

Learn about *Sargassum* Inundation Events



Massive aggregation of *Sargassum* algae inundating a coastal area of the Gulf of America. Credit: Marcial Gonzalez/Shutterstock.com

What is *Sargassum*?

- *Sargassum* is a brown, floating algae that forms large mats in the ocean. Since 2011, extremely large mats have routinely formed in what is known as the Great Atlantic *Sargassum* Belt (GASB), which stretches from the west coast of Africa to the Caribbean and Gulf of America.
- The increased growth of *Sargassum* in the GASB is fueled and sustained by the availability of a source algal population; increased nutrients from deep ocean currents, land-based sources, and atmospheric deposition; prevalent temperature and salinity ranges that promote algae growth; and winds and current circulation patterns that help move nutrients and create convergence of algal mats.
- When in the open ocean, *Sargassum* provides important habitat for diverse groupings of fish, invertebrates, sea turtles, and sea birds. However, when large

amounts of *Sargassum* aggregate nearshore or are washed onto shore (also known as *Sargassum* inundation events) these can harm human health, the environment, and coastal economies.

Can *Sargassum* Inundation Events (SIEs) Impact Human Health?

Yes, SIEs can potentially affect human health when floating near shore or decomposing on beaches.

- *Sargassum* mats harbor tiny organisms, such as jellyfish larvae, so swimmers may suffer skin irritation upon contacting the mats.
- Decomposition of large amount of beached *Sargassum* can release gases such as hydrogen sulfide and ammonia that are unpleasant to smell and may cause mild to serious respiratory, cardiovascular, and neurological effects.
- Pregnant women exposed to hydrogen sulfide generated from *Sargassum* strandings may also be at a higher risk of early onset preeclampsia, a potentially life-threatening pregnancy complication.
- *Sargassum* accumulates and leaches pollutants, including pesticides and heavy metals such as arsenic. These pollutants could contaminate seafood and harm people who eat it.

Protect Yourself and Others from Exposure to *Sargassum*

You can reduce health risks associated with *Sargassum* exposure by following these common recommendations and practices put forth by Florida Fish and Wildlife Conservation Commission and Florida Department of Health:

- Avoid recreating in waters that contain excessive *Sargassum*. Some of the organisms it harbors may irritate your skin.
- Stay away from areas where *Sargassum* is decomposing. If you live nearby, close your windows and doors.
- If you experience any airway irritation, nausea, headaches, vertigo, confusion, burning of the eyes, or other symptoms, stay away from the area with *Sargassum* until your symptoms are no longer present and the decay of *Sargassum* is no longer off-gassing.
- Avoid or limit your time close to areas with decomposing *Sargassum* if you have asthma or other respiratory conditions.
- Anyone handling *Sargassum*, particularly workers that collect and transport it from the beach to alternative locations, should consider wearing protective clothing such as gloves, boots, and respiratory protection as a precaution.

How Do SIEs Impact Local Economies?

Excessive *Sargassum* in nearshore waters and on beaches can be particularly harmful to fishing and tourism industries.

- SIEs may impact recreational and commercial fisheries by reducing the availability of important species and preventing fishermen from accessing and catching their target species.

- Decomposing *Sargassum* can cause unsightly beaches and unpleasant odors, deterring tourists from visiting affected areas, resulting in decreased tourism revenue for local economies.
- Furthermore, removing *Sargassum* from beaches and/or preventing the floating mats from reaching beaches can present expensive challenges, particularly for small communities that have limited resources. Removal may also result in the loss of sand, contributing to beach erosion.

How Do SIEs Impact Aquatic Plants and Animals, and Their Ecosystems?

Although *Sargassum* aggregations in the open ocean serve as habitat for many marine animals, the inundation of coastal areas with too much *Sargassum* can harm aquatic life and coastal marine ecosystems.

- Accumulation and decomposition of *Sargassum* in nearshore waters:
 - produces dissolve organic matter that decreases light availability to seagrasses and corals;
 - reduces the availability of food, habitat, and dissolved oxygen for other aquatic organisms; and
 - produces leachates that can degrade nearshore water quality and disrupt marine food webs.
- The build-up of *Sargassum* in coastal areas can negatively affect the reproductive biology and population size of sea turtles.

Management Methods for SIEs

Management of SIEs include the ability to forecast, intercept and prevent *Sargassum* aggregations from reaching the shore; the implementation of collection and removal strategies from nearshore areas and beaches; and the exploration of its potential uses.

- **Forecasting.** Despite the inability to forecast specific landing locations for *Sargassum*, the likelihood for a potential landing can be predicted at a regional scale using historical and current satellite observations.
- **Collection and Removal.** Many jurisdictions affected by SIEs face the decision of whether to remove and dispose of *Sargassum* prior to its landing or afterwards. They have developed standard operating procedures to safely and efficiently remove *Sargassum* from nearshore waters and beaches, and to tackle some of the challenges associated with landfill disposal.
- **Potential Uses of *Sargassum*.** While many jurisdictions have begun to explore novel uses and commercial applications for excess *Sargassum* biomass, ongoing and additional research is needed to examine: (1) the feasibility and costs associated with the need to remove associated waste (e.g. salt, sand, and water), (2) the potential need for long-term storage to deal with excess biomass and ensure a steady supply in the off-season, and (3) its capacity to bioaccumulate and/or leach metals, pesticides, microplastics and other pollutants.