



SARGASSO SEA ALLIANCE



GOVERNMENT OF BERMUDA

# PROTECTING the SARGASSO SEA

A golden floating rainforest – a place of myth and legends – the crossroads of the Atlantic

**N**AMED AFTER ITS CHARACTERISTIC RAFTS OF FLOATING GOLDEN SARGASSUM ALGAE, the Sargasso Sea is an enormous pool of slowly rotating water bounded by ocean currents within the subtropical North Atlantic Ocean. It acts as the ecological cross-roads in the Atlantic. It is an incredibly important part of the open ocean, but it still remains best known to many as a place of myth and legends, from the Bermuda Triangle where ships and planes are said to mysteriously disappear, to a notorious area of ocean becalming the unwary sailor.

Yet the Sargasso Sea has another important side to it—as a hot spot for marine wildlife, ranking alongside the best sites we protect on land. It contains a wide range of habitats and provides a resting, feeding and breeding area for many species including those that are uniquely associated with the floating rafts of the golden algae *Sargassum*. Many commercially important fish species use the area to breed and feed. Some are permanently resident, whilst many others pass through the area or migrate to the Sargasso Sea from Europe and the Americas to breed, including eels and iconic ocean species, such as whales, turtles and marlin.

The Sargasso Sea lies beyond the reach of effective frameworks for its protection and management. Most of it lies beyond the jurisdiction and responsibility of surrounding countries, and it is threatened by diverse human activities including over-fishing, pollution, ship traffic, and even harvesting of *Sargassum* itself. It deserves to be recognised and provided with at least the same level of protection that large familiar land conservation areas already have, such as the Serengeti or Yellowstone.

This leaflet provides an introduction to the Sargasso Sea, and to a ground-breaking new initiative—the Sargasso Sea Alliance—to ensure that this area is given the protection and management it so richly deserves. What we learn from this work will help better protect other key wildlife sites elsewhere in the open ocean and help introduce proper mechanisms to make this a reality. The time is now to make a difference and to make this happen.

The ocean occupies 71% of the surface of the Earth — an amazing expanse of some 360 million square kilometers. We tend to think of it as uniformly blue with little distinguishing features. Yet just like the land, it has many special places. The Sargasso Sea is by far and away one of these fundamentally important parts of the world's ocean.



The coast of Bermuda.

K Killertain Morrison

Sargassum weed in the Sargasso Sea.

J.P. Rouja

The Sargasso Sea, with an area of over 4 million square kilometres, is located within the North Atlantic sub-tropical gyre with its boundaries defined by the surrounding currents. It is the only sea in the world without land boundaries, with water depths ranging from the surface coral reefs of Bermuda to abyssal plains at 4500m.

The Sargasso Sea's importance derives from the interdependent mix of its physical structure and properties, its ecosystems, its role in global scale ocean and earth system processes, its socio-economic and cultural values, and its role in global scientific research. Despite this, the Sargasso Sea is threatened by a range of human activities that either adversely impact it directly or have the potential to do so. Being open ocean the Sargasso Sea is primarily High Seas, the area of ocean that covers about 50% of the earth's surface but which is beyond the jurisdiction and responsibility of any national government, and as such it enjoys little protection.

Bermuda has decided to improve the stewardship of its surrounding seas, both within its Exclusive Economic Zone and into the wider High Seas. With leading conservation and marine science organisations Bermuda began to investigate opportunities within current mechanisms for High Seas governance with the aim of affording protection for the Sargasso Sea. This resulted in the formation of the Sargasso Sea Alliance, a consortium led by the Government of Bermuda of leading conservation and marine science organisations and individuals.

One of the first acts of the Sargasso Sea Alliance has been to collate scientific and other supporting evidence for the importance of the Sargasso Sea. This has been drawn together into a scientific case which will be used to develop international recognition for the Sargasso Sea; to start the process of establishing appropriate management and precautionary regimes within existing international ocean agreements; and to stimulate a wider debate on appropriate management and protection for the High Seas.



Sailfish are among the many species that inhabit the Sargasso Sea.

