

Turning the Tide on the Brown Tide: Bonaire's Sargassum Response Plan

Cambiando el rumbo de la marea marrón: el plan de respuesta al sargazo de Bonaire

Inverser le cours de la marée brune : le plan d'intervention pour les sargasses de Bonaire

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EXTENDED ABSTRACT

Since 2018, episodic influxes of sargassum has significantly impacted the coastal ecosystems, tourism industry, and local economy of the Dutch Caribbean island of Bonaire. This extended abstract discusses the efforts undertaken by STINAPA (Stichting Nationale Parken Bonaire) in collaboration with local partners, government agencies, and external researchers to develop and implement a comprehensive Sargassum Response Plan.

Large influxes of sargassum can smother flora and fauna along the shoreline (Rodríguez-Martínez, 2019), hypoxia events and reduced water quality can lead to mass die off adjacent seagrass and mangrove beds (van Tussenbroek et al, 2017) and improper removal of sargassum can lead to high sand loss from beaches (Hinds et al, 2016). These impacts are felt most severely within Bonaire's bays, namely Lac Bay, which provides important foraging grounds for protected species such as sea turtles and queen conch and host a wide variety of habitat types including sandy beaches, seagrass beds, a mangrove forest and a fringing coral reef. Lac Bay's economic importance for tourism, offering activities such as wind surfing, kayaking, and snorkeling as well as the presence of adjacent restaurants and hotels, further underscores the urgency to address this sargassum issue.

Initially the island was dependent on manual cleaning efforts carried out by STINAPA's rangers, volunteers, and hired workers, using basic tools like rakes, pitchforks, and bobcats to remove sargassum from the shorelines. However, the physical and mental toll of this labor-intensive approach, coupled with the increasing volume and duration of sargassum influxes, necessitated a more comprehensive strategy. As a result, a Sargassum Response Plan was developed through collaboration with the local government and subsequent approval by the Dutch government.

A significant step forward was made through STINAPA's investment in sargassum booms. These booms were instrumental in guiding sargassum towards extraction points, but the lack of heavy equipment hindered effective removal within the critical three-day decay threshold. The urgency of the situation prompted additional financial support from the local government, enabling the acquisition of essential equipment, including additional booms, trucks, cranes, excavators, and transport containers. In addition to this equipment, there is still a need for proper storage facilities and training programs for rangers to optimize the use of heavy machinery.

To enhance the sargassum extraction process, STINAPA is exploring partnerships with companies specializing in on-water extraction techniques, utilizing pumps in conjunction with sargassum booms. By employing this approach, the responsibility for sargassum removal would be shared between STINAPA and the assisting company, ensuring clear delineation of responsibilities and a mutually beneficial contractual agreement.

Furthermore, in addition to the specialized equipment needed to remove the sargassum, a holistic response also requires the use of monitoring tools to predict sargassum influxes, continuous monitoring of sargassum activity, the creation of checklists and documentation for tracking progress, and the adoption of a creative and resource management mindset. Lastly, STINAPA will continue to work with external researchers to better understand the long-term impacts of sargassum influxes and perhaps even identify opportunities to valorize its collection in the future.

In summary, Bonaire's Sargassum Response Plan exemplifies the collaborative efforts of STINAPA, local partners, and government agencies in combating the detrimental impact of sargassum on the island's coastal ecosystems. Through strategic investments, proper equipment, and innovative approaches, Bonaire aims to turn the tide on the brown tide, preserving its precious marine environment for future generations.

KEYWORDS: Bonaire National Marine Park, Sargassum, Response Plan

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