

State of Coral Reefs around Mauritius Island: implications for coral rehabilitation and management



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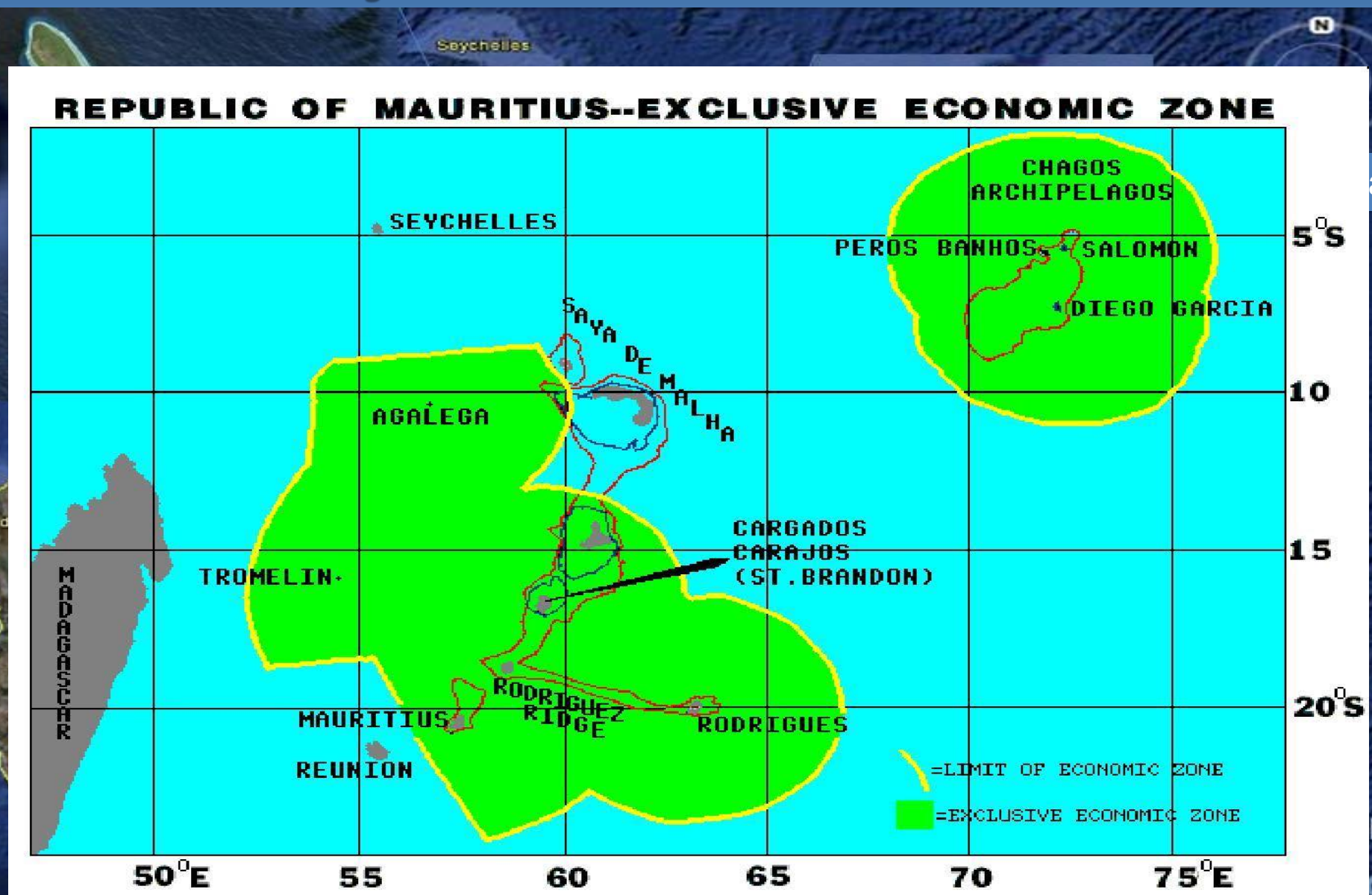


- Location: 20°17'S 57°33'E
- Capital: Port Louis
- Land mass $\approx 2000\text{km}^2$
- Sea Territory $\approx 2.3\text{M km}^2$
- Population: ≈ 1.3 million



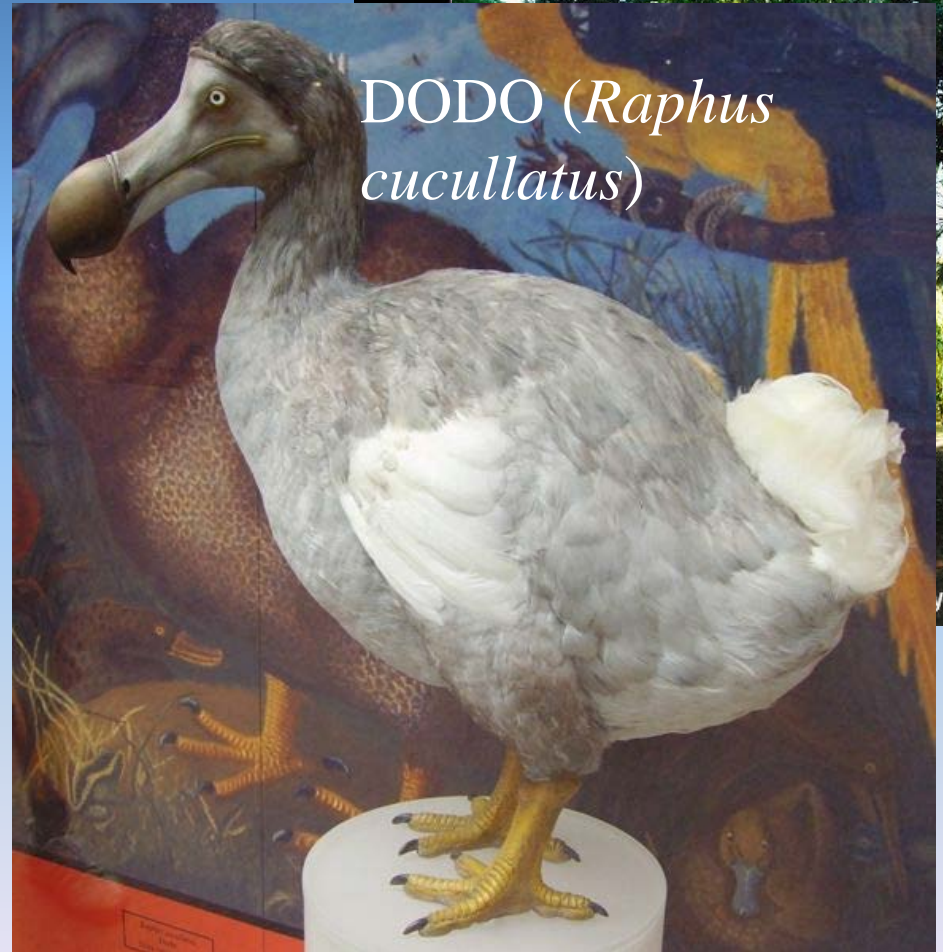
"Stella Clavisque Maris Indici" (Latin)
"Star and Key of the Indian Ocean"

The Republic of Mauritius consists of several islands, including the main island Mauritius, Rodrigues and other outer islands e.g. Agalega, Tromelin, St Brandon and Diego Garcia.



