

First Record of Stranded Holopelagic *Sargassum* Morphotypes and Associated Fauna on the Moroccan Atlantic Coast

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INTRODUCTION & AIM

The spread of non-native organisms into new marine environments has become an increasing concern, as these introductions can disrupt ecological balance and threaten native biodiversity. In 2024, an unprecedented event highlighted this issue along the North Atlantic coast of Morocco, where large quantities of pelagic *Sargassum* were observed drifting ashore for the first time. This unusual occurrence is believed to be influenced by extreme climatic fluctuations that modify oceanographic conditions, enabling the transport of Pelagic *Sargassum* from its typical tropical Atlantic habitat toward North African waters. What makes this event particularly significant is not only the arrival of the seaweed itself but also the diverse fauna it carries. Pelagic *Sargassum* forms a floating ecosystem that shelters a variety of marine species during its drift, including gastropods, and several crab species, and other organisms that rely on these rafts for refuge, feeding, and dispersal.

This study therefore seeks to conduct a detailed identification of the Pelagic *Sargassum* biomasses and the fauna accompanying them, investigate the climatic and environmental drivers behind their arrival, and assess the ecological implications of both the seaweed and its associated species.

MATERIALS & METHODS

- **Sampling:** Collection of freshly stranded holopelagic *Sargassum* at multiple landing sites.
- **Morphotype identification:** Classification of thalli as *Sargassum natans* I, *S. natans* VIII, or *S. fluitans* III using external morphological traits and taxonomic keys.
- **Density assessment:** Recording of biomass quantity and morphotype proportions from standardized samples.
- **Fauna separation:** Gentle rinsing of thalli; sorting and identification of associated epibiotic and mobile fauna.
- **Crab analysis:** Counting and categorizing crabs into mature males, mature females, ovigerous females, and juveniles.
- **Demographic calculations:** Percentage for each crab category based on total individuals.

