

Genetic characterization of invasive species *Bactrocera carambolae* Drew & Hancock in South America.

Joseane Fernanda Passos¹, Ezequiel da Glória de Deus², Ricardo Adaime³, Cristiane Ramos de Jesus-Barros³, Alies van Sauers Muller⁴ & Janisete Gomes Silva¹

¹Universidade Estadual de Santa Cruz, Rodovia Jorge Amado, km 16, Salobrinho, Ilhéus, Bahia, Brazil, ²Universidade Federal do Amapá, Macapá, Amapá, Brazil, ³Empresa Brasileira de Pesquisa Agropecuária, Macapá, Amapá, Brazil, ⁴Ministry of Agriculture, Animal Husbandry and Fisheries, Paramaribo, Suriname.

Introduction: The carambola fruit fly, *Bactrocera carambolae* Drew & Hancock is native to Southeast Asia, infests about 150 plant species and is considered a quarantine pest insect in the Caribbean region. *B. carambolae* invaded Suriname, French Guyana, and northern Brazil. In Brazil it was first recorded in 1996 and has been restricted to the states of Amapá and Roraima under official control. This is the first study to estimate genetic structure and diversity of South American populations of *B. carambolae*. *Methods:* A total of 116 individuals from 11 localities in Brazil and seven in Suriname were analyzed. Additional sequences available at GenBank from Indonesia (Lampung) and Thailand (San Pa Tong and Muang District) were also used in the analysis. We sequenced a fragment of mitochondrial gene COI. *Results:* A total of 35 haplotypes were found. Haplotypes from Indonesia were closest to haplotypes from South America separated by few mutational steps, suggesting that Indonesia is the likely source for the introduction of *B. carambolae* in South America. The Southeast Asian populations appeared as the most ancestral group in the phylogenetic trees. The high similarity and sharing of several haplotypes among populations within South America indicate lack of genetic structure. The mismatch distribution and neutrality tests suggest that South America populations have undergone a rapid growth and expansion following a founder event. *Conclusion:* The low genetic diversity and the population expansion evidenced by the neutrality tests lend support to the hypothesis of a recent introduction of a single lineage of the carambola fruit fly in South America.

Keywords: COI, carambola fruit fly, genetic diversity.