

Coral Farming- A tool for coral conservation



MINISTRY OF
FISHERIES



MAURITIUS

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Importance of Coral reefs

- **Coral reefs are the most productive and diverse ecosystems and are found in the warm, clear, shallow waters of tropical oceans worldwide.**
- **They are the rainforests of the sea**
- **Produce approx. 10% of the world marine fish production and support an estimated 25% of marine life.**
- **They are very important in controlling carbon dioxide in the ocean and help recycle nutrients.**
- **They act as a barrier against oceanic waves, thus preventing erosion of the coastline.**
- **They act as feeding and breeding grounds and as shelter for a number of marine organisms.**
- **They are responsible for the formation of sand, beaches and lagoons.**
- **They contribute to the economic growth of the Republic of Mauritius**

THREATS TO CORAL REEFS

Coral reefs are very fragile and their ecosystems can be easily disturbed naturally and by human activities. Some impacts affecting coral reefs are listed below:

Natural:

- Coral bleaching
- Cyclones
- Occurrence of Crown of thorns starfish
- Diseases
- Microalgal blooms

Man-induced:

- Sedimentation from land-based activities
- Overfishing
- Illegal fishing methods
- Anchor damage
- Oil spills
- Coastal development

Threats to Coral reefs worldwide

- 11% of reefs have been lost
- 16% of reefs severely damaged
- ~60% of studied reefs threatened by human activities
- No pristine reefs left
- The Great Barrier Reef is also in grave danger

Climate Change - Causes

- Increase in green-house gases
- Excessive burning of available fossil fuels
- Uncontrolled anthropogenic activities
- Depletion of ozone layer

EFFECTS ON MARINE ECOSYSTEM

- Increased sea surface temperatures (***The global average surface temperature has increased by at least 0.6 °C during the last 100 years and the trend is still expected to continue***)
- loss of habitats (mangroves, coral reefs etc) and loss of bio-diversity
- sea level rise
- more frequent storms, droughts, floods and other extreme weather
- possible alteration of ocean circulation patterns
- Ocean acidification

Climate Change and Coral Reefs

- Rise in SST that causes coral bleaching.
- Coral bleaching causes mortality of corals leading to loss of habitat and thus a decrease in fish and marine biodiversity.
- Reduction of natural protection of the shoreline/coastal zone (i.e erosion prone) especially for SIDS like Mauritius.
- Corals may also be affected by the increasing concentrations of carbon dioxide and elevated levels of CO₂ may reduce the pH levels and make the ocean waters acidic. This process is called **acidification** and can reduce the ability of corals to deposit limestone skeletons making them very fragile and affecting their growth.

In Mauritius....



- Coral bleaching occurred in 1998, 2003/2004 and in 2009.
- SST – more than 31deg C (January 2009)
- The intensity of bleaching is high and the degree heating weeks is more thus giving less chance for coral recovery.
- Percentage of live coral cover has decreased and algae is taking over.

