

What is Sargassum?

Sargassum is brown algae which originate in the Sargasso Sea of the western Atlantic Ocean. It grows up to several meters and can float in the open ocean. It typically consist of leafy, branches, and round, berry-like fruits. These “berries” are actually gas-filled with oxygen which aids in the buoyancy and the ability of the to float on the surface.

What began in 2011 in Eastern Caribbean islands, this algae has expanded its reach to several Caribbean islands in record volumes. The cause of the increase in influx is purely speculative and is still being investigated.



A beach covered with large amounts of seaweed in Puerto Morelos, Mexico. Photo: The Economist (2015)

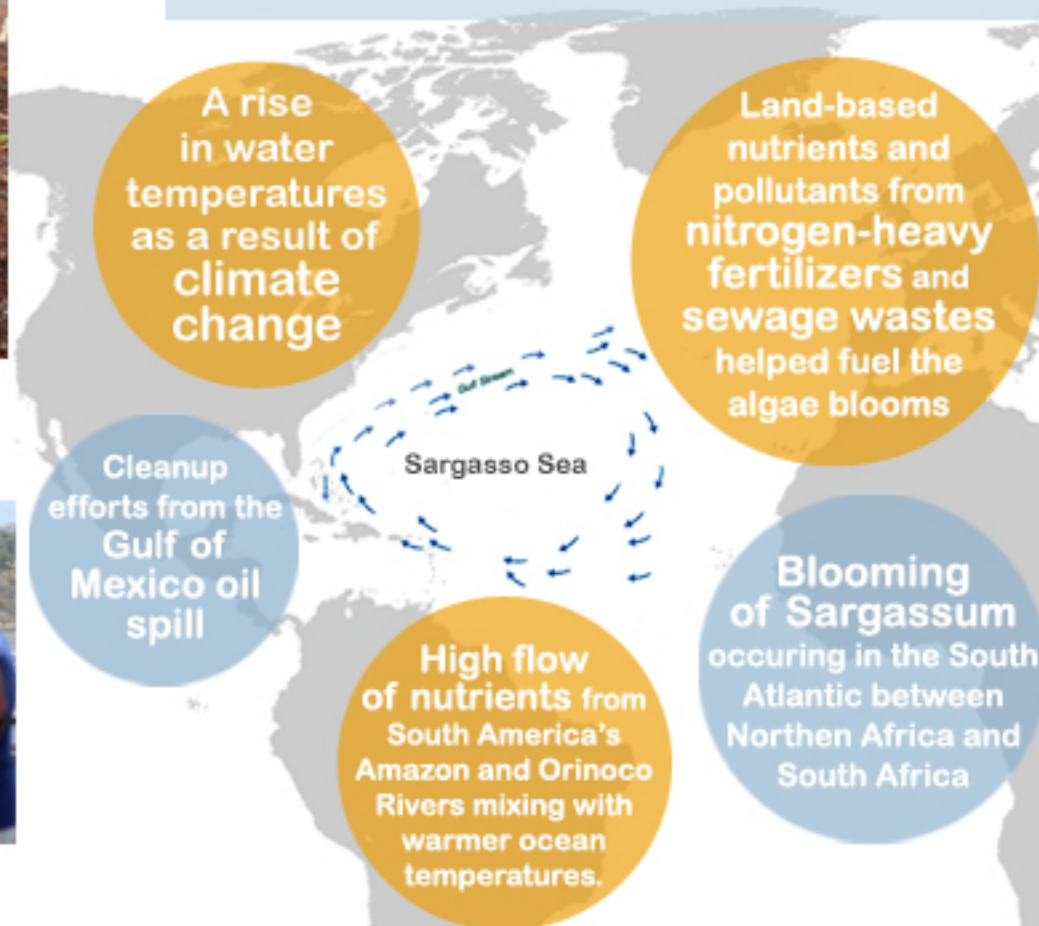
Possible Factors Responsible for the Spread of Sargassum in the Caribbean



Sea turtle overlooking sargassum seaweed in Barbados. Photo: Barbados Sea Turtle Project



Photo: The Guardian (2015)



The Spatial, Economic and Environmental Impacts of Sargassum

MARTINIQUE

The Regional Council spent 2.2 million dollars on sargassum clean-up and deployed over 100 volunteers to clear affected areas.

