

Eutrophication is the great increase of phytoplankton in a water body as a response to increased levels of nutrients. Enhanced growth of aquatic vegetation disrupts normal functioning of the ecosystem, causing a variety of problems such as a lack of oxygen needed for fish and shellfish to survive. The water becomes cloudy and blurred, so the value of rivers, lakes, and aesthetic enjoyment is decreased. Furthermore health problems can occur where eutrophic conditions interfere with drinking water treatment.

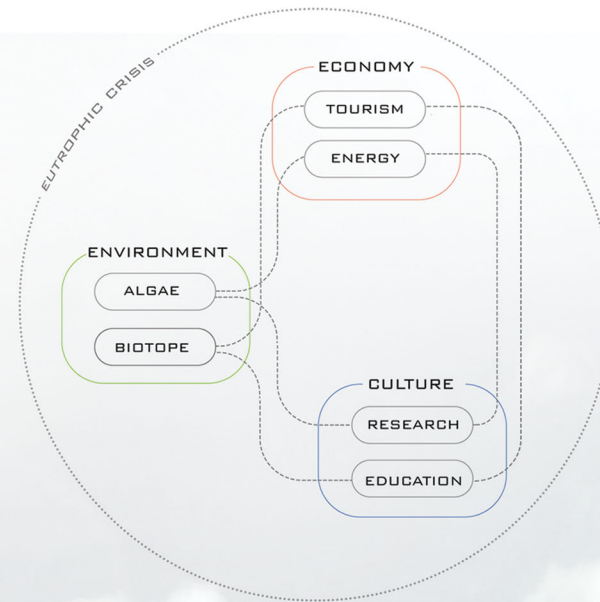
In Greece this is a growing problem, as the 25% of the lakes, rivers and lagoons are suffering from eutrophication. As a result, the aesthetics of these places is decaying, causing a decrease in tourism, which is the main economic source.

In a period of crisis, how could Greece face eutrophication and at the same time increase the economic development of each place?

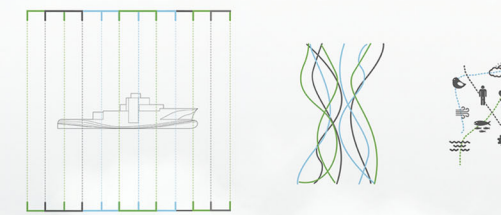
The project acts in three axes: economy, environment, culture. An oceanographic ship that is being reused will travel in a route that connects the problematic areas, collect the algae, and investigate its advantages while also providing touristic facilities. In each "station" a set of nets is placed underwater, that concentrates algae, functioning as an artificial reef. When the ship arrives, it will collect from the nets the amount of algae needed for the research and energy production and store it in the hull, where it can grow due to the sun. The existing laboratories and machine places of the ship are kept the same and other uses such as conference centers, observation spots and recreational areas are added.

In this way, a new type of biotope is developed. Flora and fauna are cohabiting with humans, pushing the local economy and proving that economic development is not interwoven with the exploitation of the environment but with the harmonic symbiosis of human and nature.

