Sargassum natans pdf

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Species of macroalgae Sargassum natans Scientific classification Clade: SAR Phylum: Ochrophyta Class: Phaeophyceae Order: Fucales Family: Sargassum natans is a species of Sargassum.[1] In English the species goes by the common names common gulfweed, narrowleaf gulfweed, or spiny gulfweed. [2]:126 It occurs in the Sargasso Sea.: 123 It is also pelagic [3] and reproduces by fragmentation. [4]:65 References ^ "WoRMS - World Register of Marine Species - Sargassum natans (Linnaeus) Gaillon, 1828". www.marinespecies.org. Retrieved 2022-01-18. ^ Pereira, Leonel (2016-01-08). Edible Seaweeds of the World. CRC Press. ISBN 978-1-4987-3050-1. ^ Coulombe, Deborah A. (1990-02-14). Seaside Naturalist. Simon and Schuster. p. 36. ISBN 978-0-671-76503-3. ^ Fleurence, Joël; Levine, Ira (2016-04-05). Seaweed in Health and Disease Prevention. Academic Press. ISBN 978-0-12-802793-6. This Phaeophyceae (or brown alga) article is a stub. You can help Wikipedia by expanding it.vte This article needs additional or more specific categories. Please help out by adding categories. (January 2022) Retrieved from " As the name suggests, Common Gulfweed is the most common Sargassum species found in the Sargasso Sea and washed up on Bermuda's beaches. S. natans is a bushy seaweed with narrow leaf blades which are golden brown with toothed edges. The rubbery-textured leaves range from 2-6 mm (0.07-0.2") wide and 2-10 cm (0.8-4") long. The gas-filled floats are less than 6 mm (0.2") in diameter and are held on short stalks along the stems among the leaves. The floats of S. natans have a single protruding spine 2-5mm (0.07-0.2") long. It is these clumps that can reach 60 cm (23.5") long. It is these clumps that form together into much larger mats. Broad-toothed Gulfweed (Sargassum fluitans)S. fluitans very much resembles S. natans, as both are golden brown in colour, with toothed, rubbery leaves, small gas-filled floats and no central stem. The leaves of Broad-toothed Gulfweed, as the name suggests, are wider reaching up to 8 mm (0.3") wide and 2-6 cm (0.8-2.4") long. The gas bladders of S. fluitans are held on relatively long stalks along the centre of the plant. The surface of the floats is smooth. Other less abundant Sargassum species reported from Bermuda include the endemic Bermuda Gulfweed (S. filipendula) and Deep-toothed Gulfweed (S. filipendula) and Dee algae) that floats in island-like masses and never attaches to the seafloor. Smaller fishes, such as filefishes and triggerfishes, reside in and among brown load image (jpg, 116 KB). Sargassum is abundant in the ocean. Upon close inspection, it is easy to see the many leafy appendages, branches, and round, berry-like structures that make up the plant. These "berries" are actually gas-filled structures, called pneumatocysts, which are filled mostly with oxygen. Pneumatocysts, which are filled mostly with oxygen. Pneumatocysts add buoyancy to the plant structure and allow it to float on the surface. Floating rafts of Sargassum can stretch for miles across the ocean. This floating habitat provides food, refuge, and breeding grounds for an array of animals such as fishes, sea turtles, marine birds, crabs, shrimp, and more. Some animals, like the sargassum fish (in the frogfish family), live their whole lives only in this habitat. as mahi mahi, jacks, and amberjacks. When Sargassum loses its buoyancy, it sinks to the seafloor, providing energy in the form of carbon to fishes and invertebrates in the deep sea, thus serving as a potentially important addition to deep-sea food web. the southern Atlantic states was designated as Essential Fish Habitat, which affords these areas special protection. However, Sargassum habitat has been poorly studied because it is so difficult to sample. Further research is needed to understand, protect, and best conserve this natural resource. Genus of brown algae Sargassum Scientific classification Clade: SAR Phylum: Ochrophyta Class: Phaeophyceae Order: Fucales Family: Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of brown (class Phaeophyceae) see list Lines of Sargassum is a genus of brown (class Phaeophyceae) see list Lines of brown (class Phaeophyceae) see list Lines of brown macroalgae (seaweed) in the order Fucales. Numerous species are distributed throughout the temperate and tropical oceans of the world, where they generally inhabit shallow water and coral reefs, and the genus is widely known for its planktonic (free-floating) species. Most species within the class Phaeophyceae are predominantly cold-water organisms that benefit from nutrients upwelling, but the genus Sargassum appears to be an exception.[1] Any number of the normally benthic species may take on a planktonic, often pelagic existence after being removed from reefs during rough weather; however, two species (S. natans and S. fluitans) have become holopelagic—reproducing vegetatively and never attaching to the seafloor during their lifecycles. The Atlantic Ocean's Sargasso Sea was named after the algae, as it hosts a large amount of Sargassum.[2] History Sargassum was named by the Portuguese sailors who found it in the Sargasso Sea. They called it after the wooly rock rose (Halimium lasianthum) that grew in their water wells at home, and that was called sargaço in Portuguese (Portuguese pronunciation: [ser'yasu])[3] - from the Latin salicastrum. The Florida are well known for the high levels of Sargassum covering their shores. Sargassum or gulfweed was observed by Columbus. Although the seaweed acquired a legendary reputation for covering the entirety of the Sargasso Sea, making navigation impossible,[4] it has since been found to occur only in drifts.