History

- Discovery by Arabs??
- Portuguese sailors
- Dutch period (1598 - 1710)
- French rule (1710 - 1810)
- British era (1810 - 1968)
- Independence in 1968
- Republic in 1991





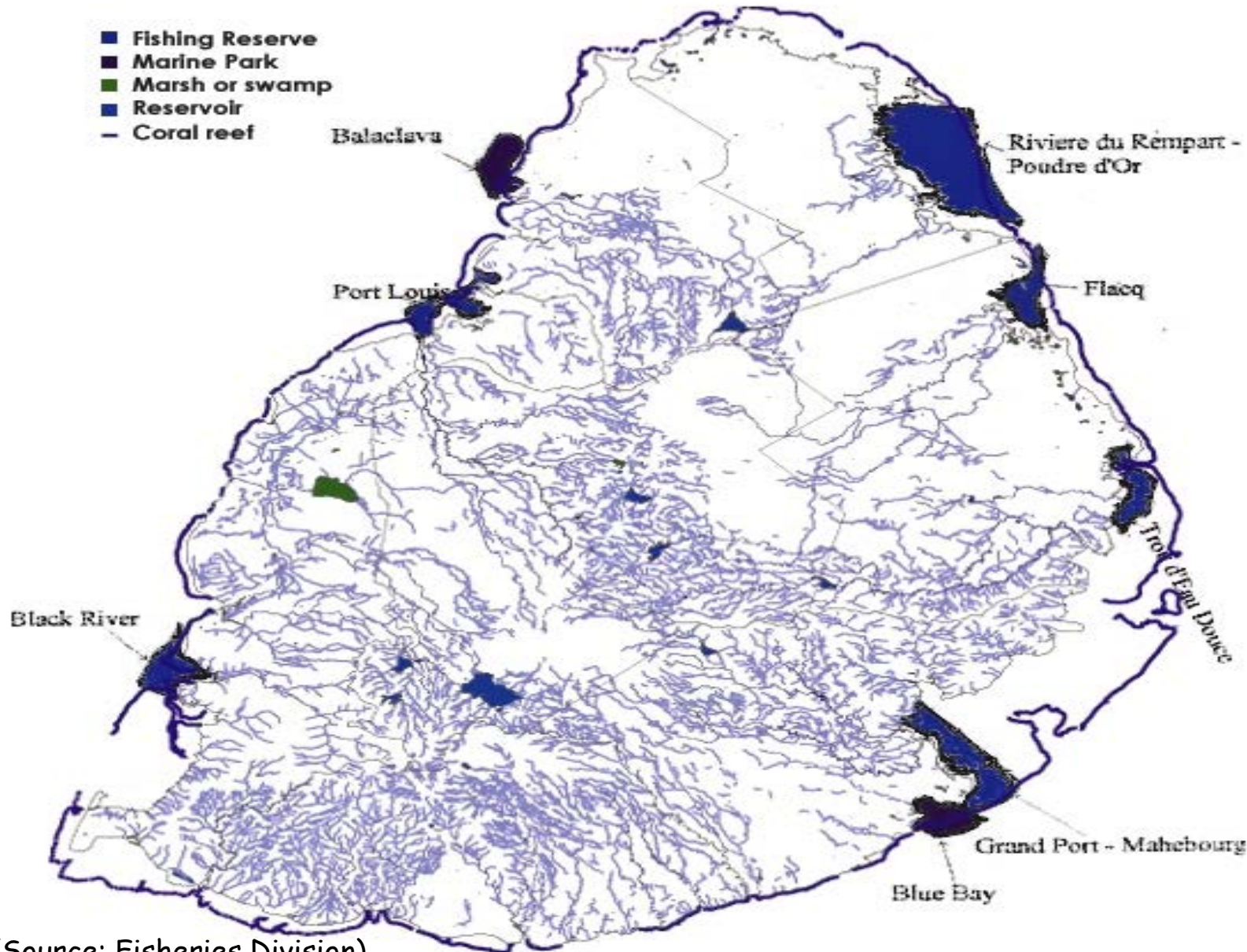
Tourism



Sugar Cane



Marine Protected Areas in Mauritius



Marine protected areas in Mauritius cover an extent of 7190 ha including 6 fishing reserves and 2 marine parks.