MEXICO

The Environment Department has allotted 9.1 million dollars and has hired 4600 temporary workers to assist with clean up efforts.

“Overall it would cost the Caribbean region at least US\$120 million and more than 100,000 people to assist with cleanup efforts for the spread of Sargassum in the Caribbean” - Sir Hilary Beckles



Photo: Romel Hall

BARBADOS

At the last count, 42 sea turtles have been found dead due to the compression and density of the sargassum bloom in Long Beach Area and several have been found trapped.

Photo: Barbados Sea Turtle Project

TRINIDAD AND TOBAGO

3 million TT has been allotted to address the spread of Sargassum

Experienced significant losses in tourism revenue based on hotel cancellations and reduced bookings.

Curtail recreational and commercial fishing activities.



Photo: The Telegraph Project

Saint Lucia, St. Vincent & the Grenadines, Guadeloupe, Puerto Rico, Florida, Jamaica and Grenada have also been invaded by sargassum in 2015.

Advantages and Disadvantages of the Sargassum Invasion



Important food source for birds and fish.



Provides unique habitat that supports and maintains a diverse marine ecosystem.



When left on the seafront, acts as a buffer to reduce wave current and wind erosion by binding sand and dunes.



Has potential for value added economic uses, such as compost and fertilizer, biofuels and livestock feed, and use in nutraceutical and pharmaceutical products.



Floating nature of Sargassum has the potential to serve as a pathway for introduction of unknown or new species.



Decomposing Sargassum gives off a foul odour which is a nuisance and deterrent for tourist and recreational activities.



Prolonged exposure to decomposing Sargassum can have health effects. Bacteria and microbes produced by vegetation can also cause skin irritation.



High influx of Sargassum have resulted in the death of marine creatures such as turtles.



High economic cost both for cleanup efforts and losses in tourism and fishing revenue.

Best Practices and Research Potential

1. Manual Removal

(Barbados, Saint Lucia and Saint Thomas)

Pro

Hand raking is preferable to machinery; beach raking equipment with a perforated conveyor belt is preferable to heavy construction equipment. Provides a more sustainable option; less disruption to beach and marine ecosystem.

Con

Time consuming; labor cost.

2. Burying Sargassum

Pro

Can act as a fertilizer for shore plants; has the potential to help build sand and reduce beach erosion.

3. Removal of Sargassum with the Use of Cranes and Mechanical Equipment

Pro

Less time consuming; can manage to remove larger quantities than manual labor would.

Con

Expensive; disrupts beach and marine ecosystem, destruction of marine habitats.

4. Voluntary Beach Clean-Up

(Barbados, Saint Lucia)

Pro

Reduced labor cost

Con

Limited participation based on perception of Sargassum; may not be able to address large influx.

5. Utilized for compost and fertilizer

(Barbados)

Pro

Improves soil health; provides cheap natural alternative to fertilizer, also less stressful on the environment.

6. Sargator Boat Collection System

Boat /Barrage Prototype similar to what is used to collect oysters (Guadeloupe)

Pro

Can collect up to 10 tons of algae with a treadmill up to 1.80 m deep.

Con

Potentially costly; the prototype won't be available until November 2015.

7. Potential Opportunities for Use as Biosorbent in Metal and Mining Process to Remove Toxic Heavy Metals in the Environment

Pro

Provides cheap alternative for biosorbents influx; could provide returns of 25% and payback over three years.

Con

Funding and additional R&D is needed; uncertainties surrounding the influx of Sargassum may not sustain production levels.

8. Manufacturing of value added products such as personal care products

Con

Funding and additional R&D is needed; uncertainties surrounding the influx of Sargassum may not sustain production levels.