

## Research Notes – Preprint (31 December 2022)

**Occurrence of *Zaprionus tuberculatus* on Southeastern Brazil coastal plain, in Rio de Janeiro.**

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*Zaprionus tuberculatus* Malloch 1932 is an African drosophilid included in the *inermis* species group. This fly expanded its geographic range to Eastern and Western Mediterranean lands about a decade ago (Patlar *et al.*, 2012; Raspi *et al.*, 2014), and more recently it was detected for the first time in Americas (Cavalcanti *et al.*, 2022). Moreover, since this species is a potential agricultural pest – as observed for the invasive *Zaprionus indianus*, already established in South, Central, and North America – a close monitoring of its presence in neotropical areas is in order.

*Z. tuberculatus* first record in the American continent was obtained in the Brazilian central highlands. Firstly, it was detected in natural conservation units around Brasília, in January 2020. About one year later its presence was detected in urban parks, in Brasília (Cavalcanti *et al.*, 2022). Here, we communicate its identification at two localities on the coast of the state of Rio de Janeiro, Southeastern Brazil. Moreover, in both areas we observed *Z. tuberculatus* in lower abundance than *Z. indianus*.

Our first record of *Z. tuberculatus* was obtained from blackberry fruits collected in March 2022 from an orchard at Araruama (22°52'22" S; 42°20'35" W), a beach town located at approximately 120 km eastwards from Rio de Janeiro. We collected these fruits and brought them to our laboratory as a methodological test of procedures for the study of fly predation on fruit plants. Each blackberry was kept on a cotton cushion, inside a plastic cup covered with a net tissue (2 mm mesh), at 22°C. From a total of 25 collected fruits, four yielded nine *Zaprionus* flies. Of these, eight were *Z. indianus* and one was a female *Z. tuberculatus*. This latter species was recognized due to the large tubercle on the forefemur and its adjacent cuticular expansion. Additionally, we observed that living individuals from these species can be easily distinguished by thorax tegument color. *Z. tuberculatus* displays a gray-brownish tone, darker than *Z. indianus* color.

In September 2022, two baits of banana and yeast were set up in that same orchard, and the flies attracted to the site were collected with a net. A total of 37 *Zaprionus* flies were collected, displaying the following proportion: 29 *Z. indianus* (17 males, 12 females) to 8 *Z. tuberculatus* (4 males, 4 females). We also collected blackberries, but no flies emerged from them. One month later, October 2022, we made one more blackberry collect and, again, no flies emerged from the collected fruits. It should be mentioned that all blackberry collections were obtained from a single plant.

Finally, in the third week of November 2022, we set up a trap – with banana and yeast bait – in a garden inside Federal University of Rio de Janeiro (UFRJ) campus, in Rio de Janeiro (22°50'20" S; 43°13'40" W). After two days all flies (most drosophilids) were collected and the trap was reset for four more days, allowing us to obtain a second collect. The first obtained sample contained four male and three female *Z. tuberculatus*, and no *Z. indianus* flies. The second contained 6 males and 5 females for *Z. indianus*, plus two males and one female *Z. tuberculatus*.

The main issue in this communication is the regular recording of *Z. tuberculatus* on Southeastern Brazil coastal plains, side by side with *Z. indianus*. In spite of the small sample size, and the result obtained from one of the trap samples obtained in Rio de Janeiro, our data suggest that the more recent invader species (*Z. tuberculatus*) is less common than *Z. indianus*. Besides that, our observations confirm the need of checking the ability of *Zaprionus* flies to successfully lay eggs on small thin-skinned ripening fruits (Bernardi *et al.*, 2017; Pfeiffer *et al.*, 2019), which includes the activity of the most recent invader.

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**References:** Bernardi, D., F. Andreazza, M. Botton, C.A. Baronio, and D.E. Nava 2017, *Neotrop. Entomol.* 46: 1-7; Cavalcanti, F.A.G.S., L.B. Ribeiro, G. Marins, G.S.S.S. Tonelli, S.N. Bao, A. Yassin, and R. Tidon 2022, *Ann. Entomol. Soc. Am.* 115 (3): 267-274; Patlar, B., B. Koc, M. Yilmaz, and E.D. Ozsoy 2012, *Dros. Inf. Serv.* 95: 94-96; Pfeiffer, D.G., M.E. Shrader, J.C.E. Wahls, B.N. Willbrand, I. Sandun, K. van der Linde, C.A. Laub, R.S. Mays, and E.R. Day 2019, *J. Integr. Pest Manag.* 10 (1): 1-8; Raspi, A., A. Grassi, and G. Benelli 2014, *Bull. Insect.* 67 (1): 157-160.