STRATEGIC PLAN



THE DISTINCT ZONES OF ACTION

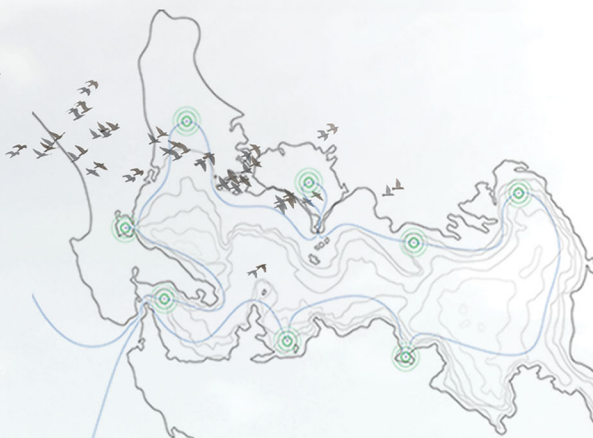


BLENDING OF THE DISTINCT ZONES OF ACTION

AMVRAKIKOS GULF



EUTROPHIC SITES



ROUTE OF THE SHIP

THE CONCEPT

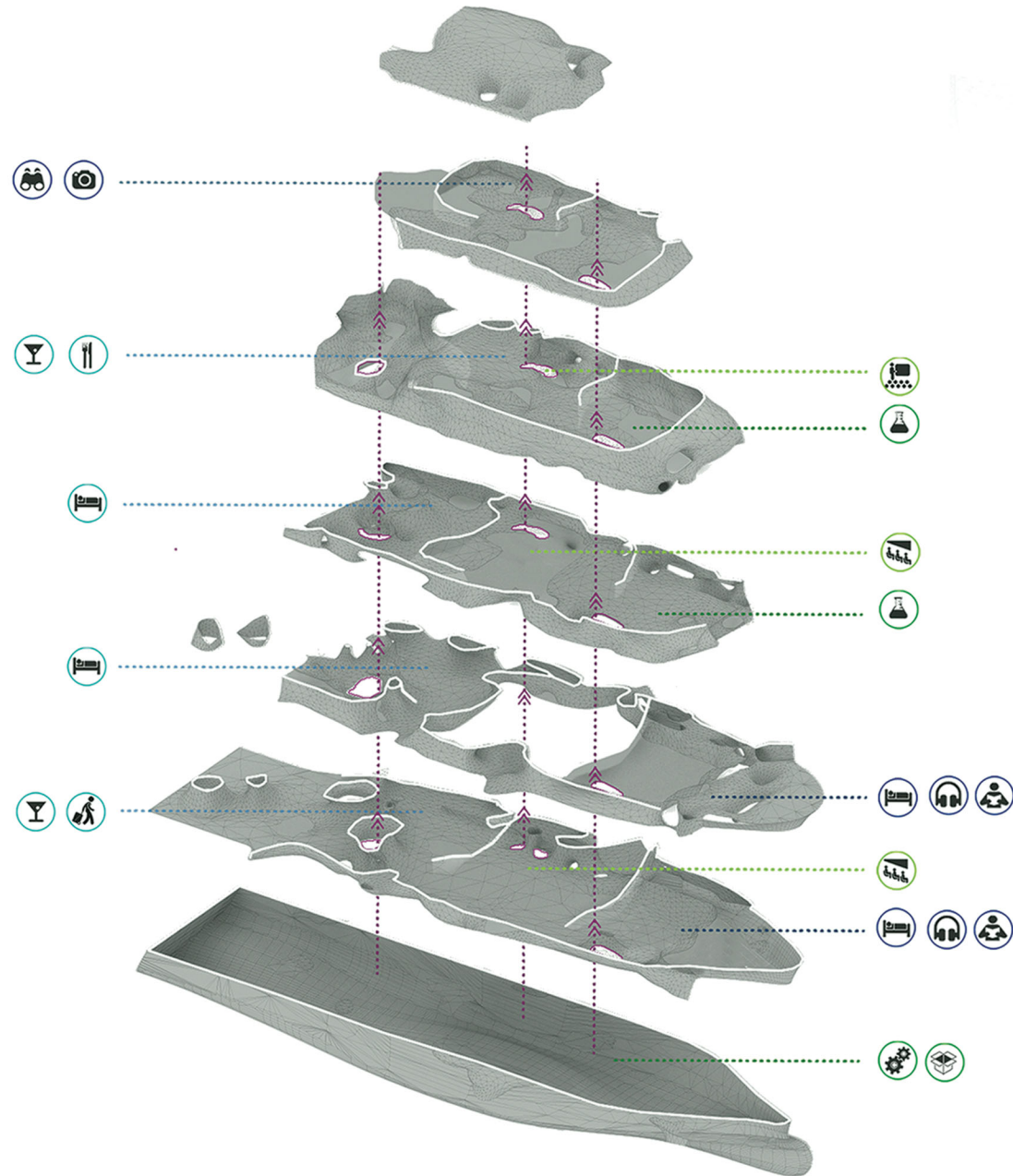
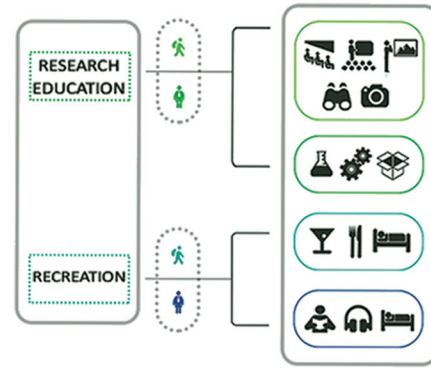


