

NOTA BREVE

MASSIVE QUANTITIES OF PELAGIC *Sargassum* ON THE SHORES OF SAN ANDRES ISLAND, SOUTHWESTERN CARIBBEAN

Cantidades masivas de *Sargassum* pelágicos en las costas de San Andrés Isla, Caribe suroccidental

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ABSTRACT

We report an unusual biomass of floating *Sargassum*, composed of the species *S. fluitans* and *S. natans*, that reached the northeastern coast of San Andres island in September 2014. The time and size of the event is unprecedented to the island.

Keywords: drifting algae, *Sargassum*, San Andres island, unusual biomass.

RESUMEN

Se reporta la llegada de una biomasa inusual de *Sargassum* flotante, compuesta por las especies *S. fluitans* y *S. natans*, a la costa nororiental de la isla de San Andrés. La época y el tamaño del evento nunca habían sido reportados anteriormente para la isla.

Palabras clave: algas flotantes, biomasa inusual, San Andrés isla, *Sargassum*.

Golden tides of pelagic *Sargassum* have been a recurrent event in the Caribbean Sea and the Gulf of Mexico, where great biomass of these algae is periodically washed ashore. The Sargasso Sea offshore the coast of Florida, has always been considered the source of this drift biomass beaching along the coastline of the Antilles and the Gulf of Mexico.

With the trade winds blowing in North-east to South west direction in the second part of the year, drifting algae coming from Sargasso Sea are a common event from September to January (Moreira and Alfonso, 2013).

Periodically, the volume of these floating algae has increased. For example, the increase of the golden tides during 1980s and 1990s in the Gulf of Mexico was associated to nutrification in the Gulf due to higher nutrient loads of the Mississippi river (Lapointe, 1995; Smetacek and Zingone, 2013).

Recently, it was demonstrated that floating *Sargassum* in the Gulf of Mexico does not come from the Sargasso Sea, instead it originates in the Gulf, and is then exported in spring to the Sargasso Sea, with an estimated biomass of one million tons wet weight transferred each year (Gower and King, 2011). In 2005, atypical quantities of *Sargassum* were observed in the Gulf of Mexico, it was such a biomass that 2005 was named the “*Sargassum* year” (Gower *et al.*, 2013).

During spring and summer of 2011, anomalous quantities of pelagic *Sargassum* were washed ashore along the eastern coastline of the Caribbean Sea, and crossed the Atlantic to reach the coast of western Africa, from Sierra Leone to Ghana (Johnson *et al.*, 2013; Smetacek and Zingone, 2013) in an unprecedented event. The peak biomass that year was 200-fold higher than the previous eight years’ average biomass peak recorded in the Caribbean, while to man’s memory, it was the first time drifting *Sargassum* reached the coast of Africa (Smetacek and Zingone, 2013).



Figure 1. Floating *Sargassum* along the coast of San Andres island.



Figure 2. Beached *Sargassum* on the coast of San Andres island

Contrary to what was previously thought, satellite images showed that the origin of the floating algae was not the Sargasso Sea, but an area north of the estuary of the Amazon River, offshore the coast of Brazil (Johnson *et al.*, 2013; Gower *et al.*, 2013). This region had never been associated with *Sargassum* growth in the past, and, although the underlying causes of this anomalous event have not yet been elucidated, scientists suggest a link with global warming and perhaps nutrient load from the Amazon River (Johnson *et al.*, 2013).

In 2012, Moreira and Alfonso (2013) reported an unusual *Sargassum* tide in the southern coast of Cuba. Although the authors mentioned that floating *Sargassum* periodically beaches along the island's coastline, the site and time of the year the drift algae were observed in 2012 were unusual.

San Andres Island lies in Southwestern Caribbean, about 280 km off the coast of Nicaragua. Its coast is periodically subjected to drifting algae during winter months, generally from November to January, when trade winds are strong and great amounts of drift are driven to the coast. The drift reaching the island is composed of seagrass species (*Thalassia testudinum* and *Syringodium filiforme*), which constitute the major biomass, and a diverse community of seaweeds, among which *Sargassum natans* and *S. fluitans* are present (Ortiz and Gavio, 2012).

During September 17th-20th of 2014, an unusual tide of *Sargassum* reached the northeastern coast of the island, covering an estimated of 32520 m² (El Isleño, 2014).

The algae were identified as *Sargassum fluitans* and, with less biomass, *S. natans*. As reported in other locations, the biomass and timing of the drift reaching San Andres was unusual and not seen in the past decades. Meanwhile,

reports of floating algae reaching the coastline of the Lesser Antilles have been documented between August and September of this year (Roffis, 2014). During the 2011 event, San Andres was not affected by the golden tide reaching both sides of the Atlantic.

The fact that these events have become recurrent, in the past three years, is alerting scientists as well as the affected communities, where tourism, fishing, and other economic activities have been disrupted. It is possible that nutrient loads are a likely cause, as it was suggested twenty years ago by Lapointe (1995). Although the origin of this 2014 event has not been identified yet, the drift in San Andres was observed shortly after the passage of hurricane Edouard (Sosnowski, 2014) towards the Atlantic coast of United States, and currents deriving from this atmospheric event may have blown seaweeds to San Andres Island.

Although in San Andres the *Sargassum* episode was short-lived and no major negative effects were observed on the nearshore coastal communities, it is urgent to understand the causes of these events, which may disrupt shallow ecosystems like seagrass and macroalgal beds, and affect local communities disrupting their economic activities.

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