

# Epifauna (micro-meio-macrofauna) associated with pelagic sargassum algae during a two years survey around coasts of Guadeloupe (French West Indies)

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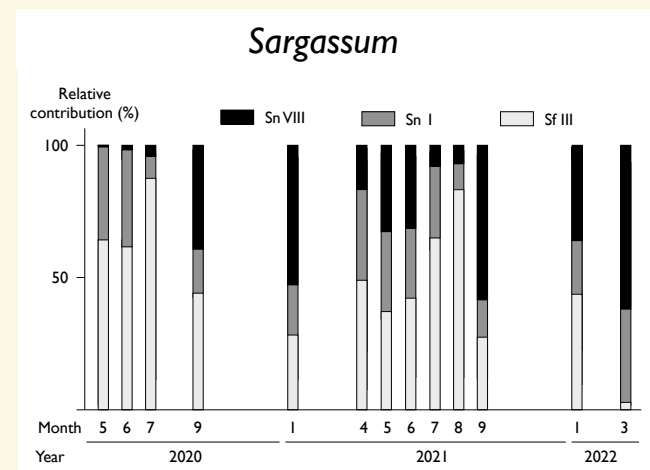
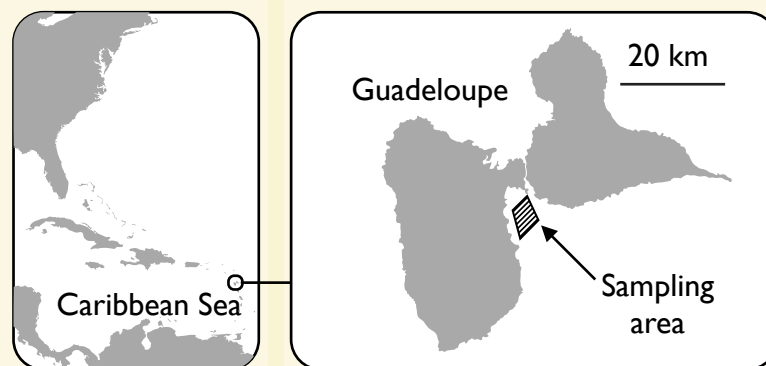
Three morphotypes of holopelagic *Sargassum* are naturally floating in the Atlantic (*S. fluitans* III, *S. natans* I and VIII). Recently *Sargassum* increased their distribution and abundances. Since 2011, coastal areas of the Caribbean and tropical Atlantic Ocean started to experience unprecedented massive stranding of *Sargassum*<sup>1</sup> leading to environmental, economic and human health issues<sup>2</sup>.

The aim of this study is to bring knowledge about the ecological functioning of the *Sargassum* floating system measuring abundance and structure of epifaunal community (micro-meio-macrofauna) during a survey from May 2020 to March 2022 performed in coastal waters of Guadeloupe (French West Indies).

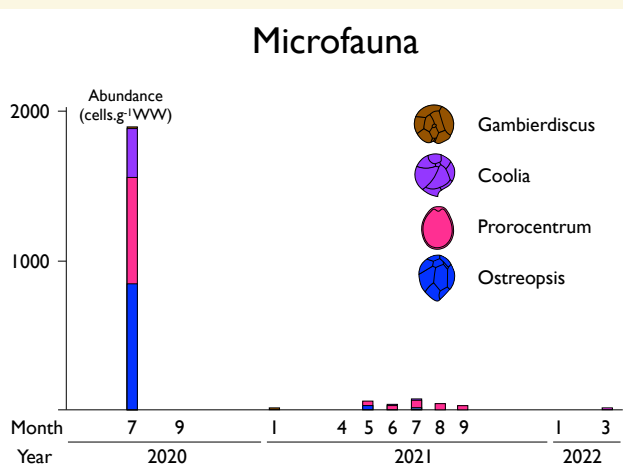
*Sargassum* were sampled per morphotype through scuba diving for micro and meiofauna whereas bulk *Sargassum* were directly sampled from boat for macrofauna study.



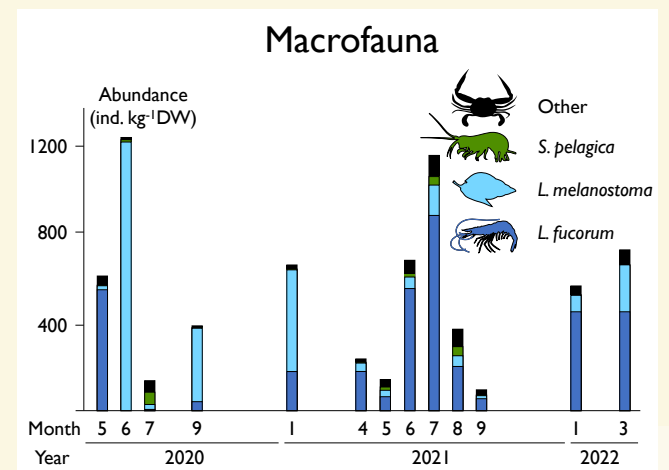
In laboratory, fauna were extracted, stored (lugol for micro and alcohol for meio and macrofauna), identified using morphological characters and counted per weight of algae.