EUTROPHICATION IN GREECE

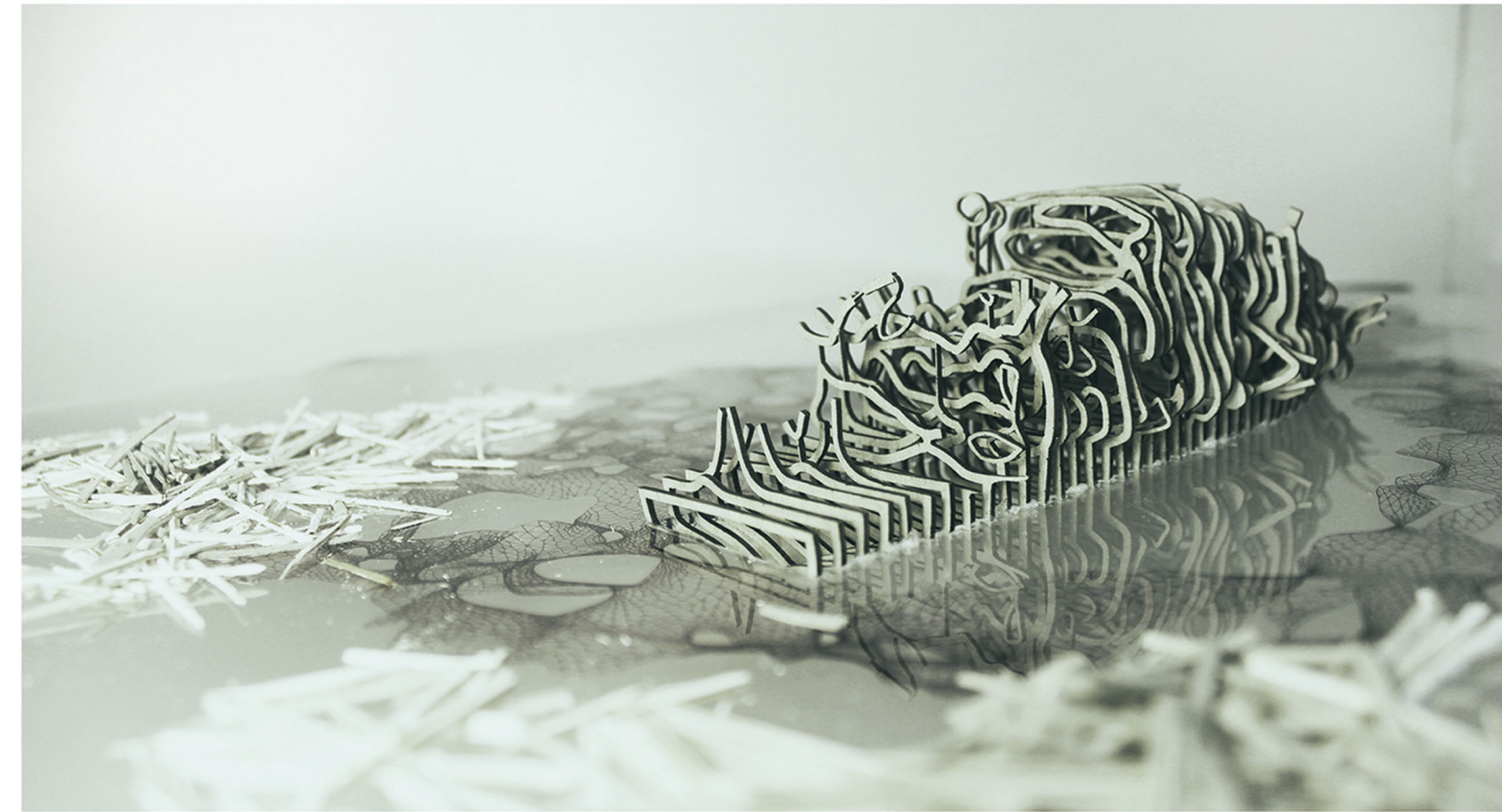
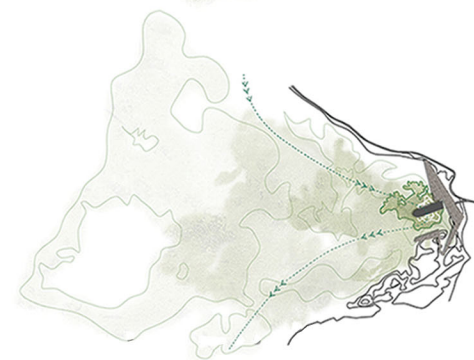
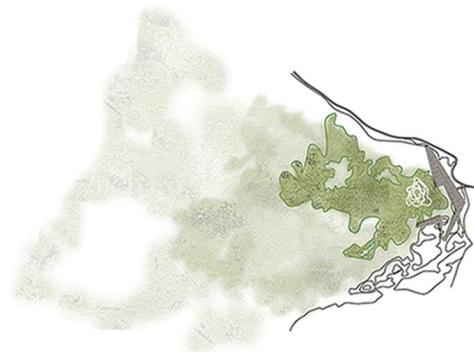
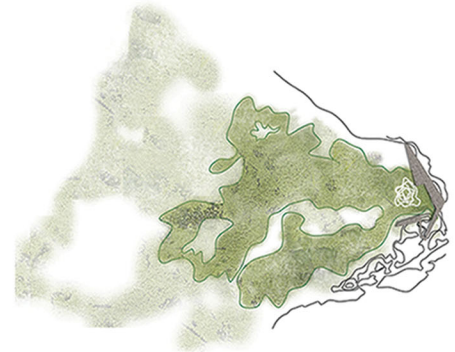


