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FIRST CHARACTERIZATION OF WATER-STRIDERS (HEMIPTERA, HETEROPTERA) INHABITING MANGROVE ENVIRONMENT OF GUADELOUPE.

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We present here the first report of skating insect species from Guadeloupe. The mangrove of Guadeloupe and the Lesser Antilles is particular because of its poverty in plant diversity: only five species are present. Mangroves trees develop according to a salinity gradient evolving in particular distribution of these five species. On the waterfront, *Rhizophora mangle* can support up to 35‰ of salt. Their aerial roots help them to stabilize in in the muddy sediment. At the opposite, mangrove hinterland is identifiable due to the presence of the large leguminous *Pterocarpus officinalis* that lives in salinity around to 3-4‰ (Lugo & Snedaker, 1974).

The insects studied were mainly observed on the waterfront of the mangrove between the roots of *Rhizophora mangle* or mangrove hinterland, in the water holes between the buttresses of the roots of *Pterocarpus officinalis*.

On the waterfront, mangroves can take many forms: small isolated islets and mangrove sea front with isolate bay. The isolated islets of the bay of “Grand-Cul-de-Sac-Marin” are frequently beaten by winds and shore-breaks. Mangrove sea front with isolated bays is better protected by winds but can be impacted by freshwater runoff from the land. Rivers and canals also cross mangroves. Their estuaries can undergo strong variations in salinity depending on the currents and floods but also by the tides.

The terrestrial and marine fauna of the mangrove is well described, but insects belonging to the order Hemiptera have not yet been studied. These “marine” insects are commonly referred to as water strider or water skaters. They move in small groups on the surface of the water. Their limbs are arranged in a X-shape to increase their buoyancy at the surface. Their sizes vary from one species to another between 2 to 7 mm.

Thanks to several sampling campaigns, the distribution of Hemiptera in the bay of “Grand-Cul-de-Sac-Marin” is now better evaluated. Five different species (of 3 genus) were observed: *Rhagovelia plumbea*, *Rheumatobates trinitatis*, *R. mangrovensis*, *R. imitator* (Figure 1) and *Limnogonus franciscanus* (Figure 2).



Figure 1: *Rheumatobates imitator* male individual identifiable through its arched and armed limbs. Photo taken in the field (R. Garrouste).

Figure 2: *Limnogonus franciscanus* male individual presented in macropterous form. Photo: S. Conjard.



Figure 2

In the isolated islets located in the bay and on the mangrove seafront, the species *Rhagovelia plumbea* is present. It is an exclusively marine species, and it represents one of the nine species of the Salina Group in *Rhagovelia*, as described by Molano *et al.* (2018). *Rheumatobates trinitatis* is also present on the waterfront, but also in areas more protected from mangroves such as in the “Manche à eau” bay, the “Rivière salée” or in the mouths of rivers such as the “Canal des Rotours”. It shares the waterfront with *Rhagovelia plumbea*. In general, they never move beyond 20 m from the aerial roots of mangroves tree to avoid being carried away by currents and swells (Cheng & Lewing, 1971). In estuaries with mangroves, three species are present: *Rheumatobates mangrovensis*, *R. imitator* and *Limnogonus franciscanus*. According to our study, *R. mangrovensis* has only been observed at the mouth of the “Grande-Rivière à Goyave”. *R. imitator* is one of the so-called «modified» *Rheumatobates* with high sexual dimorphism; males have very arched legs (Hungerford, 1954). The largest groups of *R. imitator* individuals observed were in freshwater ponds in the “Grande-Terre” or in small bodies of water behind mangroves. Some individuals have been found drifting in the “Canal des Rotours” (personal observations).

Limnogonus franciscanus is one of the largest species (7 mm in length) and the only macropterous species observed during the study (Figure 2). It has been observed in the ponds of “Grande-Terre” and in the water holes behind the mangroves but also at the mouths of the “Grande-Rivière à Goyave” and the “Canal des Rotours”. It is therefore a freshwater species that lives mainly in freshwater lands. But like *Rheumatobates imitator*, it can be carried away by currents and live on thin films of freshwater in river mouths.

This distribution, observed in Guadeloupe, seems to be the same as in Trinidad. The same species are present in the same habitats (Nieser & Alkins-koo, 1991).

In the future, it would be interesting to focus on the physiology and/or metabolism of these insects in order to better understand their biology and their involvement in the mangrove food chain. By studying their physiology, we will also be able to better understand their ability to adapt to these changing environments at the interface between land and sea.

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