= Millepora alcicornis =

Millepora alcicornis , or sea ginger , is a species of colonial fire coral with a calcareous skeleton . It is found on shallow water coral reefs in the tropical west Atlantic Ocean . It shows a variety of different morphologies depending on its location . It feeds on plankton and derives part of its energy requirements from microalgae found within its tissues . It is an important member of the reef building community and subject to the same threats as other corals . It can cause painful stings to unwary divers .

= = Taxonomy = =

Millepora alcicornis is not a true coral in class Anthozoa but is in class Hydrozoa , and is more closely related to jellyfish than stony corals . Because of the variability in growth habit that this coral exhibits , it has been the subject of much confusion as to its taxonomy , being described under a number of different names from different localities . In 1898 , Hickson decided that the variations in morphology were due to environmental factors and that Millepora alcicornis was the valid name for all these species . This conclusion has since been questioned .

The species was first described by Linnaeus in 1758 , but his type locality is unknown . The scientific name comes from the Latin with Millepora meaning " thousand @-@ pored " and alcicornis meaning " elk @-@ horned " . It seems likely that the type locality is in fact the West Indies . Explaining this in 1941 Crossland wrote " I cannot resist the remark that the one thing quite certain about the many forms of Millepora is that none of them have any resemblance to an elk 's horn , except perhaps that from the West Indies " .

= = Description = =

The morphology of Millepora alcicornis is very variable . Most colonies probably start as encrusting forms and adopt a branching structure as they grow . The encrustations can become established on a variety of structures , not only on coral reefs and rocks but also on dead corals and the hulls of wrecked ships . Later development is in the form of plates or blades in habitats with much water movement such as the surf @-@ pounded outer edges of reefs . In calmer waters , such as in deep lagoons or more sheltered parts of the reef , a more upright , leafy or branched structure develops which can grow to 50 centimetres (20 in) tall . The habit of growth is also influenced by the inclination of the surface on which the fire coral grows . On vertical surfaces , the encrusting bases are larger with longer perimeters and the density of branching is lower than it is on horizontal surfaces . The cylindrical branches usually grow in a single plane and span a range of hues from brown to pale , cream @-@ like yellow , while branch tips are white .

Embedded in the calcareous skeleton are numerous microscopic polyps . They are connected internally by a system of canals and are concealed behind pores in the skeleton , the surface of which is smooth and lacks the corallites of true stony corals . The polyps have specialist functions , the gastrozooids processing and digesting the food caught by the dactylzooids which are grouped around them . The gastrozooids are small and plump and extend four to six tentacle stubs through their pores but are otherwise invisible . The dactylzooids have hairlike tentacles covered in cnidoblasts . Stings from the cnidocysts immobilize an item of prey and the tentacles thrust it through the mouth of an adjacent gastrozooid , from where it passes into the stomach for digestion . The polyps also extrude the coenosteum , the calcareous material of which the skeleton is composed . The coenosteum contains certain symbiotic microalgae called zooxanthellae . These are photosynthetic organisms which provide their hosts with energy and in return benefit from a protective environment in a well lit position . About 75 % of the fire coral 's energy requirements are provided by the zooxanthellae .

= = Distribution = =

Millepora alcicornis is found in the Caribbean Sea , the Gulf of Mexico , Florida , the Cape Verde Islands and along the coast of Central and South America as far south as Brazil . It has also been found in Bermuda , but the morphology at that location is so different from that in the rest of its range that it may be a distinct species . It grows at depths of up to 40 metres (130 ft) and is the only fire coral that often grows at depths greater than 10 metres (33 ft) .

= = Biology = =

Millepora alcicornis feeds on plankton . The tentacles of the dactylzooids are normally extended all the time . If an object is waved about above the coral , it will cause the tentacles to retract and then the coral can be handled without experiencing the painful stings caused by the cnidocytes .

Reproduction is by either asexual or sexual means . Parts of the coral may get detached from the colony by a storm or other means , and some of these fragments may end up in suitable locations to grow into new colonies which will be genetically identical to the parent colony . This fragmentation is probably the most frequent method of reproduction . Alternatively , certain pores called ampullae contain polyps that bud off short @-@ lived , jellyfish @-@ like medusae , which separate from the colony . They produce gametes which , after fertilisation , develop into planula larvae . These drift with the currents as part of the zooplankton before settling out and developing into new colonies .

= = Ecology = =

A number of species of shrimp and fish take refuge among the branches of Millepora alcicornis , seemingly immune to the venom . Hawkfish in particular often perch on top of the fire coral , perhaps protected by their skinless pectoral fins . Perhaps unsurprisingly , Millepora alcicornis has few predators . The fireworm (Hermodice carunculata) sometimes grazes on it , but prefers other corals . Certain nudibranchs in the genus Phyllidia eat it as do filefish in the family Monacanthidae .

It has been found that when Millepora alcicornis grows in close proximity to an arborescent gorgonian sea fan , the fire coral becomes aggressive . It produces " attack " branches which grow out sideways towards the sea fan , develop into hand @-@ like structures and encircle and smother it . The fire coral then uses it as a substrate for new growth . Sometimes this new growth gets separated from the parent colony , and a new colony of fire coral is formed , genetically identical to the original one . This aggressive action is specific to gorgonians and does not happen in response to the close presence of other live or dead corals , other sessile invertebrates or open water . The fire coral seems to be able to detect the gorgonian 's presence as a result of water flowing over the surfaces of both .

= = Threats = =

Although not a true coral , Millepora alcicornis is subject to the same general threats that corals and coral reefs are facing . The greatest of these is global warming and the consequent rise in sea temperatures . Millepora alcicornis is one of the first corals to show bleaching as the symbiont zooxanthellae are killed . However , it is also more resilient than most and becomes re @-@ established by recruitment earlier than the scleractinian corals . Other general threats to reefs include ocean acidification , pollution , sedimentation , invasive species and other changes in species dynamics , coral diseases , fisheries , leisure activities and tourism . Small quantities of Millepora alcicornis are gathered for sale to collectors .

= = Human interactions = =

The cnidocytes of Millepora alcicornis are powerful enough to sting human skin . They can inject a venom that causes a painful burning sensation , skin eruptions , blisters and scarring . The toxin has been investigated and is a water @-@ soluble protein , 40 ?g of which provides a median lethal dose to mice weighing 20 grams (0 @.@ 71 oz) .

Millepora alcicornis has no commercial uses but is sometimes kept in reef aquaria . It requires high water movement and bright light to flourish and its health can be judged by its colour , a yellow hue showing health whereas a darker brown colour can indicate too little light . It can be difficult to control because it grows fast and spreads over other objects in the tank .