Marine Biodiversity in Mauritius

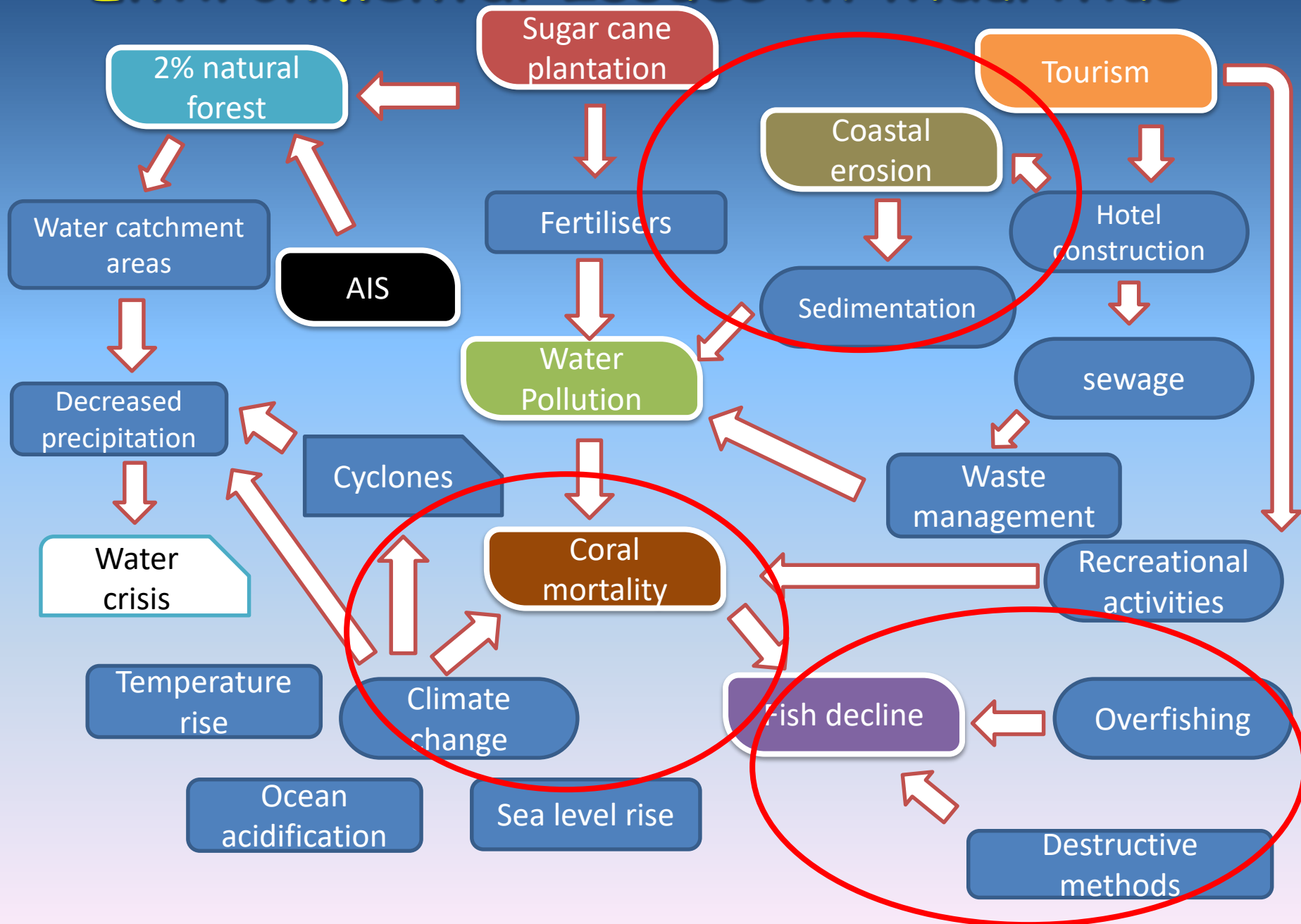
Coral Reefs	Five types of reefs: fringing, reefs, atolls, reef flats and barrier reefs; 43 genera of hard corals; 159 species from 16 families
Fish	Out of 340 species of fish identified, 42 within the lagoon area are sold commercially. 7 species of Penaeid shrimps have been reported in Mauritian near shore waters as well as two species of deepwater shrimp and several species of sea stars and other echinoderms.
Algae	Over 160 genera of marine algae and a few species of seagrass have been observed in Mauritian waters.
Marine mammals	17 marine mammal species have been recorded in Mauritian waters - mostly as they migrate to and from Antarctica to warm tropical waters for calving. Dolphins and whales are also encountered in Mauritian waters.
Sea turtles	2 species of sea turtles are commonly encountered in the shallow waters of Mauritius: the hawksbill, <i>Eretmochelys imbricata</i> and the green <i>Chelonia mydas</i> .
Shoreline birds	The Rivulet Terre Rouge Estuary Bird Sanctuary located in the north of Louis Harbour is a tidal mudflat that is used by migrating shorebirds. Many migratory birds visit this site each year.



Source : ICZM Strategy Report, October 2009

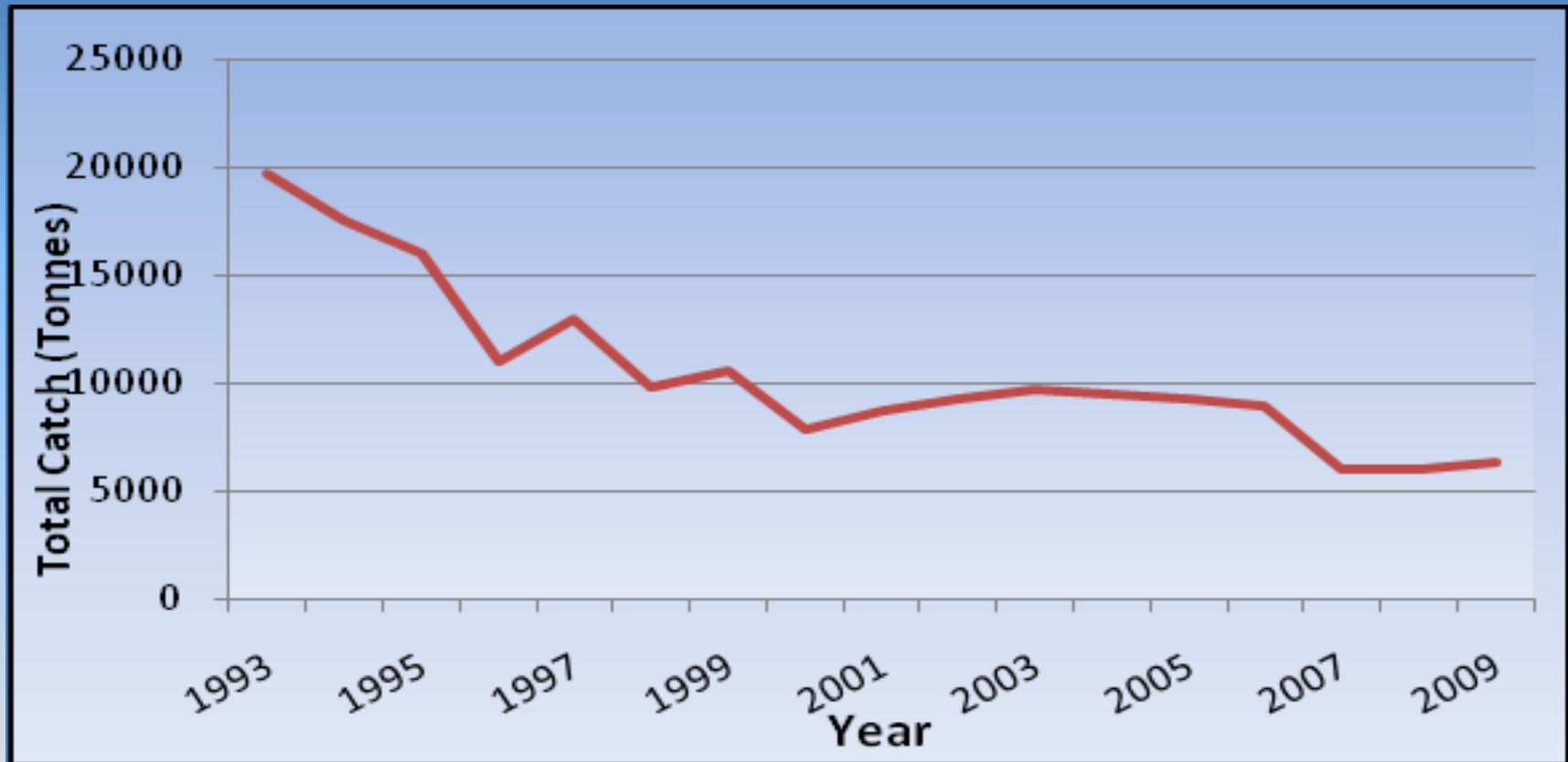
One endemic coral: *Acropora Rodriguensis*

