An underwater photograph showing a vibrant sea grass bed in the foreground and middle ground. The water is clear and blue. Numerous fish of various species are swimming throughout the scene, some near the grass and others further away. The overall atmosphere is bright and healthy.

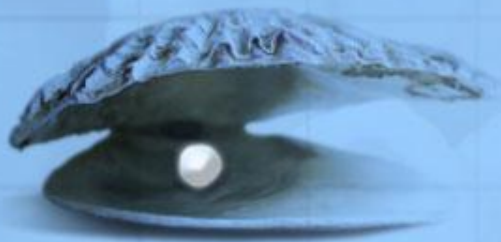
Biological survey of species diversity of sea grass beds in selected sites of southern Sri-Lanka.

Hikkaduwa, Weligama, Polhena.

Harishcandra K.A.D.A.T
FS/2006/010

Introduction.

- 1.What are Sea grasses ?
- 2.Distribution of Sea grass.
- 3.Importance of Sea grass.
- 4.Species diversity of a Sea grass bed.
- 5.Importance of study species diversity of a Sea grass bed.
- 6.Importance of this survey.



Sea grasses are.....

Marine angiosperms, that all are monocots & able to grow submersed in marine waters, to which they are restricted.(Wikipedia vol.5 p.255)

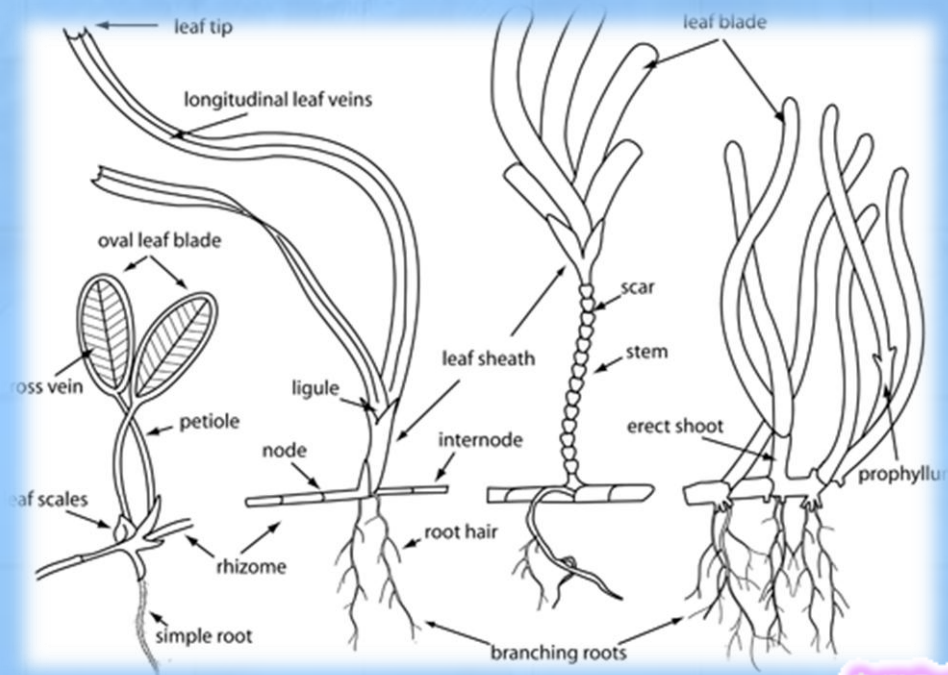


Figure 1: Morphology of a Sea grass.