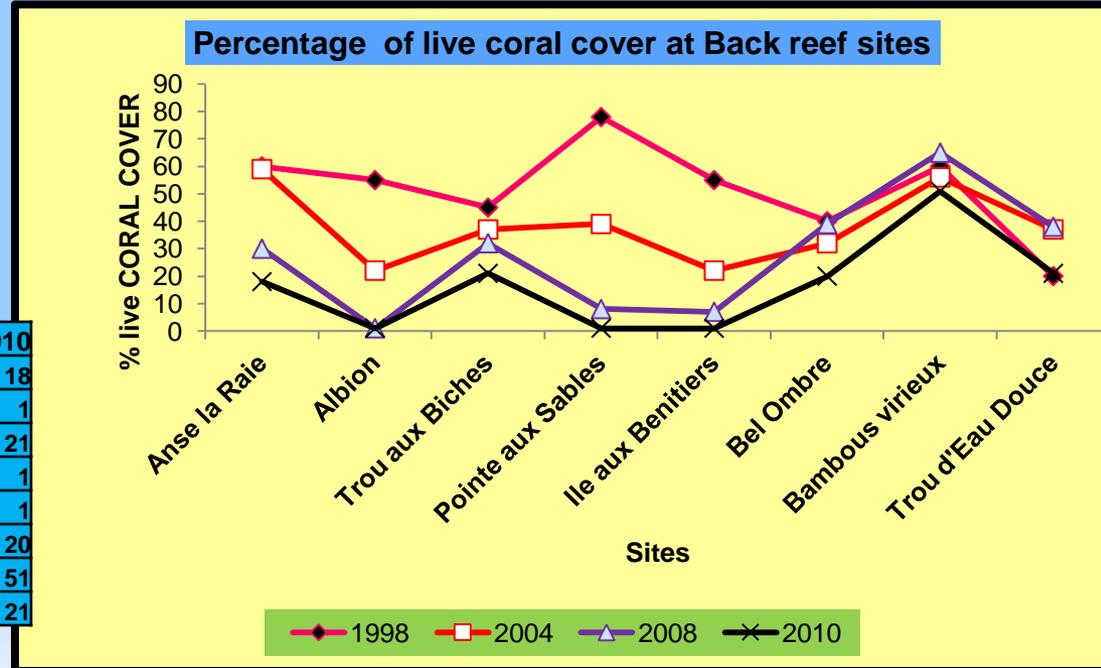


STATUS OF CORAL REEFS IN MAURITIUS

Long-term Monitoring of coral reefs (M/Fisheries) shows a general decrease of live coral reefs

- **causes – coral bleaching, sedimentation, eutrophication from land based sources, and low percentage of juvenile corals**

Sites	1998	2004	2008	2010
Anse la Raie	60	59	30	18
Albion	55	22	1	1
Trou aux Biches	45	37	32	21
Pointe aux Sables	78	39	8	1
Ile aux Benitiers	55	22	7	1
Bel Ombre	40	32	39	20
Bambous virieux	60	56	65	51
Trou d'Eau Douce	20	37	38	21



Urgent action required to conserve and rehabilitate coral reefs



CORAL FARMING IN MAURITIUS

- Pilot project was carried out in Albion from 2008.
- Main objective was to farm different species of corals in an ocean based nursery which would be used to rehabilitate degraded lagoons and create coral gardens.
- Use simple structures that are sturdy, environmentally friendly and easy to manipulate .
- Promising results obtained.

RESULTS

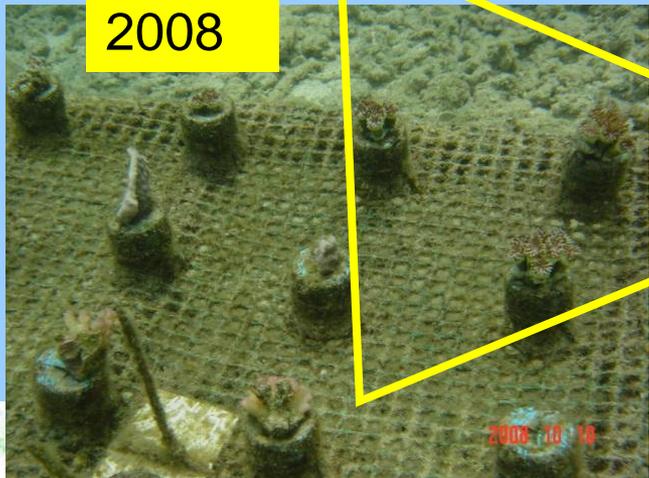
All species of corals had considerable growth. Some species more resistant and some had faster growth than others
Basal tables very resistant to any type of weather conditions.
They act as a substrate for settling of coral larvae (mainly encrusting corals).
The tables act as an artificial reef and an increase in fish abundance in the area has been observed.