Environmental Issues in Mauritius



Fisheries Decline in Mauritius

Total lagoon and off lagoon fish catch (in tonnes) (1993 - 2009)



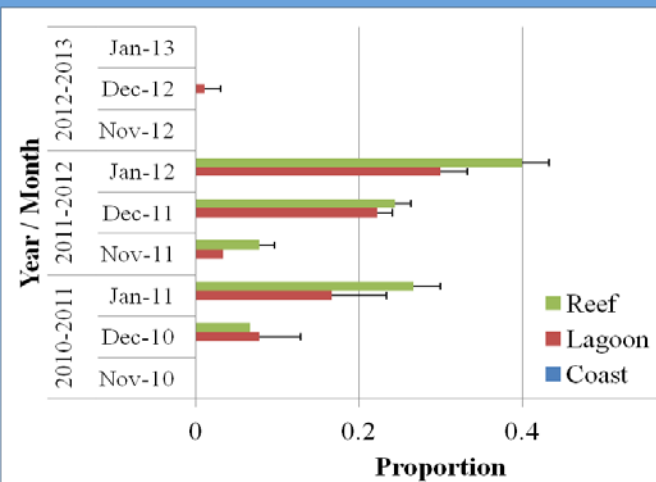
Source: Ministry of Fisheries and Rodrigues, Fisheries Division

Coral Bleaching and Mortality

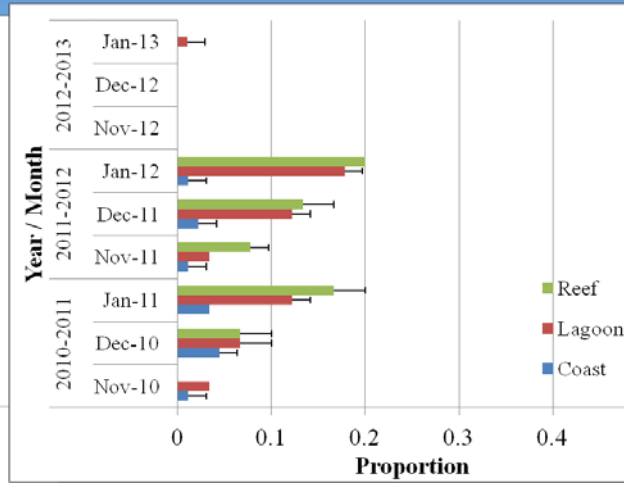
- Only a mild bleaching event ($<10\%$) reported in 1998 coinciding with tropical cyclone Anacelle
- In 2004, more intense bleaching event was observed ($\approx 24\%$)
- January - March 2009, $\sim 70\%$ bleaching and 40 - 50% mortality of corals were recorded
- Tabular bleached Acroporids suffered 100% mortality
- March 2016, $\sim 70\%$ bleaching, with at least 60% recovery at some sites