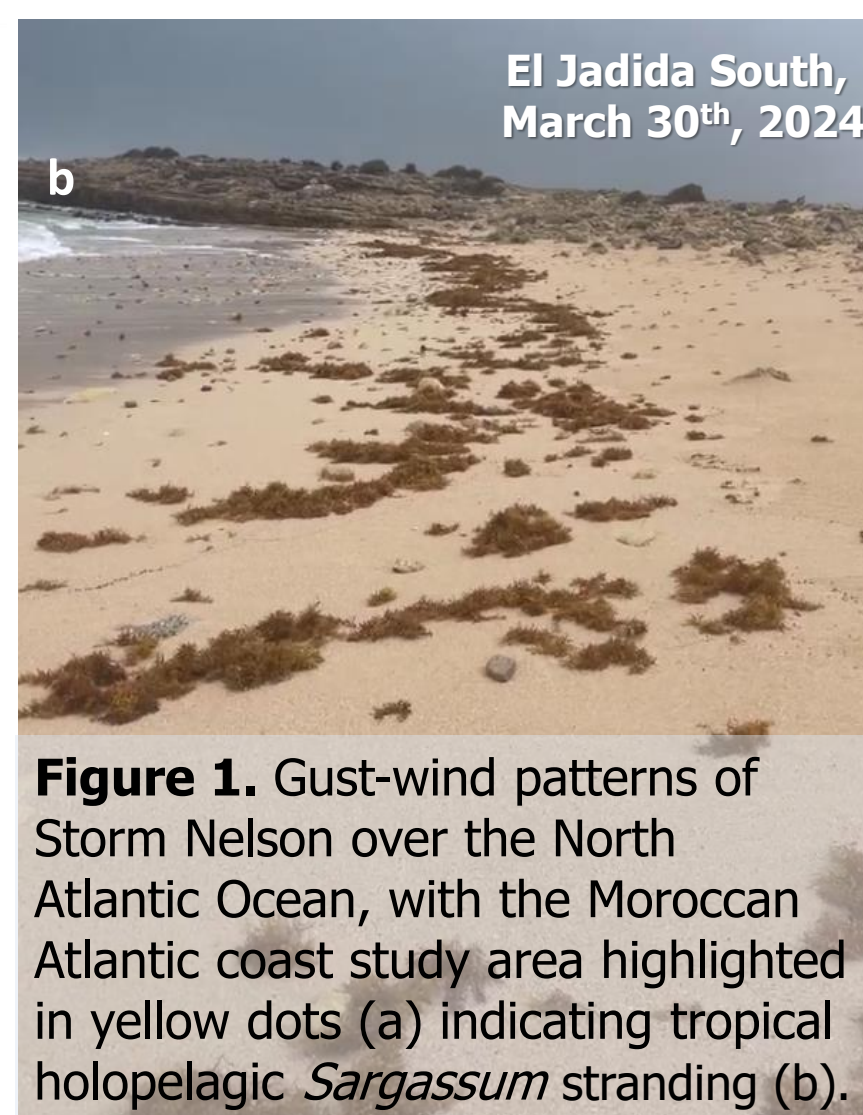
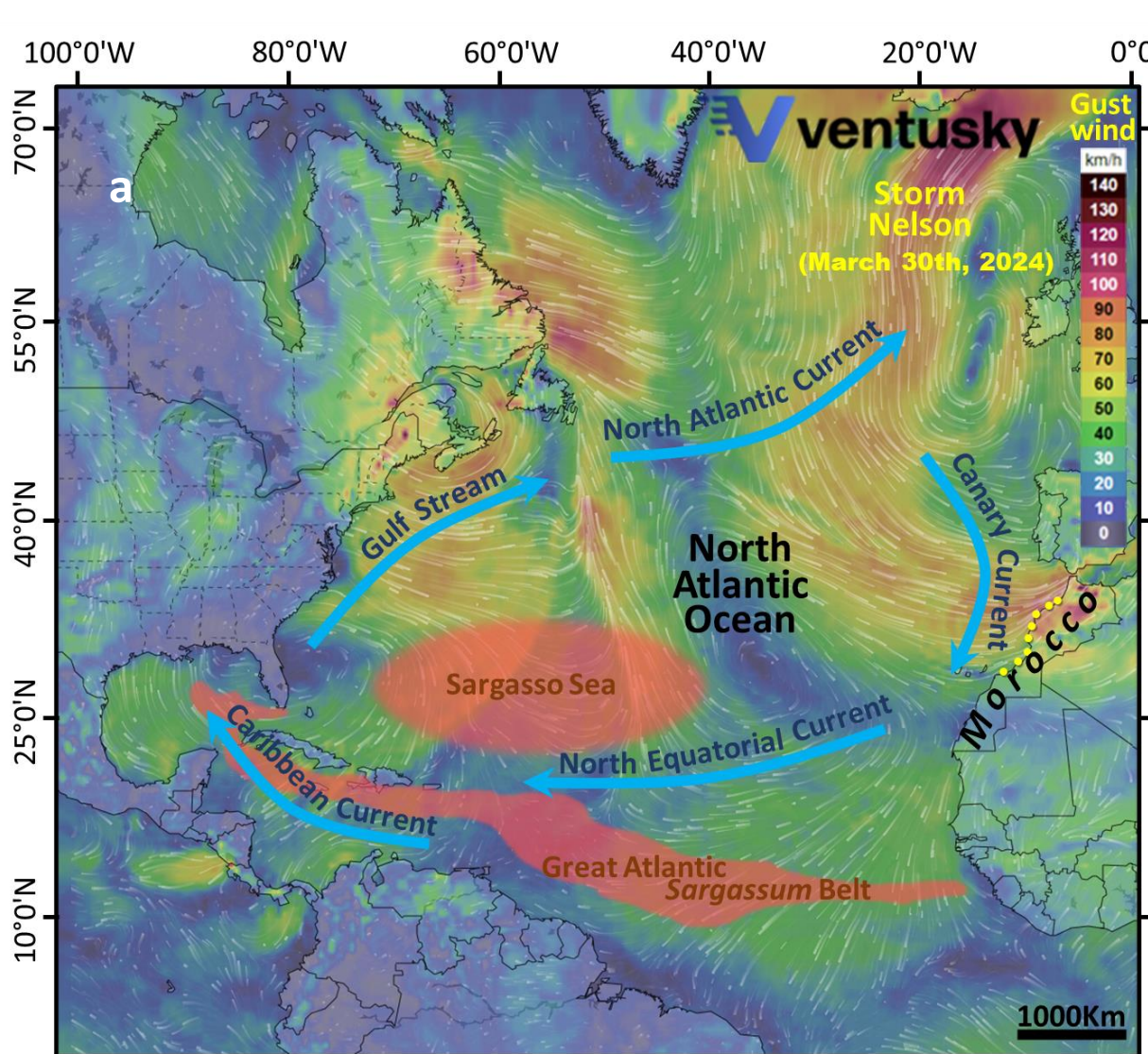