[5] Sargassum—either the species S. pallidum, or more rarely, hijiki, S. fusiforme—in doses of 0.5 gram dissolved in warm water and drunk as a tea. It is called 海藻; hǎizǎo in traditional Chinese medicine, where it is used to resolve "heat phlegm".[6] Description Close-up of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum, showing the air bladders that help it stay afloat Main article: List of Sargassum species Species of this genus of algae may grow to a length of several metres. They are generally brown or dark green in color and consist of a holdfast, a stipe, and a frond. Oogonia and antheridia occur in conceptacles embedded in receptacles on special branches.[7] Some species have berrylike gas-filled bladders that help the fronds float to promote photosynthesis. Many have a rough, sticky texture that, along with a robust but flexible body, help them withstand strong water currents. Ecology See also: Ocean surface ecosystem Large, pelagic mats of Sargassum in the Sargassum secies in the Sargassum patches act as one of the only habitats available for ecosystem Large, pelagic mats of Sargassum in the Sargassum secies in the sargassum in the Sargassum secies in the sargassum secies in the sargassum secies and the sargassum secies in the sargassum secies i different parts of their development, but also as a permanent residence for endemic species that can only be found living on and within the Sargassum mats are home to more than 11 phyla and over 100 different species.[10] There is also a total of 81 fish species (36 families represented) that reside in the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[11] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts of their life cycles.[12] Other marine organisms, such as young sea turtles, will use the Sargassum or utilize it for parts can survive elsewhere. This community is being affected by humans due to overfishing, trash and other types of pollution, and boat traffic, which could eventually lead to the demise of this diverse and unique habitat.[9] Below is a list of organisms that are associated with the Sargasso Sea. The Sargasso Sea plays a major role in the migration of catadromous eel species such as the European eel, the American conger eel. The larvae of these species hatch within the sea and as they grow they travel to Europe or the East Coast of North America. Later in life, the matured eel migrates back to the Sargasso Sea to spawn and lay eggs. It is also believed that after hatching, young Loggerhead sea turtles use currents such as the Gulf Stream to travel to the Sargasso Sea, where they use the sargassum as cover from predators until they are mature.[12][13] Organisms found in the pelagic Sargassum patches,[14][15][9] Arthropods Amphipods Skeleton shrimp Crabs Copepods Shrimp Sea Spiders Worms Annelid worms Flatworms Mollusks Nudibranchs Snails Squid Fish Sargassum fish Porcupinefish Triplefin Planehead filefish European eel American conger eel Others Sea turtles Sargassum beds, where they are also known as gulfweed, a term that also can mean all seaweed species washed up on shore. Sargassum species are found throughout tropical areas of the world and are often the most obvious macrophyte in near-shore areas where Sargassum beds often occur near coral reefs. The plants grow subtidally and attach to coral, rocks, or shells in moderately exposed or sheltered rocky or pebble areas. These tropical populations often undergo seasonal cycles of growth and decay in concert with seasonal changes in sea temperature.[16] In tropical Sargassum species that are often preferentially consumed by herbivorous fishes and echinoids, a relatively low level of phenolics and tannins occurs.[17] The camouflaged sargassum fish (left) has adapted to live among drifting Sargassum seaweed. It is usually a small fish, such as this juvenile puffer (right), are also found in sargassum. Inundations Large patches of Sargassum adrift near the island of Saint Martin. In limited amounts, washed-ashore Sargassum adrift near the island of Saint Martin. [18] Once ashore, sargassum provides vital nutrients such as carbon, nitrogen, and phosphorus to coastal ecosystems which border the nutrient-poor waters of the western North Atlantic tropics. [19][20] Additionally, it decreases coastal ecosystems which border the nutrient-poor waters of the western North Atlantic tropics. [19][20] Additionally, it decreases coastal ecosystems which border the nutrient-poor waters of the western North Atlantic tropics. coastal areas in record amounts.[21] Coastlines in Brazil, the Caribbean, Gulf of Mexico, and the east coast of Florida saw quantities of sargassum inundation event occurred in 2011 and had a biomass increase of 200 fold compared to the previous eight years average bloom size. [23] Since 2011 increasingly stronger inundation events have occurred every 2–3 years. During a Sargassum inundation event in 2018, one Sargassum inundation events have caused millions of dollars of lost revenue in the tourism industry, especially hurting small Caribbean countries whose economies are highly dependent on seasonal tourism.