

Mermaid's Mermaid's Glove

Isodictya palmata

Class: *Demospongiae*
Order: *Poecilosclerida*
Family: *Isodictyidae*
Genus: *Isodictya*

Distribution

This species occurs in the boreal and sub-arctic North Atlantic. It is widespread at both sides of the North Atlantic Ocean, as far south as the British Isles in the east and the Gulf of Maine in the west.

Habitat

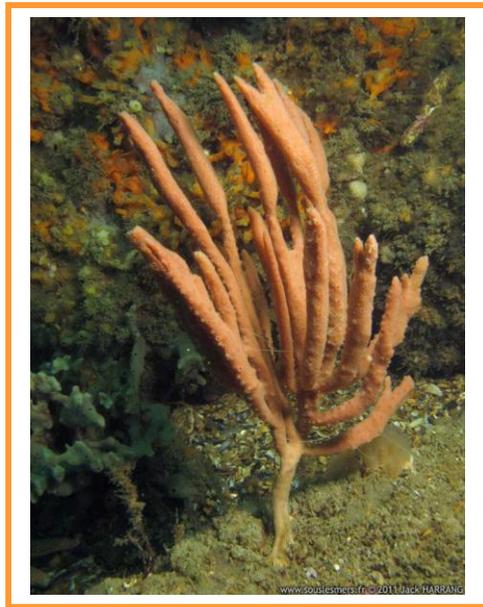
They are benthic, living at the bottom of seas, lakes or rivers. At Burntcoat Head they occupy the surrounding coastal area.

Food

These are suspension feeders. Minute particles of food are filtered from water for consumption.

Reproduction

They reproduce both sexually and asexually. The asexual reproduction is by budding. The buds may be external or internal.



Remains of sponges can be found along the shoreline.

Demospongiae is the most diverse class of sponges, including more than 90% of the known species commonly known as demosponges. In this class the order *Poecilosclerida* is the largest and most diverse order, with 25 families and several thousand species. One of these families is *Isodictyidae*. This family contains a great variety of species with a wide global distribution. The genus *Isodictya* is a North Atlantic species in this family. It is found from Newfoundland to North Carolina and occurs in Nova Scotian waters.

For the most part sponges occur on bedrock. They attach themselves firmly to solid surfaces. The hard substrate is typically located at the base of rock cliffs and consists of outcrops, boulders, and rock debris of decreasing size. This species is most often seen on rocky locations at depths of 10 metres and further down to about 37 metres. Depths vary with geographic location. Some other species range from intertidal to hadal depths.

Ambient water is drawn into the body of the sponge through minute openings (ostia). Food particles are collected on a collar of microvilli (tiny hair-like projections). They capture these for digestion. Particles include phytoplankton, bacteria and yeasts, organic material and organic detritus. Water is then expelled.

The internal buds are called gemmules. Both types of buds develop into new sponges. In sexual reproduction most sponges are hermaphrodites, being able to perform both male and female functions. Usually, a sponge will play one role at a time. Some cells of the sponge change into eggs or sperm. While eggs are generally retained, sperm are released into the water.



Development

When sperm are 'inhaled' by another sponge of the same species, these fertilize the eggs. The eggs develop within the parent sponge.

Characteristics

Demosponges are visually a very diverse group. They have a wide variety of sizes, shapes and colours. They are a fairly simple animal life form made up of a few types of cells which are largely independent of one another and only loosely held together. These cells do not form tissues or organs; a sponge does not have a mouth, digestive or circulatory system.

Adaptations

Its porous body has a system of fine, branching canals leading to chambers lined with cells. Each cell has a single beating hair. The beating of these hairs generates a current through the sponge. Oxygen is also absorbed.

Status/Threats

Natural predators include littorinid snails, sea stars and nudibranches.

Sightings in Nova Scotia

They occur in local waters and around other coastal areas of Nova Scotia.

The free-swimming larvae leave the parent sponge and settle down to become new sponges. They usually have both male and female reproductive organs. The other form of development is from a bud. An external bud is a small piece broken off from the main body. This has the ability to grow into another sponge.

The Mermaid's Glove can be yellow, orange, or light brown. It is a high, erect, branching sponge and can reach 35 cm in height. Branches grow from a short stalk attached to the sub-stratum. They are compressed and are 2 to 3 cm wide. They usually taper at the upper end. Branches may coalesce into plate shaped areas. Oscules occur in rows along the branches. These are small exhalent openings, a descriptive characteristic of this species. The long finger-like lobes provide *Isodictya palmate* with the common name of Mermaid's Glove. The consistency is somewhat soft to firm with a spongy elasticity.



A sponge constantly remodels and fine-tunes its structure to ensure efficient filter feeding. It can control the flow of water through it, and even stop it altogether (e.g., when the water is too silty). In general, a sponge can pump water equal to its body volume once every 5 seconds! They have amazing regenerative powers. Not only can they repair damage to their bodies, but a whole sponge can slowly grow from a small bit that broke off. The movement of water is a physical factor the sponge has to adapt to. This includes direction and velocity of tidal currents. The topography of the bottom can greatly affect the speed, direction, and amount of turbulence in tidal currents.

The sponge has a long history of having been used by humans as a cleansing tool, occasionally resulting in over-harvesting in some remote areas. They are no longer used as extensively, modern materials have replaced them. Trawling and dredging has major impact on all benthic communities.



Skeletal remains of Mermaid's Glove can frequently be found along the shoreline.