WIOMSA-Funded Coral Disease Project

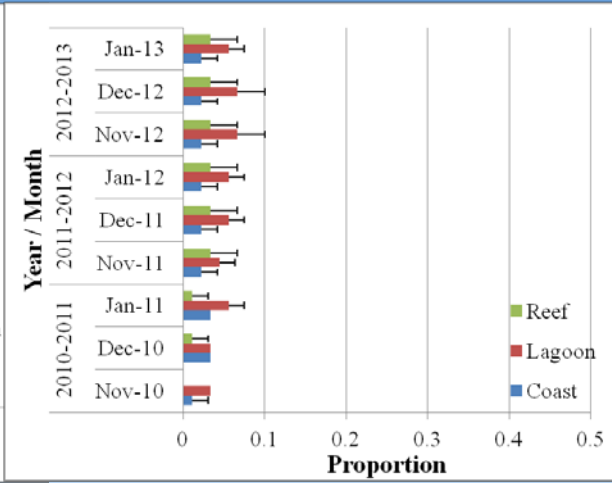
White Plague



Brown Band

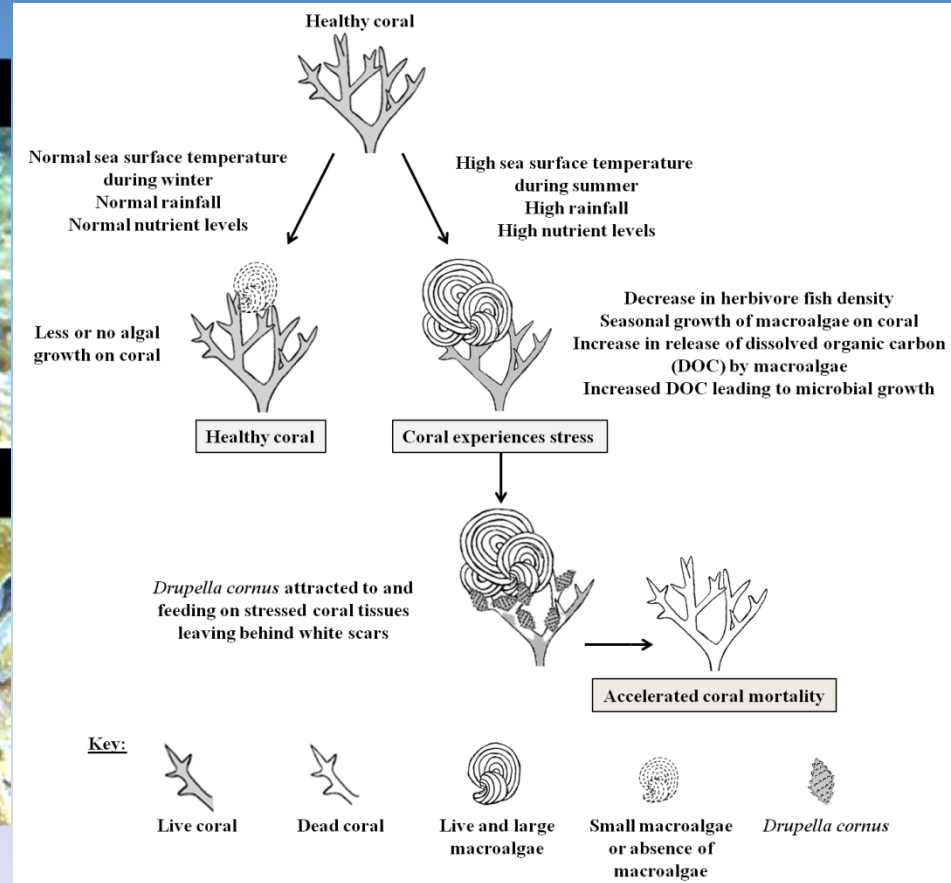
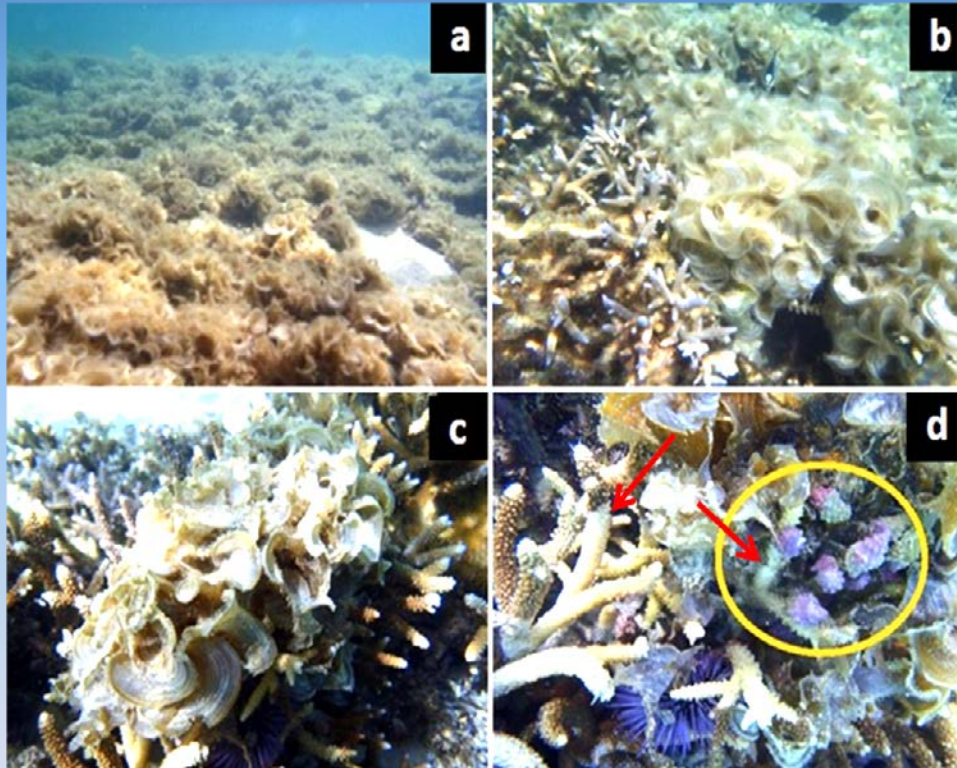