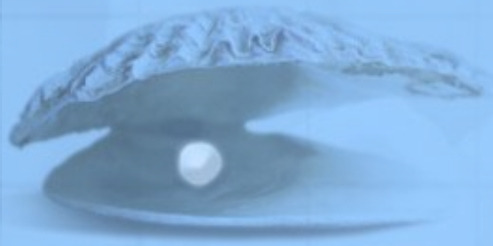
Sea grasses are....(contd)

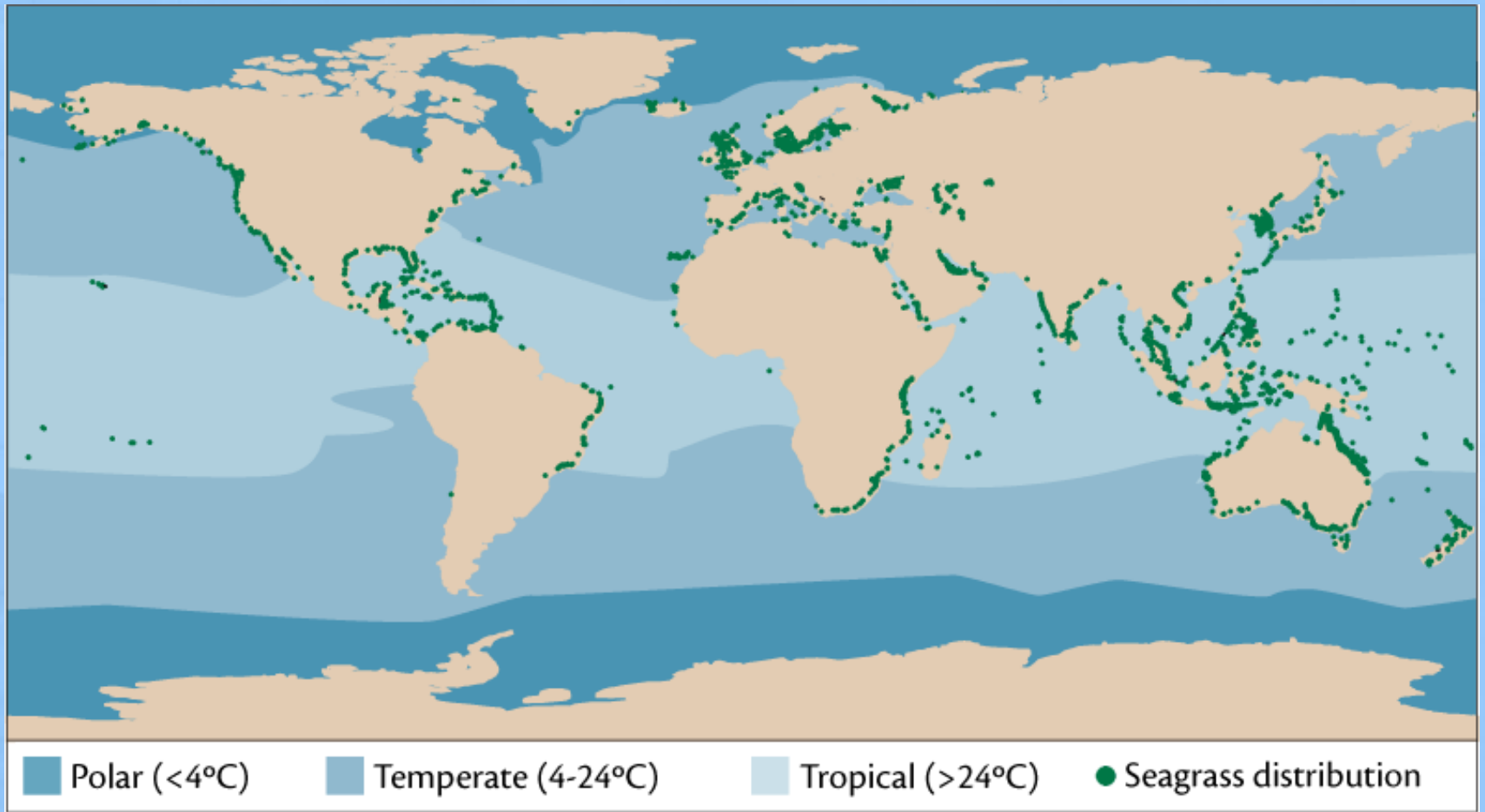
Belong to

- 2 Families (Hydrocharitacea & Potamogonacea)
- 12 generas &
- 50 species.