A Pollock

# Sargasso Sea Facts



**THE OPEN OCEAN** is poorly protected. 71% of the surface of the earth is covered by sea. 50% of the surface of the earth is covered by open ocean, the so-called High Seas that lie beyond the jurisdiction of bordering states. Unlike terrestrial environments, the High Seas have no overarching framework for protection and management. Protecting the Sargasso Sea will show how this can be achieved.

**THE SARGASSO SEA** lies within the subtropical North Atlantic Ocean, bounded by ocean currents circulating clockwise around a central gyre of deep water. Apart from the waters surrounding Bermuda it is High Seas. The current boundaries are variable, especially in the eastern Atlantic, hence the Sargasso Sea Alliance is focussing on the area within the western Atlantic basin – the heart of this important ocean gyre.



Messa Ushiroda / iStockphoto.com

## A NURSERY AND FEEDING AREA

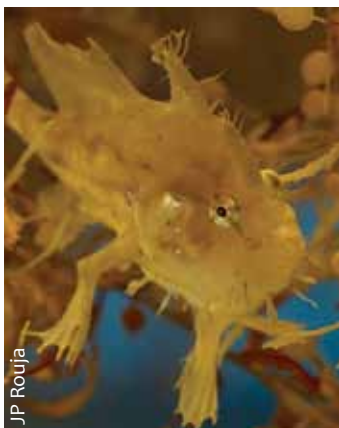
is created by the mats of *Sargassum* and its associated communities. Over 100 species of fish spawn in the area, flying fish lay bubble nests in the mats and their eggs have long filaments to entangle the weed. Juvenile turtles spend their lost years hiding and feeding amongst *Sargassum*, birds feed and rest on the mats, and many species of commercially important fish including tuna, marlin, wahoo and dolphin fish feed beneath the mats.



P Auster

## SEAMOUNTS AND RIDGES

criss-cross the seafloor, these are home to deep water corals which in turn have their own endemic communities of invertebrates and which act as spawning areas for deep water fish.



JP Rouja

## THE GOLDEN FLOATING RAIN FOREST

is a hot spot for wildlife based upon two species of floating *Sargassum* the world's only wholly floating and free-living large algae. Over 150 invertebrate species live on or in association with the *Sargassum*. Ten animal species are endemic-found only within the mats of *Sargassum*. These include fish, molluscs and crustaceans, camouflaged to match their surroundings and, in the case of the Sargassum Fish, having modified fins to allow it to creep through the weed.

### IT IS AN IMPORTANT RESOURCE

both locally and globally, worth many millions of dollars a year because of its fisheries, the direct and indirect benefits of the coral reefs surrounding Bermuda, and tourism. Despite this the revenues derived from the Sargasso Sea are much lower than they might be because of the absence of appropriate management.



T Puchner



A Murch

### A CROSS ROAD IN THE ATLANTIC OCEAN,

it is an area that many species including whales, turtles, and tuna migrate through, whilst in deep water below the *Sargassum* the endangered European and American eels migrate here from the coasts of Europe, Canada and the USA to spawn. The Sargasso Sea is their only known spawning area. Other deep migrants include Porbeagle Sharks—which migrate from the temperate eastern Atlantic to give birth to their young here, and Swordfish migrate into the area where they live by day at depths of several 100 m and swim up to the surface at night to feed.

### OF VITAL IMPORTANCE TO GLOBAL SCALE PROCESSES

of oxygen production and carbon sequestration due to a combination of abundant tiny photosynthetic bacteria, deep sunlit waters and physical mixing processes. The Sargasso Sea is conventionally regarded as being oligotrophic; but the annual net primary production is three times higher than in the Barents Sea.



T. Wardman

### A CRITICAL AREA FOR OCEAN RESEARCH AND MONITORING,

the Sargasso Sea has been a focus for ocean science since the voyage of HMS Challenger in the 1870s. It is the site of Beebe's first bathyscape dives, the sea where variability in deep ocean currents was found, where the most abundant photosynthetic organism on earth was discovered, and it is the site of the world's longest ocean time series of measurements which together give us so much vital information about global climate change.