Growth Anomaly

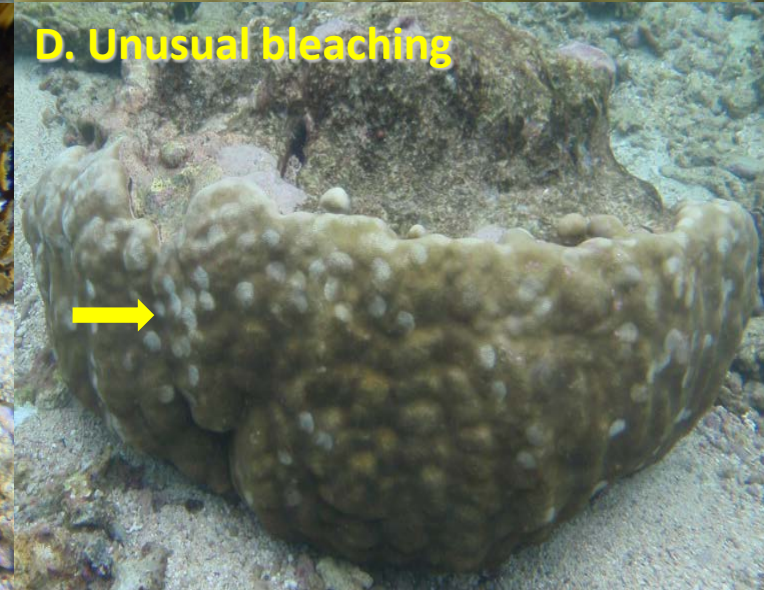
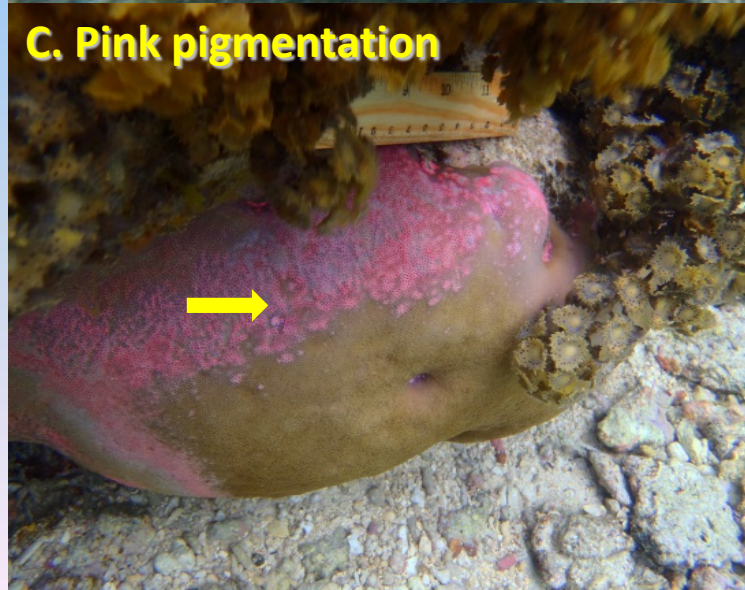
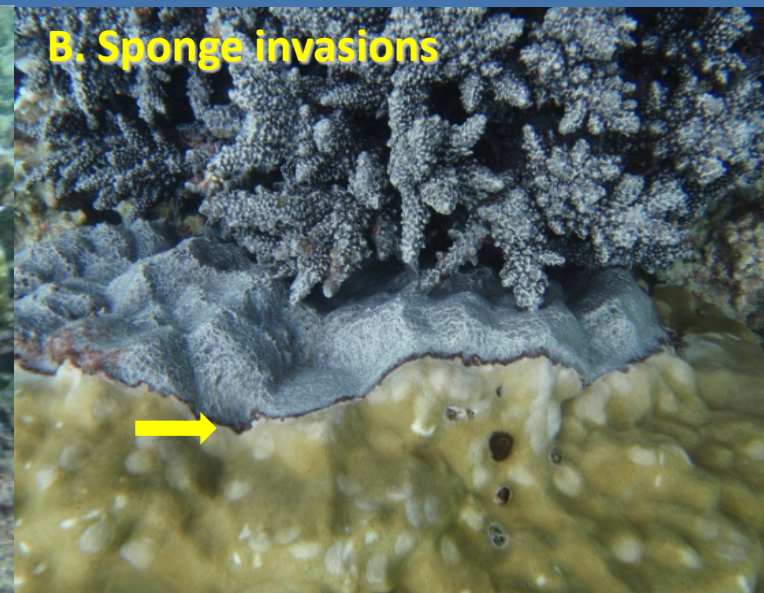
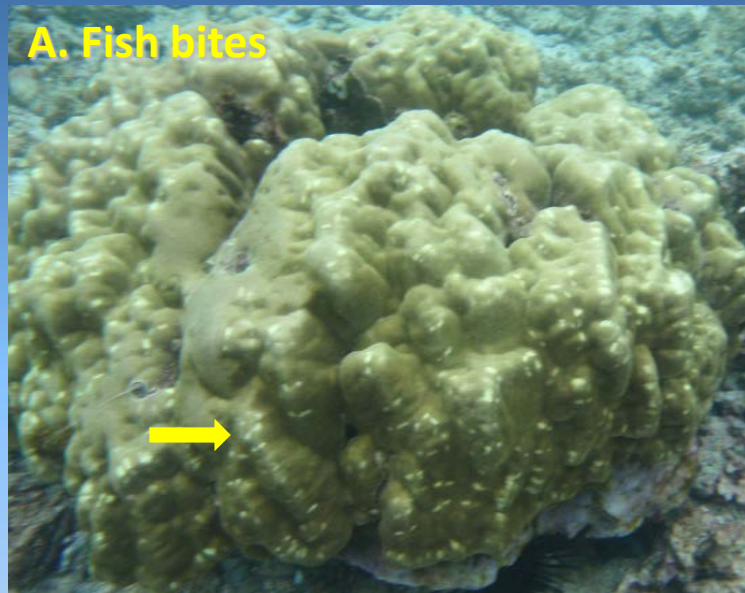


Coral-eating gastropod: *Drupella*

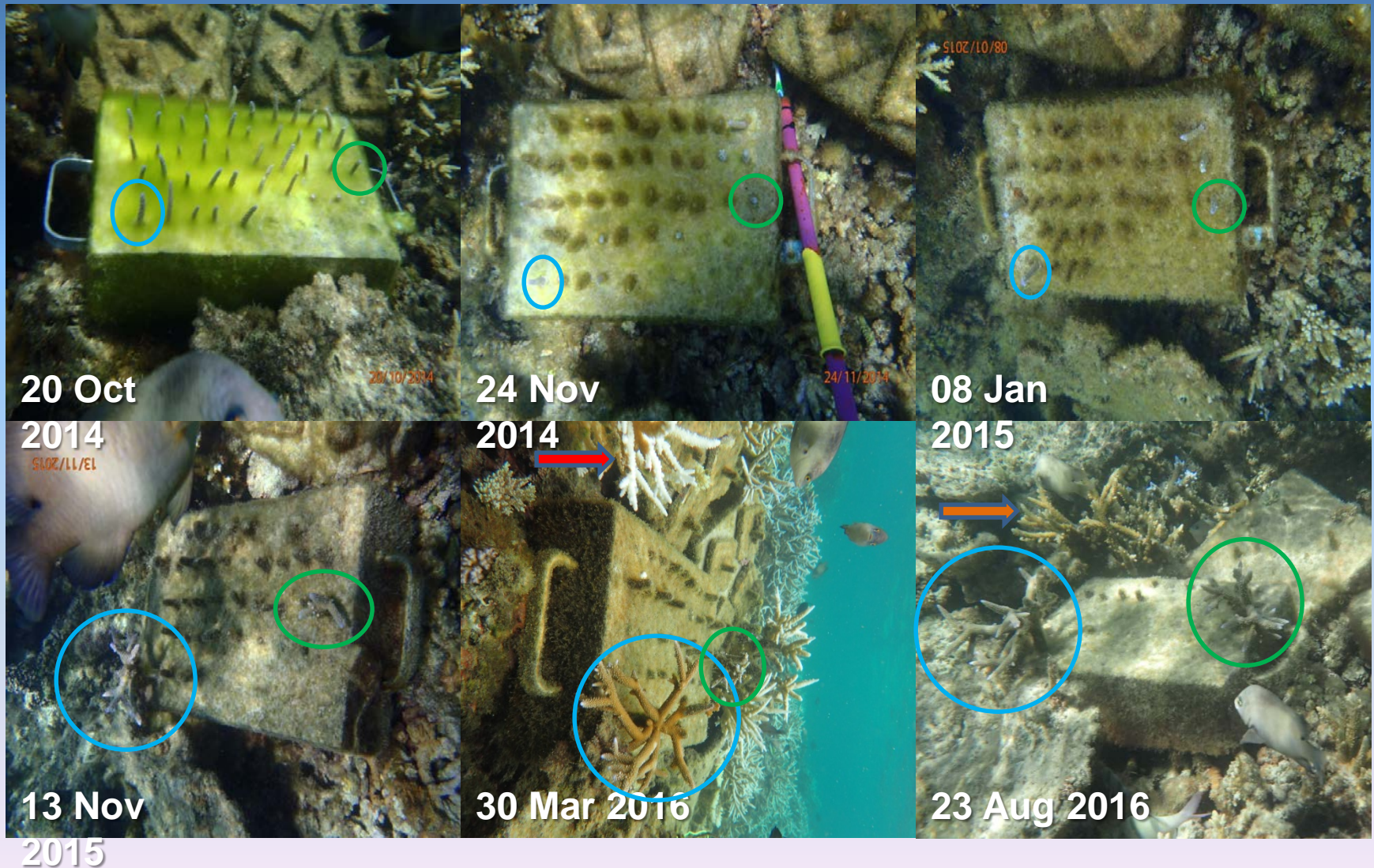
[Kaullysing et al. in press 13thICRS, Hawaii]