[23] While the Sargasso Sea is a known source of sargassum types composing these inundation events have led researchers to believe that the Sargasso Sea is not the point of origin of inundating Sargassum [23][25] Sargassum natans I and Sargassum fluitans III are the dominant sargassum species found in the Sargasso Sea.[26][27][28] Biological impacts Unprecedented Sargassum inundation events cause a range of biological and ecological impacts in affected regions. The decomposition of large quantities of Sargassum additionally creates hydrogen sulfide gas, which causes a range of health impacts in humans.[30] During the sargassum inundation event in 2018, 11,000 Acute Sargassum Toxicity cases were reported in an 8-month span on just the Caribbean islands of Guadalupe and Martinique.[31] Massive amounts of floating sargassum present a physical barrier preventing corals and seagrasses from receiving sufficient light, fouling boat propellers, and entangling marine turtles and mammals.[32][33] With every Sargassum inundation event, large amounts of nutrients are transported from the open ocean to coastal environments. This greatly increases nutrient transport, and its effect on marine and coastal ecosystems are still unknown. Understanding the causes and drivers of Sargassum inundations is critical as they become more commonplace.[34] Nutrient factors The Sargassum blooms, is classified as an oligotrophic region.[35] With warm, oxygen-poor waters and low nutrients, biomass production is limited by what little nutrients are present.[36] Historically, low nutrient levels in the Sargasso Sea have limited sargassum production; however, new influxes of nitrogen and phosphorus are driving factors in increased biomass production.[37][38][39] Recent studies have found three likely drivers of nutrient influx linked to increasing Sargassum biomass: an increase in nutrient output from the Amazon River, increased nutrients in the Gulf of Mexico, and coastal upwelling off the West African Coast which transfers deep nutrient-rich waters to the upper water column where sargassum resides.[40][41][39] Nutrient output from the Amazon River has been shown to have a direct, yet delayed, effect on large Sargassum inundation events, with events occurring one to two years following years of high nutrient output.[40] Phosphates and iron transported via the trade winds from North Africa have been reported to have a fertilizing effect on sargassum growth; however, further data is required to understand its role in causing inundating Sargassum blooms.[23] Researchers globally agree that continued research is required to quantify the effect of marine chemical changes and other environmental factors in the recent increase in Sargassum biomass and inundation events.[40] Currents and winds The physical drivers behind Sargassum inundation events are prevailing winds and ocean surface currents.[42] The Caribbean is located in a region heavily affected by trade winds. Trade winds are strong, consistent northeasterly winds which blow dust-filled dry air from the Sahara across the Atlantic.[43] Trade winds additionally play a critical role in the annual hurricane season in the Western Atlantic.[44] The Caribbean Current and Antilles branch of the Atlantic North Equatorial Current are the major current transporters of Sargassum in the region.[45][46] Researchers have recently begun using Moderate Resolution Imaging Spectroradiometer satellite imagery and ocean current data to track and forecast inundation events with a high level of accuracy.[47] Human impact The effects of deforestation, waste-water runoff. and commercial agriculture fertilizer on facilitating the excess accumulation of nutrients in aquatic, and marine environments have been well studied and shown to be driving factors in eutrophication.[48][49] Since detrimental Sargassum inundation events did not begin until 2011, it is likely that an unknown nutrient threshold was reached and surpassed. Given current agricultural policies and practices, it is unlikely these inundation events will disappear on their own without human nutrition and are considered a rich source of vitamins, carotenoids, proteins, and minerals. Many bioactive compounds chemically classified as terpenoids, sterols, sulfated polysaccharides, polyphenols, sargaquinoic acids, sargachromenol, and pheophytin were isolated from different Sargassum species. These isolated compounds and/or extracts exhibit diverse biological activities, including analgesic, anti-inflammatory, antioxidant, neuroprotective, anti-inflammatory, anticoagulant, hepatoprotective, and anti-viral activities. [50] Climate change Variations in sea level, salinity, water temperature, chemical composition, rainfall patterns and water acidity all play roles in regulating algae blooms.[51] As anthropogenic forces increase the variability of these factors, the frequency, duration, severity and geographic range of harmful algae blooms have increased, causing millions of dollars of lost revenue as well as damaging fragile coastal and coral ecosystems.[52] References ^ Hogan, C. Michael (2011). Monosson, E.; Cleveland, C.J. (eds.). "Algae § 1.3 Brown algae". Encyclopedia of Earth. Washington DC: National Council for Science and the Environment. ^ "Sargasso". Straight Dope. ^ Gómez de Silva, Guido 1988. Breve diccionario etimológico de la lengua española. Fondo de Cultura Económica, Mexico City, ISBN 968-16-2812-8, p. 627. ^ Padilla, Michael J. (2000). Earth's Waters. Prentice Hall. p. 114. ISBN 9780134349404. Retrieved 11 July 2022. 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