FUNCTIONS

The project combines uses of research and education with recreational activities. The residents of this active habitat are divided in two categories: the researchers and the visitors. Both of them can learn and study and at the same time relax and entertain, due to several spaces created from the hull of algae.



TRANSFORMATION OF THE PLACE



STAGES

I

II

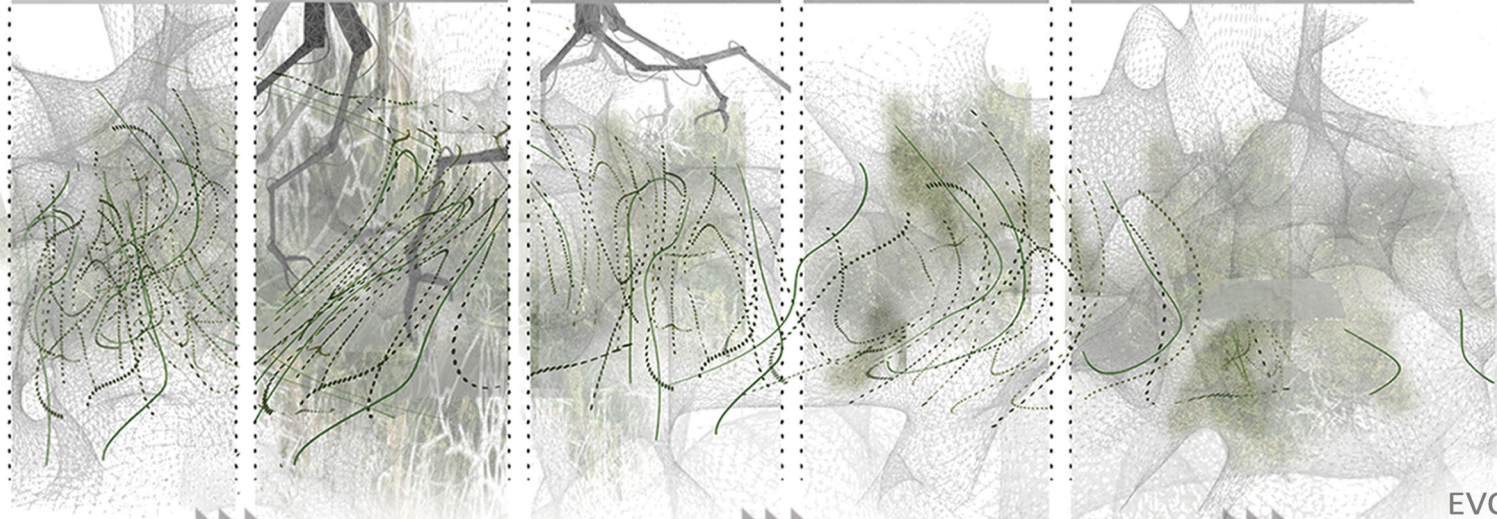
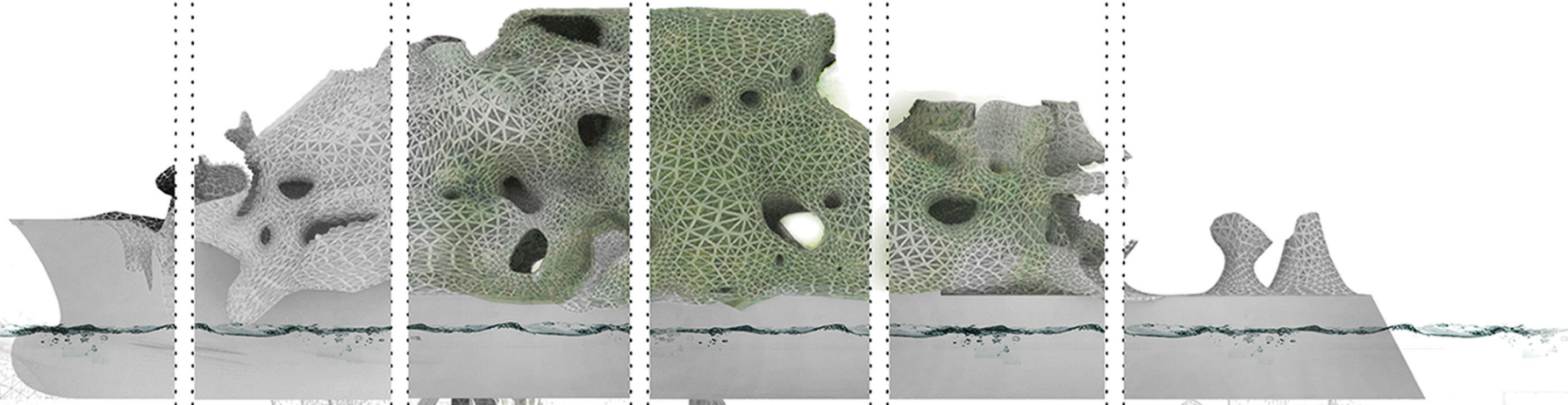
III

