Communication Brief of the Caribbean Regional Fisheries Mechanism Secretariat – October 2014

SARGASSUM SEAWEED INVASION - WHAT, WHY & WHAT WE CAN DO?

Background

From June to September 2011, numerous beaches and bays of islands in the eastern Caribbean (e.g., Anguilla, Antigua & Barbuda, Barbados, British Virgin Islands, Guadeloupe, Martinique, St. Lucia, St. Maarten / St. Martin) were enveloped with unprecedented amounts of brown seaweed. In 2012 and 2014, Barbados, Guadeloupe, Dominica, Antigua & Barbuda, St. Croix and Puerto Rico reported moderate episodes of the phenomenon.

Fish landing site covered with *Sargassum*, Aug. 2011

The species associated with the mass intrusion were the Common Gulfweed *(Sargassum natans)* and the Broad-toothed Gulfweed *(Sargassum fluitans)*. Both species are entirely free-floating (i.e., they never attach to the seafloor) and are native to the Caribbean region.

Mystery of the Invasion

The original hypothesis surrounding the source of the *Sargassum* in 2011 was that strong and unusual currents from tropical storms probably brought the masses of seaweed from the Sargasso Sea (in the north, east of Bermuda) to the islands in the eastern Caribbean. Later works using data on ocean currents and back-tracking from the impacted islands suggest that the *Sargassum* may have "bloomed" close to the equator between Brazil and Africa, then released into the eastern Caribbean. High ocean temperatures and high nutrient inputs may have supported the bloom. There is still no definitive evidence about the source of the *Sargassum* in 2011, 2012 and 2014; hence there is an urgent need for research to guide mitigation strategies given its impact on fisheries, tourism and recreational activities.

Ecological Role of *Sargassum*

Sargassum functions as: feeding grounds for important pelagic fishes (including juvenile swordfish, dolphinfish and various tunas); as spawning surfaces for flyingfish *(Exocoetidae)*; and nursery areas for a number of endangered species (Hawksbill turtle, European eel, etc.). Various species of seabirds (terns, tropic birds and boobies) also forage among the seaweed.

Waterway of a hotel resort clogged with *Sargassum*, Aug. 2011

Impacts of the Invasion

- Clogged waterways / ports followed by the foul odour associated with the decay (e.g.

River Bay, Barbados; Dennery Beach, St. Lucia; Mamora Bay, Antigua).

- Disrupted fishing, swimming and boating activities (e.g., Micoud Beach, St. Lucia; Mill Reef, Antigua; Orient Beach, St. Martin).
- Closure of hotels and high clean-up cost (e.g., St. James's Club, Antigua).
- Abnormally high catches of juvenile dolphinfish (e.g., Barbados, St. Lucia).
- Unofficial reports of low catches of flyingfish in subsequent years (e.g., Barbados).
- Entangled / damaged fishing gear (lines and nets) and vessel propellers.
- "Fish kills" (e.g., juvenile eels, jacks, triggerfish) associated with the decaying *Sargassum*.
- Turtle hatchlings finding it difficult to make their way to the ocean.

Clean-up of beach and waterway of at a hotel resort, Aug. 2011

What We Can Do?

Fishers and other Seafarers:

- Report the location (latitude & longitude, if possible) and size or dimensions of *Sargassum* clusters or lines to fisheries authority / coastal zone authority.
- Participate in community clean-up of port of operation and development of local mitigation plan.

Hotel Owners / Managers:

- Develop contingency / mitigation plans to address the seaweed phenomena.
- Incorporate the seaweed phenomena into hotel's environmental programme (e.g., using seaweed, once treated, as mulch or fertilizer for hotel horticulture).

Given the possibly of a re-occurrence on the magnitude and regional scale of 2011:

Local Fisheries & Tourism Authorities:

- Collaborate with stakeholders in the development of a national mitigation plan.
- Collaborate with regional counterparts and institutions (e.g., CRFM, Caribbean Network of Fisherfolk Organisations, University of the West Indies, University of Southern Mississippi Gulf Coast Research Laboratory, Caribbean Hotel and Tourism Association) in areas such as harmonising data collection / reporting, assessing impacts, formulating research and developing "best practices".
- Explore commercial options for *Sargassum* use (e.g., agricultural, medical).
- Explore the option of a regional early warning system; Texas A&M University has been using satellite imagery to forecast *Sargassum* landfall.

Fish landing site and beach covered with *Sargassum*, Sep. 2014

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Prepared with funds from the Technical Centre for Agricultural and Rural Co-operation ACP-EU (Project No. 2-1-23-303-3).