Other Stressors on thermally tolerant *Porites*



UoM-Funded Coral Transplantation Expt: Reef Flat



Coral Transplantation Expt: Lagoon



Coral Transplantation Expt: Near-Coast



20 Oct
2014



24 Nov
2014



08 Jan
2015



13 Nov
2015

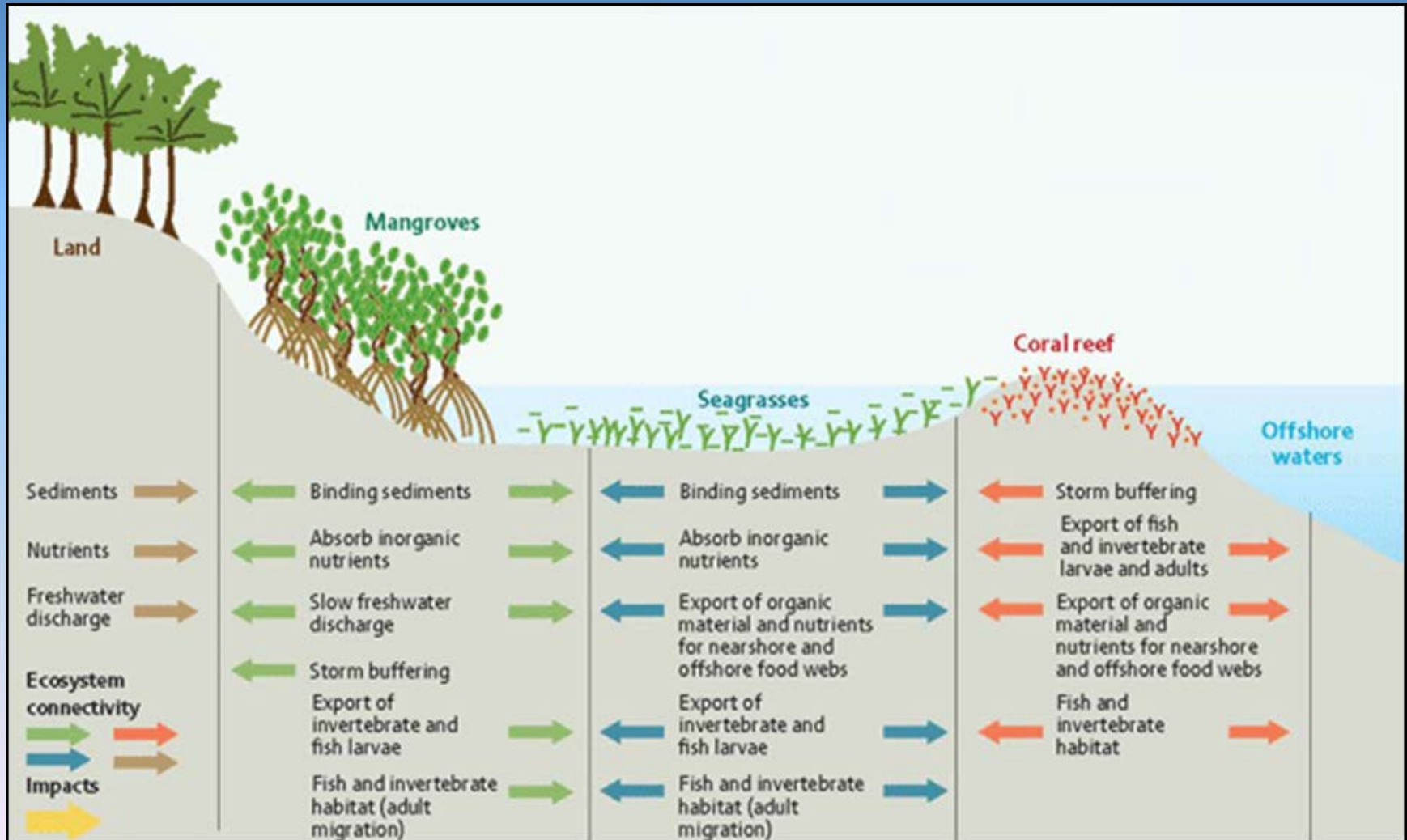


30 Mar 2016



23 Aug 2016

Interactions of Mangroves, Seagrass Beds and Coral Reefs

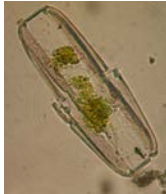


Interactions of mangroves, seagrass and coral reefs (Source: <http://americas.iweb.bsu.edu>)