Coral farming- A tool for conservation of coral reefs

Results from pilot project

2008



2010

Galaxea fascicularis

African Adaptation Programme Demo Project on Coral Farming

- ❖ Funding for five sites
- ❖ Carried out at 3 sites in Mauritius and 2 sites in Rodrigues (SEMPA)
- ❖ Sites chosen in Mauritius:
 - Albion
 - Pointe aux Sables
 - Trou aux Biches
- ❖ Purchase of materials and construction of basal tables
- ❖ Site selection carried out in 2011
- ❖ Basal tables set at all 3 sites in 2011 (5 tables on each site)
- ❖ Coral fragments placed on basal tables in 2012. (16 fragments on each table)



Albion - 5 tables (16 fragments each)

Coral fragments (approx 1cm) placed in April 2012- 4 species *Acropora*, *Pocillopora*, *Galaxea* and *Porites*

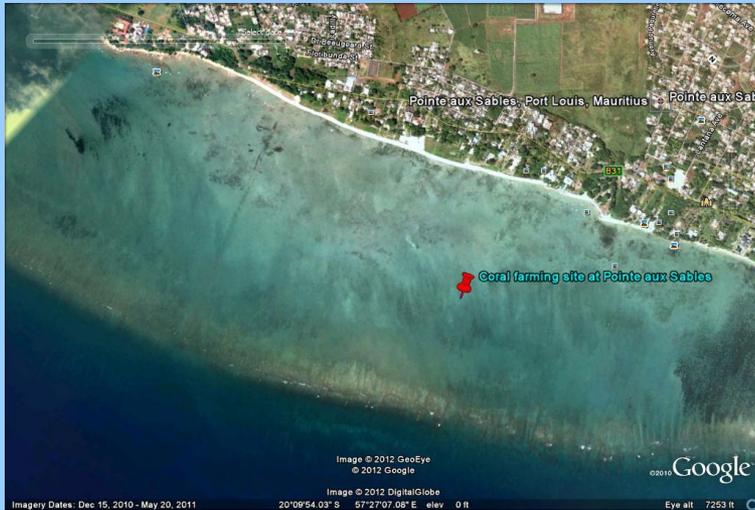
Monitoring ongoing- growing well



APRIL 2012



September 2012



Pointe aux Sables - 5 tables (16 fragments each)

Coral fragments (approx 1cm) placed in April 2012- 4 species *Acropora*, *Pocillopora*, *Galaxea* and *Montipora* sp.

Water column is very turbid but corals are growing well



September 2012



Trou aux Biches - 5 tables (16 fragments each)
Coral fragments (approx 1cm) placed in April 2012- 4 species
Acropora, *Pocillopora*, *Millepora* and *Porites sp.*
Monitoring ongoing- growing well



APRIL 2012



September 2012



Hermitage, SEMPA - 5 tables (16 fragments each)

Coral fragments (approx 1cm) placed in May2012- *Acropora* and *Pocillopora* sp.

Monitoring ongoing by RRA staff

Ministry of Fisheries- Coral Farming Project



Graviers, SEMPA - 5 tables (16 fragments each)

Coral fragments (approx 1cm) placed in May 2012- *Acropora* sp.

Monitoring ongoing by RRA staff

Ministry of Fisheries- Coral Farming Project

Training given to 5 participating officers from Rodrigues:

- SEMPA,
 - Commission for Environment & Ors.,
 - Fisheries Protection Service and
 - Shoals of Rodrigues.
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- Fixing of five basal plates at each of the two sites within SEMPA.
 - Fixing of coral fragments of different available species on the basal plates.
 - Maintenance of the basal plates and replacement of the coral fragments, if required.
 - Data collection

Officers involved in the follow-up monitoring exercises

WAY FORWARD

Large scale ocean based coral farming using resistant species of corals

Better measures to prevent sedimentation of the lagoon

Continued sensitization of public to conserve and protect corals



SAVE CORALS

THANK YOU