**A PLACE OF LEGEND** so a culturally important part of the ocean. First described by Columbus who feared his ships would be trapped by mats of floating golden algae, named *Sargassum* possibly because its air bladders reminded Portuguese sailors of bunches of grapes. Sailors feared being becalmed in the calm seas—the doldrums, and later the Bermuda triangle achieved notoriety because ships and aeroplanes were supposedly lost here. Bermuda itself has a rich maritime history and its settlement after the wreck of the *Sea Venture* (on its way to Virginia) in 1609 was reputedly the inspiration for Shakespeare's *The Tempest*.

**IT IS THREATENED** by human activities including over-fishing and collateral damage from fishing including entanglement in gear and unwanted by-catch; by ship traffic creating noise in the water and risks of collision; by pollution from both land and ships; by harvesting of *Sargassum*; and by future deep-sea mining.

Apart from over-fishing and plastic pollution many of the threats are not obvious, as it is difficult to collect evidence of direct causal relationships between specific activities and adverse impacts in such a wide expanse of ocean. But there is clear and growing evidence that the Sargasso Sea is being adversely impacted by human activities and with the possibility of new uses for *Sargassum* in the future, the lack of direct scientific evidence should not preclude international cooperation and action based on the well-established precautionary principle.





A Stevenson

**LED BY THE GOVERNMENT OF BERMUDA**, the Sargasso Sea Alliance was formed to draw attention to the international importance of the Sargasso Sea and the threats upon it and is seeking to establish appropriate protective measures through the various sectoral organisations with interests in the Sargasso Sea such as International Commission for the Conservation of Atlantic Tuna (ICCAT), (for fisheries), International Maritime Organisation (IMO) (for shipping), International Seabed Authority (ISA) (for seabed exploitation issues). Creating a network of protection will help mitigate the lack of overall protective measures due to High Seas status, leading to the creation of an open ocean Marine Protected Area.

The opportunity to recognise the importance of the Sargasso Sea and to develop and implement procedures to protect this iconic region and the wider High Seas should be taken before it is too late.

We need your support!

## ABOUT THE SARGASSO SEA ALLIANCE

The Sargasso Sea Alliance is led by the Bermuda Government and aims to mobilise support from a wide variety of national and international organisations, governments and donors for protection measures for the Sargasso Sea.

### SARGASSO SEA ALLIANCE PARTNERS:

International Union for the Conservation of Nature (IUCN)  
and its World Commission on Protected Areas

Mission Blue / Sylvia Earle Alliance

Marine Conservation Institute

Woods Hole Oceanographic Institution

Atlantic Conservation Partnership

Bermuda Institute for Ocean Sciences (BIOS)

Bermuda Underwater Exploration Institute (BUEI)

WWF International

The Secretariat of the Sargasso Sea Alliance is hosted by the Washington D.C. Office of the International Union for the Conservation of Nature (IUCN), Suite 300, 1630 Connecticut Avenue NW, Washington D.C., 20009, USA.

To view the full Science Case, please visit our website at:  
[www.sargassoalliance.org/case-for-protection](http://www.sargassoalliance.org/case-for-protection)

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For further details contact

Dr David Freestone (Executive Director) at [dfreestone@sargassoalliance.org](mailto:dfreestone@sargassoalliance.org)  
or Kate Killerlain Morrison, (Programme Officer) at [kmorrison@sargassoalliance.org](mailto:kmorrison@sargassoalliance.org)



Sargasso Sea Alliance, saved the following resources by using 656 pounds of Primavera Gloss, made with 81% recycled fiber and 60% post-consumer waste, elemental chlorine free and manufactured with electricity that is offset with Green-e® certified renewable energy certificates: 4 fully grown trees, 1943 gallons of water, 2 Million BTUs of energy, 123 pounds of solid waste, and 431 pounds of greenhouse gases. Calculations based on research by Environmental Defense Fund and other members of the Paper Task Force. [www.newleafpaper.com](http://www.newleafpaper.com)