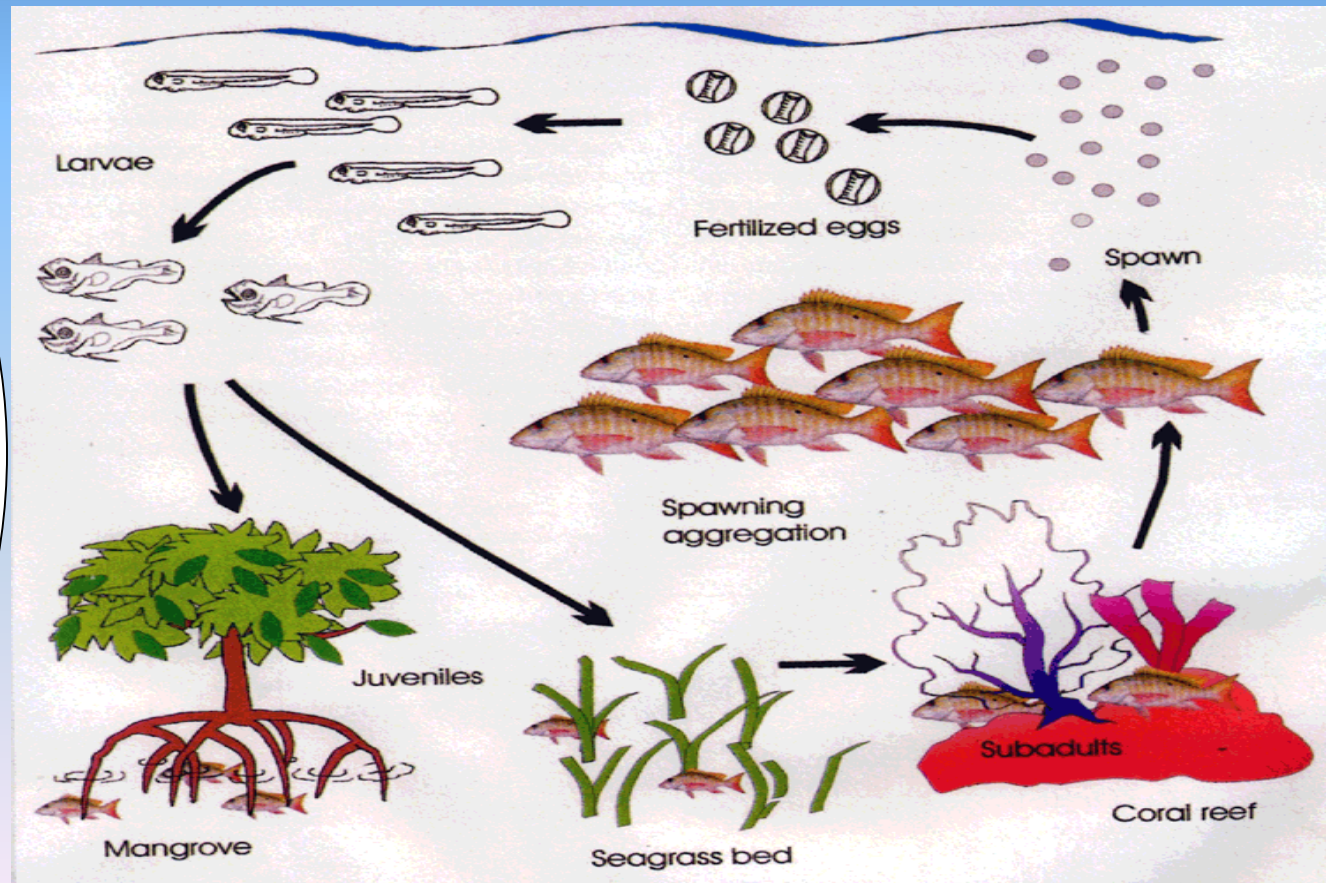
Interactions in the wake of anthropogenic and climate change-driven era?

Water column:

Phytoplankton
(Primary Producers)

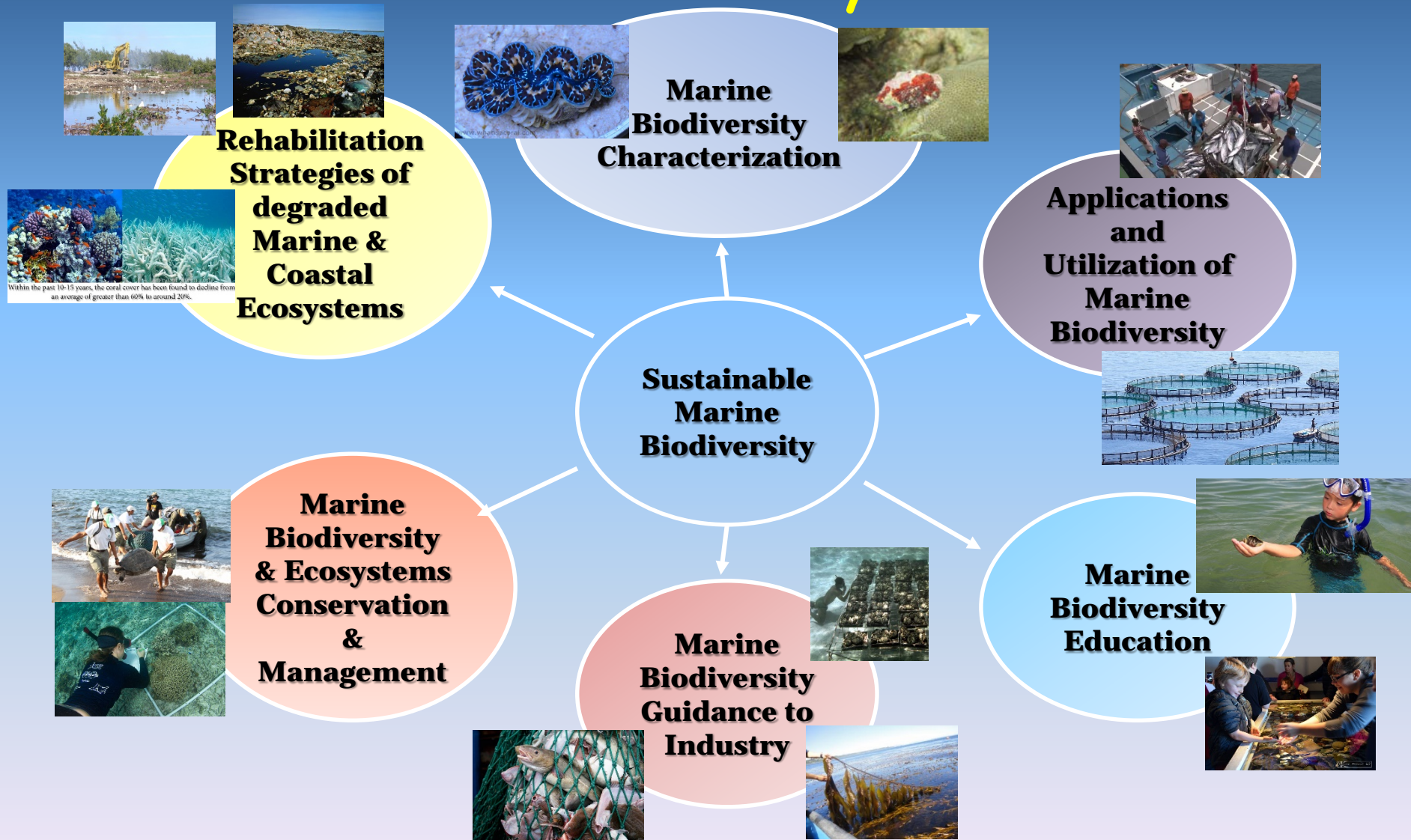


Zooplankton
(Secondary Producers)



Animal migration (Source: <http://www.reefresilience.org>)

Pole of Research Excellence: Sustainable Marine Biodiversity



Need to exchange and share research findings and technology to help marine coastal ecosystems under an Africa and Asia Network!

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**THANK YOU FOR YOUR
KIND ATTENTION!**