

# EXPERIMENTAL STUDY ON GROWTH OF THE CORAL OVER THE STRUCTURE

YASWANT KUMAR.L<sup>1</sup>, ISWARYA.D<sup>2</sup>

<sup>1</sup>B.Tech Student ,Department Of Civil Engineering, Veltech Dr.RR & Dr.SR Technical University, Chennai.

<sup>2</sup>Assistant Professor, Department Of Civil Engineering, Veltech Dr.RR & Dr.SR Technical University, Chennai.

\*\*\*

**Abstract** - This paper presents an experimental study on growth of the coral over the coastal plains in order to prevent the excess loss of the erosion of the soil in the shore line areas and also to support the fishes and also some of the marine live forms. This project may bring out various positive outcomes regarding the growth factor of the corals and also bring out healthy marine ecosystem. The result shows gradual increase in the fish population in the coastal areas and also acts as an environmental barrier.

## 1. INTRODUCTION:

In order to support the growth of the corals in the shore line areas we are providing the structural support near the coastal areas and also using some geo-textile to reduce the force of the incoming waves to the shore .this helps in the growth of the corals near the shore and nourish the soil which gives many positive outcomes such as healthy coastal flora & fauna near the coast line areas and also prevention the soil erosion near the coast line areas.

Glatfelter, E.H., R.K. Monahan, and W.B. Glatfelter (1978) made a research in the "Growth rates of five reef-building corals in the northeastern Caribbean" : The study was conducted in the presence of W.B.Glatfelter in the year 1978 regarding the growth of the corals invertebrates near the coastal areas of the Caribbean coastal plains the results was amazingly positive as there was an great growth factor in the coral growth near the shore line areas of the Caribbean coastal areas due to the implementation of the special type of an base for the coral support.

**Sewell, R.B.S (1935).** Made a research Study on "**coral and coral-formations in Indian waters**": This was a Geographic and Oceanographic Research in Indian Waters carried on the year 1935 by Dr.Sewell R.B.S on the growth of the corals in the Indian waters as this study was very useful for the research works carried on the oceans in the Indian waters this also brought a very positive results in the growth of the corals in the ocean atmosphere.

**Weines, H.J (1962)** had undergone a study on the "**environment and ecology of the marine habitats**": This study had brought a very interesting facts upon the growth of the corals and also the behavior of the marine inhabitants and also the corals with the newly created atmosphere to the old atmosphere also this study proves when there is an alteration in the natural way of the growth of the corals then we can see some of the newly forms of the corals growing in that areas.

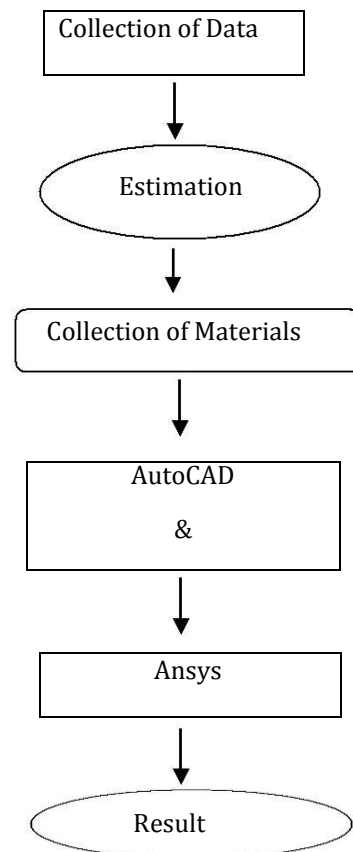
The observation of study performed for many years has shown that the stony coral polyps can create massive reef structures. Reefs start to form when these polyps starts to secrete skeletons of the calcium carbonate (CaCO<sub>3</sub>) from their body.

Most stony corals have very small composition of the polyps, which can measure to an averaging 1 to 3 millimetres in diameter, but entire colonies can grow very large and weigh several tons. As they grow, these reefs provide structural habitats for hundreds to thousands of different vertebrate and invertebrate species.