Figure 1. Gust-wind patterns of Storm Nelson over the North Atlantic Ocean, with the Moroccan Atlantic coast study area highlighted in yellow dots (a) indicating tropical holopelagic *Sargassum* stranding (b).

RESULTS & DISCUSSION



Figure 2. Morphological differences among holopelagic *Sargassum* species and associated epibiota. (a–b) *Sargassum natans* I and VIII. (c) *Sargassum fluitans* III. (d–g) Examples of epiphytic and associated fauna observed on holopelagic *Sargassum* thalli (*S. fluitans* III colonized by hydroids (*Aglaophenia latecarinata*) (d), Crabs (e), *Scyllaea pelagica* Linnaeus, 1758 (f)).

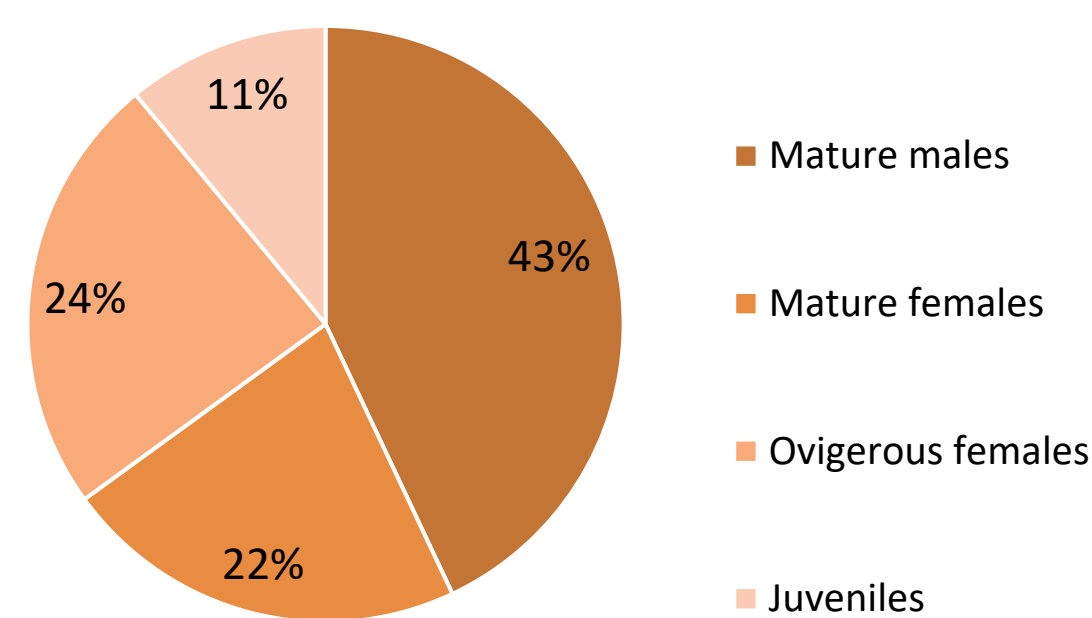


Figure 3. Population Structure of Crabs Found clinging on Pelagic *Sargassum*.

CONCLUSION

Holopelagic *Sargassum* and its associated fauna reached Morocco as intact drifting communities, likely transported by extreme hydrometeorological conditions. This event signals the need for continued monitoring as climate-driven storms intensify long-distance biomass movement

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