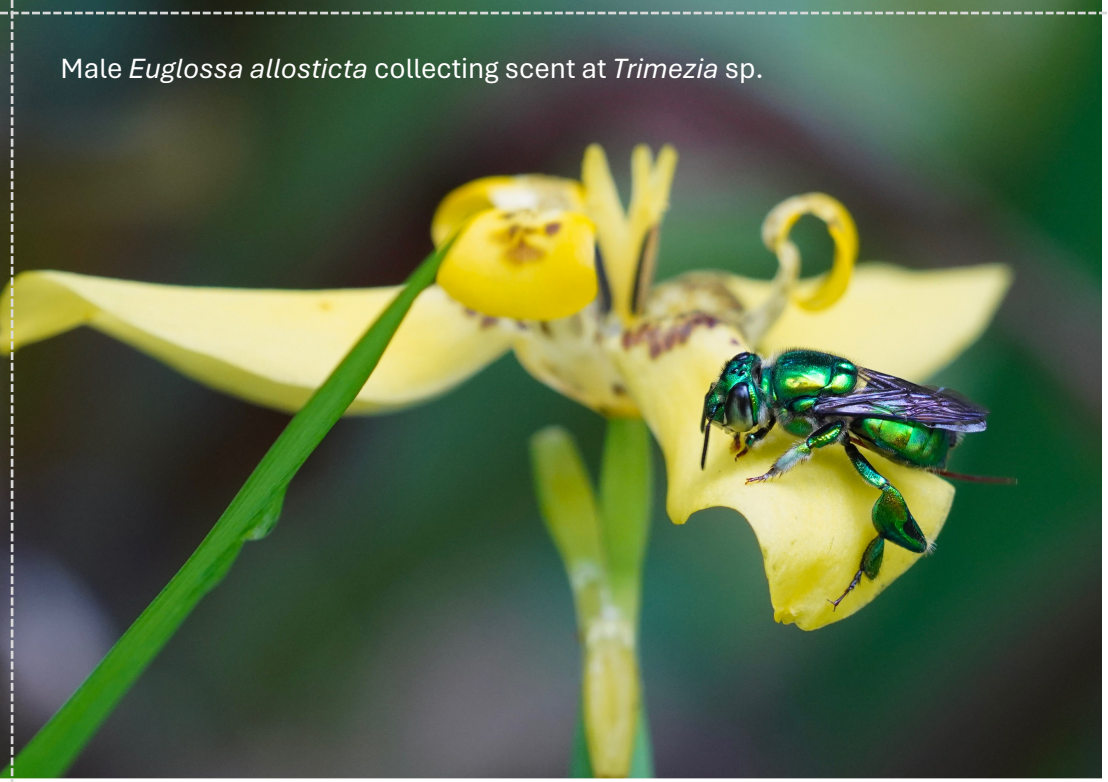
Kefersteinia sp. on
Euglossa villosiventris

Orchid pollinaria on male orchid bees in La Gamba.
Individual pollinaria consist of a sticky attachment pad (viscidium), a stalk (stipes) and two pollen-containing pollinia. Different images not to scale.



Inner structure of hind tibia of male *Euglossa tridentata* with perfume storage pouch. Sagittal cut (below) exactly through the canal (arrow) that connects pouch to tibial surface; scale bar: 0.5 mm. Axial cut (top) with magnified outer wall. Scanning electron micrographs by A. Sager & T. Eltz.

Male *Eufriesea purpurata* collecting scent at *Spathiphyllum silvicola*.



Male *Euglossa allosticta* collecting scent at *Trimezia* sp.

Male *Euglossa flammea* collecting scent at *Gloxinia perennis*

Male *Euglossa tridentata* collecting scent at *Mormodes* cf. *fractiflexa*

Male *Euglossa tridentata* collecting scent at *Gongora* sp.

Eulaema polychroma (Mocsáry 1899)

- 19 mm, a black bee with orange hairs on metasoma except for T1; hairs on T2 sometimes rubbed off
- Head black with cream colored markings
- Tongue: short, barely reaching metasoma when folded

Similar to *E. speciosa,* but with cream colored markings on face

Distribution: Texas to Peru
Baits: (1,8-cineol, skatole, vanillin) – rarely comes to baits in La Gamba

Eulaema speciosa (Mocsáry 1897)

- 20 mm, a black bee with orange hairs on metasoma except for T1; hairs on T2 sometimes rubbed off
- Head black without cream colored markings
- Tongue: reaching to Sternum 4 of metasoma when folded

Similar to *E. polychroma,* but with a longer tongue and without cream colored markings on face. Males are occasionally observed displaying in the forest understory early in the morning (Pokorny et al. 2017).

Distribution: Costa Rica to Ecuador
Baits: 1,8-Cineol (skatole, vanillin) - rarely comes to baits in La Gamba

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Video of male orchid bees collecting scent at chemical bait: www.youtube.com/watch?v=BmedVkitI9g

Other videos of orchid bees: www.youtube.com/@ecolversity4061/playlists

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