- Have strong hold over the soil.
- They have good structural bending features.
- Can support with any supports provided due to good structural arrangement of the corals.
- Increase in the fish culture.
- Due to strong hold over soil reduce in soil erosion.
- Soil nourishment is done.
- Provides a Well modified ecosystem.

**1.1 THE OBJECTIVES OF THE PROJECTS:**

- To promote a well modified, healthy and nourished ecosystem.
- To reduce the soil erosion in the coastal areas and nearby shoreline zones where there is prone for the erosion to occur.
- To support the growth of the corals in the coastal areas as well as to support the corals using specialised structural composition.
- To increase the coral growth near the low lying areas which is very near to the coastal zones.
- To increase the rate of the fish cultivation in these areas
- Materials used Steel Structure, Corals-LPF Types, Corals-SPF Types, and Geo Textile Bags are used in the base construction of the coral structure inside the marine basin.



**2. STEEL STRUCTURE:**

The steel structure is used in order to provide a good support to the corals from the harmful wave action in the coastal areas therefore we use an doom shaped steel structure in the coastal areas to prevent the corals from moving in the stormy waters.

**3. CORALS LPF TYPES:**

Large Polyp Stony Corals are generally larger calcareous corals with large fleshy polyps. We use this forms of the corals to harden the base of the coastal beds and also to provide a firm support to the movement of the structure caused by the vigorous wave actions.

**4. CORALS LPF TYPES:**

In general, the Small Plopped Stony corals have small polyps on a calcareous skeleton. In many instances they are either branching or plated. This type of the coral forms are mostly can be used in the regions wherein we require more concentration of the soil hold.

**5. GEO-TEXTILE BAGS:**

Geo-textile are permeable fabrics which, when used in association with soil, have the ability to separate, filter, reinforce, protect, or drain. We will be using this geotextile bags to stop the heavy incoming wave and break these waves.

Materials List	Actual Cost	Shipping cost
Live Stock	6,72,508	3,55,000
Electrical Appliances	1,39,900	1,96,200
Purification System	69,080	10,000
Medicinal Requirement	75,150	9,340
Storage & Preservation	9,297	800
Apparatus & Instrumentation	1,21,356	20,200
Maintenance Charges	4,30,000	10,000
Installation Charges	3,00,000	31,161
<b>Total Cost</b>	<b>28,50,000</b>	

## 6. COLLECTION OF MATERIALS:

### CEMENT:

We are using Sulphur Resistant Cement & High Performance To resist the flow of the water and also the salinity of the water in the marine atmosphere these two forms of the cements will be used in the construction of the foundation and also the flooring.

### STEEL STRUCTURE:

We are using T-joint and also L-joint for the major structural components and also for the supports left for placing the corals, this will be layered with a coating of sulphur resistant spray.

### CORALS-SPF TYPES& CORALS LPF TYPES:

These are the form of the corals which are being used in this project inside the marine atmosphere.

### AUTOCAD & STAADPRO:

The model is made by using AutoCAD and the load, deflections and shears are analysed through the staddpro.

### ANSYS:

The outcome of the structure is analysed using ansys software to find their impact loads when they are displaced inside the marine atmosphere under vigorous forces acting over the structure.

### RESULT & DISCUSSION:

In order to support the growth of the corals in the Shore line areas we are providing the structural support near the coastal areas and also using some geo-textile to reduce the force of the incoming waves to the shore .this helps in the growth of the corals near the shore and nourish the soil which gives many positive outcomes such as healthy coastal flora & fauna near the coast line areas and also prevention the soil erosion near the coast line areas.

## 7. CONCLUSION:

The result shows gradual increase in the fish population in the coastal areas and also acts as an environmental barrier. This project may bring out various positive outcomes regarding the growth factor of the corals and also bring out healthy marine ecosystem.

## REFERENCES:

- [1] Glatfelter, E.H., R.K. Monahan, and W.B. Glatfelter (1978) "Growth rates of five reef-building corals in the northeastern Caribbean".
- [2] Sewell, R.B.S (1935) coral and coral-formations in Indian waters.
- [3] Weines, H.J (1962) "environment and ecology of the marine habitats.
- [4] Verstelle, J.Th (1932) "The growth rate at various depths of coral reefs in the Dutch East Indian Archipelago"