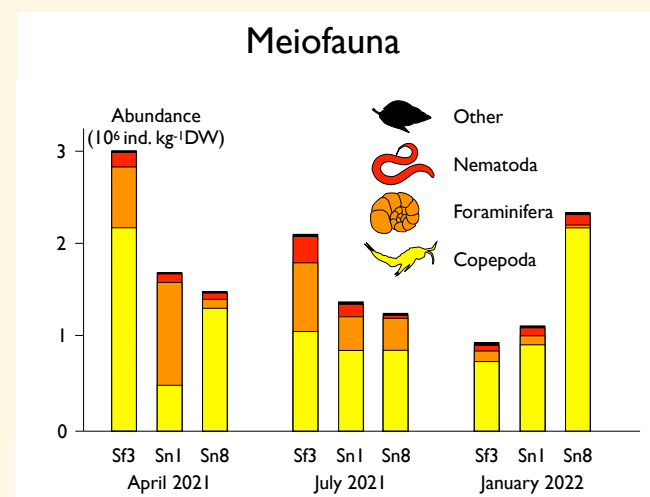
*S. flutans* III is dominating the *Sargassum* community during spring and summer whereas *S. natans* VIII is more abundant during autumn and winter



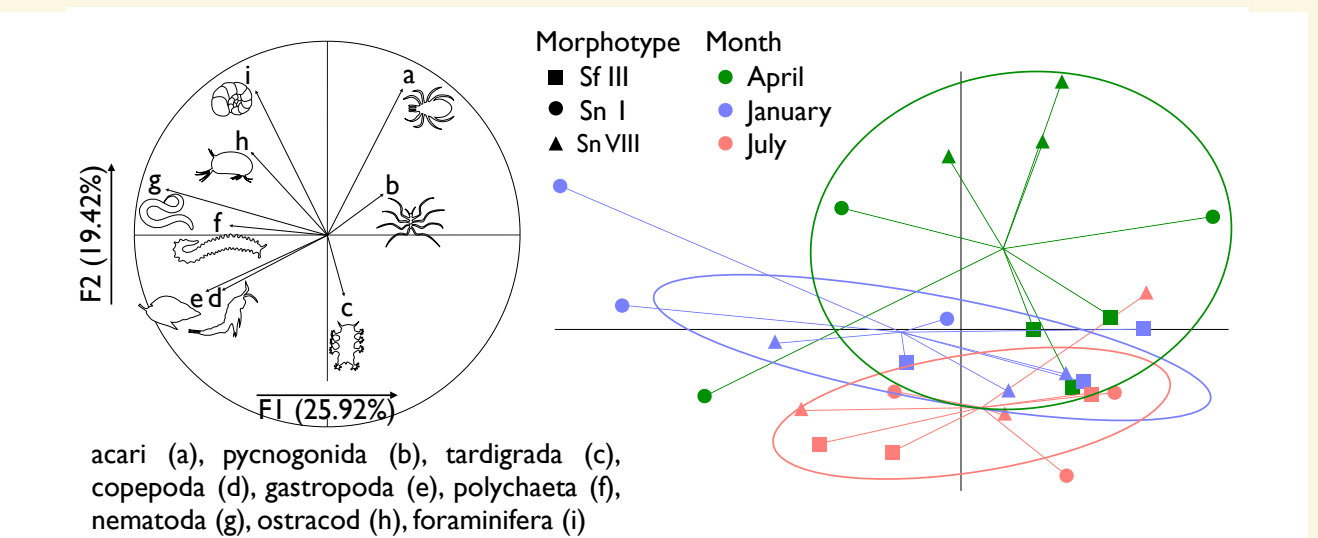
Toxic benthic dinoflagellates abundances are highly variable and temporally higher than previously measured<sup>3</sup> and could allow toxin entrance in marine food web.



Macrofauna is largely dominated by two species: a shrimp (*Lateutres fucorum*) and a snail (*Litiopa melanostoma*).



Meiofauna is dominated by copepods, followed by foraminifera and nematode. Average biomasses of meiofauna are more important than biomasses of macrofauna (5555 vs 774 mg.kg DW<sup>-1</sup>)



A Principal Component Analysis revealed a higher structuration of meiofauna community according to sampling months than according to *Sargassum* morphotypes. Different morphology of algae would consequently have a limited influence on hosted community of meiofauna suggesting important exchange of fauna between fragments of *Sargassum*.

Abundant and diverse communities of fauna are associated with holopelagic *Sargassum*. This fauna plays a trophic role for numerous organisms including commercial (fish) and endangered (bird) species. *Sargassum* bring important biomasses of fauna in oligotrophic offshore waters. *Sargassum* represent 20 millions metric tons wet biomass<sup>4</sup> and consequently presumably change offshore pelagic food web at the scale of the Atlantic Ocean.