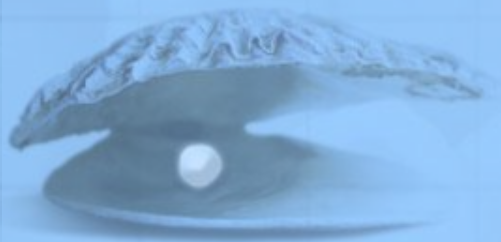
In Sri Lanka it is assumed that there are 6-7 sea grass species.

Sea grasses are distribute in a wide range of oceans with soft sediment bottom or rarely in hard rocky bottom & from tropical region to temperate region.





Global Sea grass distribution.



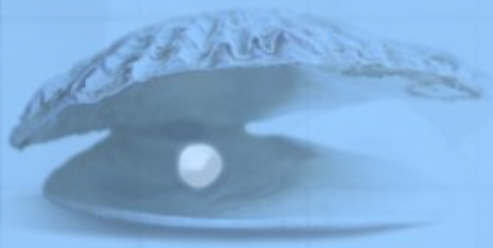


Coral reef distribution pattern in Sri Lanka



Important of Sea grass

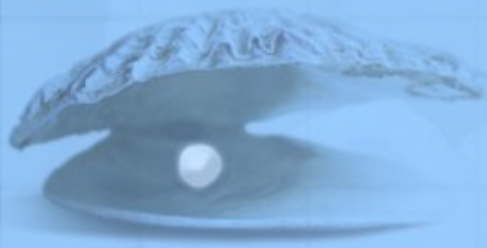
- ❖ Sea grasses are a vital part of the marine ecosystem due to their high productivity level .
- ❖ Sea grasses perform numerous functions such as
 - Stabilizing the sea bottom
 - Providing food and habitat for other marine organisms
 - Maintaining water quality
 - Supporting local economies



Species diversity of a Sea grass bed.

- ❖ In a single sea grass bed there may 1, 2 or more sea grass species exists. High sea grass species richness is normally in sea grass beds in tropical region than temperate region.

- ❖ Also there is a higher level of species diversity in a single sea grass bed. These species can be categorized mainly in to 4 broad categories.
 1. Microbial diversity
 2. Macroalgal diversity
 3. Invertebrates
 4. Vertebrates.

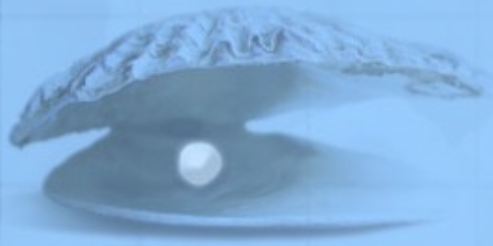


Microbial diversity - Epiphytes are the dominant class within the microbial community in a sea grass bed.
i.e. – Diatoms

Macro algae -

Often live in association with sea grasses but prominently as epiphytes on the leaves that have a long life span. There are more than 350 epiphytic macro algal species that belong to major taxonomic divisions. Most of these algae are opportunistic algae.

i.e. *Ulva* sp, *Chalodophora* sp.



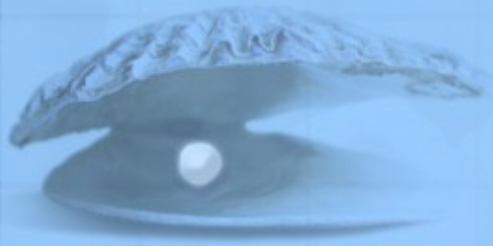
Invertebrates -

The invertebrate fauna associated with seagrass is very rich. These invertebrates live

1. epiphytically on sea grass leaves & on the sea grass rhizomes.
2. associate with sediment of sea grass beds.
i.e. – shrimps, clams, crabs, sea urchins etc...