IV

V

VI

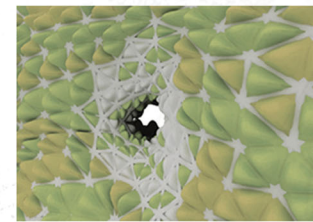
THE MECHANISM



EVOLUTION OF BIOTOPE IN TIME

EQUIPMENT

storage | grow

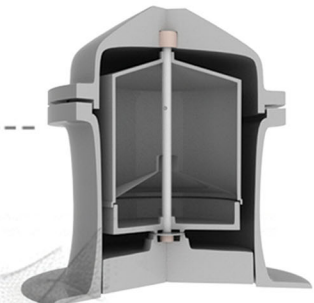


pipping system distributing algae to the incubator cells forming the ship envelope

filtration

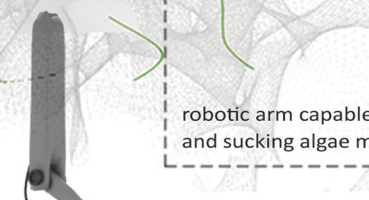
selection

concentration



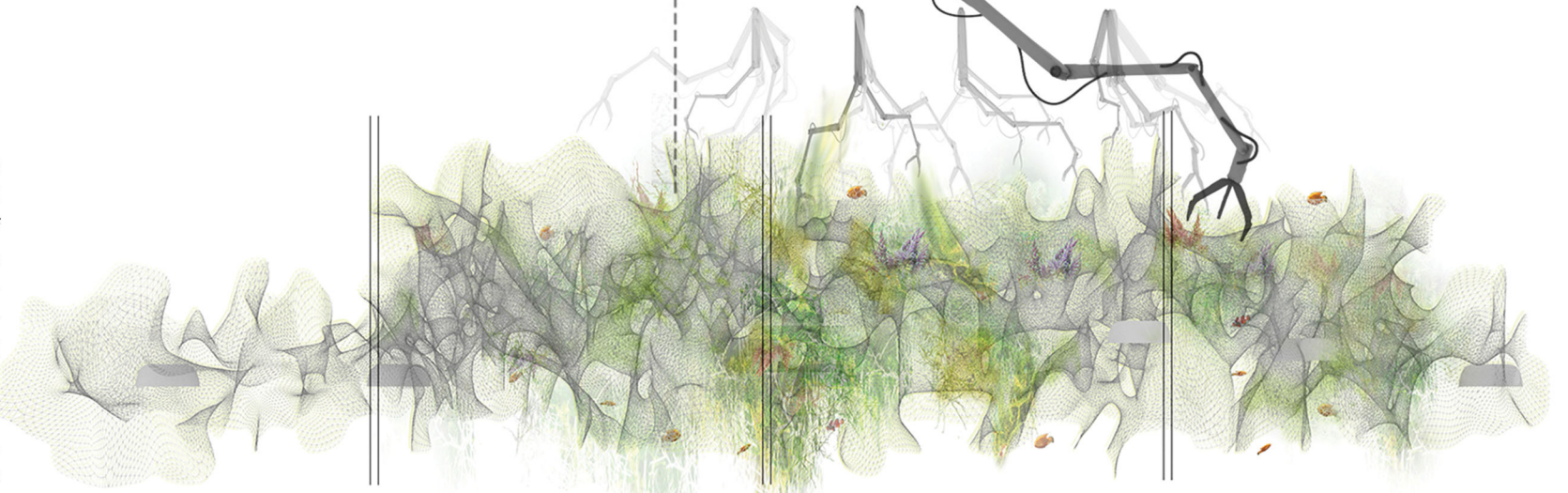
centrifugal filtering system separating algae from other materials

robotic arm capable of selecting and sucking algae mixture



UNDERWATER CORAL REEF

The nets that are placed underwater act as one more biotope. The algae is concentrated on them creating a kind of coral reef. This reef is inhabited by the marine fauna, since the formation of the nets create a variation of inverted spaces. The algae and the other types of phytoplankton that consist the final form of the reef can also feed its habitants. In this way, a self-sufficient biotope emerges. When the ship arrives at its station (reef), it collects the necessary amount of algae and leaves the flora that is important for the balanced function of the food chain.



EVOLUTION OF THE UNDERWATER CORAL REEF