Vertebrates -

There are so many types of vertebrates especially fish species. Turtles, manatees, dugongs etc.. in sea grass beds in a different magnitudes.



Important of study species diversity of a Sea grass bed

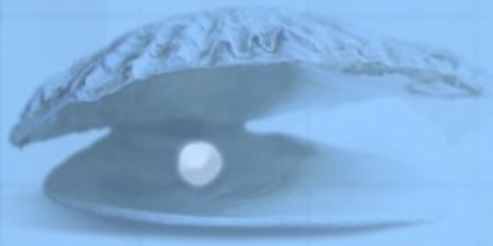
There are few advantages of studying species diversity in sea grass beds.

1. An idea about the species composition of sea grass beds can be obtained by such a survey.
2. A comparative idea about spatial distribution of sea grasses & associated species can be obtain by doing a comparison between the species diversity of sea grass beds.
3. Temporal variation of species richness in sea grass beds can be determined.
4. A source of secondary data can be prepared for the future analyses.



Important of this survey.

- ✓ This study will help to identify the species composition of sea grass beds in 3 different sites.
- ✓ It is important to identify the variation of species composition , & how it vary with sites.
- ✓ The final result of this practical session will help to identify the most suitable environmental parameters that ensure highest development of sea grass & associated species richness.



Objectives.

1. Identify the sea grass species in 3 different sites in southern coast.

Hikkaduwa

Polhena

Weligama

2. Determine density of sea grass species in these 3 sites.
3. Identify & calculate the species richness & composition of
 - i. Microbial species- Epiphytic micro algae i.e. Diatoms
 - ii. Macroalgal species- Epiphytic & associated macro algae. i.e *Caulerpa* spp. , *Ulva* spp.

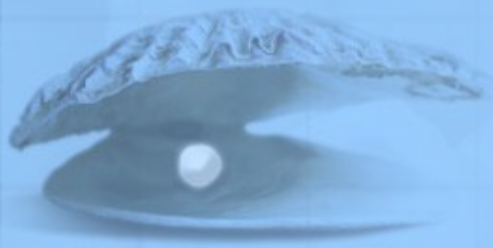


iii. Invertebrate diversity – Meiofauna, polychaetes, Shrimps, Echinodermates etc..

iv. Vertebrates - Fish species associated with sea grass beds.

4. Estimate the environmental quality by using indicator species & Bio indicators.

5. Determine the significance of variation of species composition of 3 sea grass beds.



Methodology.

Site selection.

- A reconnaissance survey is done to identify the sites. According to that survey;
3 sites are selected in southern Sri Lanka.
(Hikkaduwa, Weligama, Polhena ,3 Ramsar wetlands in Sri Lanka.)

Sea grass species Identification.


It is done by using sea grass identification key that was developed by Prof. L. Kannan & Dr. T. Thangaraju, India.


Sampling


1. Snorkeling or a manta tow survey method is used to observe the sea grass beds.
2. Line transect method is used to sample the sea grass beds.
3. 3 sub sites for 3 sites is selected according to the result of visual observations.

Sea grass & macrophytes diversity measurements.

It is calculated by using the method “Estimation Of Cover adapted by Saito & Atobe” (1970)

 Sediment samples will be taken by using appropriate corers to identify & calculate the meiofauna communities.

 Epiphyte coverage will be determined by the index that is developed by Sea Grass- Watch Organization.

 Fish assemblages with sea grass beds will be identified visually through snorkeling up to species level.



Week		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	October 2010		November 2010				December 2010				January 2011				Feb		
Literature survey	■	■															
Project proposal			■														
Oral presentation			■	■													
Research & data collection					■	■	■	■	■	■	■	■	■				
Analysis of results							■	■	■	■	■	■	■				
Thesis writing									■	■	■	■	■	■	■		
Submission of first copy													■	■	■		
Final presentation															■	■	■
Submission of final copy																■	■

Chart - Time frame of research

Thank You.

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