Country / City	Thailand / Project : Kantang Distrct, Trang Province
University / School	Chulalongkorn University
Academic year	2019
Title of the project	Community Landscape Development for Dugong Conservation
Authors	Paveenuch Rujipipatwong

TECHNICAL DOSSIER

Title of the project	Community Landscape Development for Dugong Conservation
Authors	Paveenuch Rujipipatwong
Title of the course	Bachelor Of Landscape Architecture
Academic year	2019
Teaching Staff	Asst. Prof. Sirintra Vanno / Asst. Prof. Dr. Chamawong Suriyachan
Department/Section/Program of belonging	Landscape Architecture
University/School	Chulalongkorn University

Written statement, short description of the project in English, no more than 250 words

The Dugong is classified as Vulnerable on the IUCN Red List of Threatened Species. Presently, the dugong population is on the decrease and their mortality rates continue to increase annually. The main cause is due to human threats to their natural resources impacting the ecosystem of seagrass which is a dugong's main diet. Its habitat is also the first ecosystem to be impacted by various changes, as it acts as the gate between the coast and the sea. The deterioration of seagrass ecosystem and increased morality rates of dugongs has led to a state policy aiming to develop Andaman seacoast communities into a model community for dugong conservation. The main occupations in these communities are fishery and agriculture, and it is Thailand's largest seagrass ecosystem and dugong habitat. The expansion of communities and the tourism industry has caused various nagative impacts to the dugong habitat, including shrimp farming, monoculture, dropping waste and sediments into the sea, and inappropriate fishery.The objective of this community landscape development for dugong conservation project is to restore natural resources, develop the community to be able to co-exist with other living beings, as well as providing knowledge, instilling and creating awareness in nature conservation, and promoting sustainable ecotourism.

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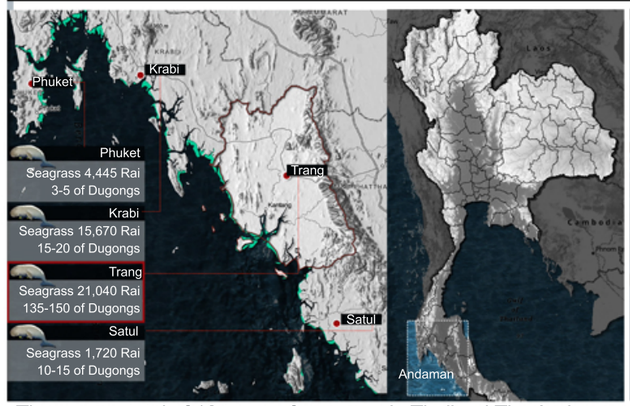
CLIMATE CHANGE AGAIN

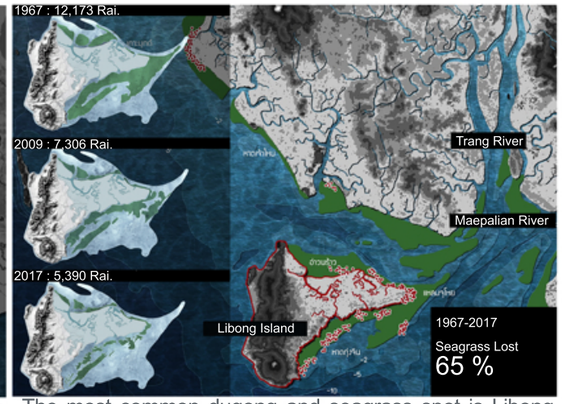
11th International Biennial Landscape Barcelona

Barcelona September 2020

SCHOOL PRIZE

DUGONG AND SEAGRASS IN THAILAND





There are a total of 12 types of seagrass in Thailand.The Andaman coast will find seagrass and dugongs from Phuket, Krabi, Trang and Satun. The most are in Trang 21,040 rai and with a population of 135-150 dugongs, which is the last herd of Thailand.

The most common dugong and seagrass spot is Libong Island. Since the island is influenced by the Trang river and Maepalian river, it is fertile and suitable for the growth of seagrass.But changes in the environment resulting from human activities causing the 65% lost of seagrass. If this area is not conserved or rehabilitated In the end, it will affect the last group of dugongs of Thailand.

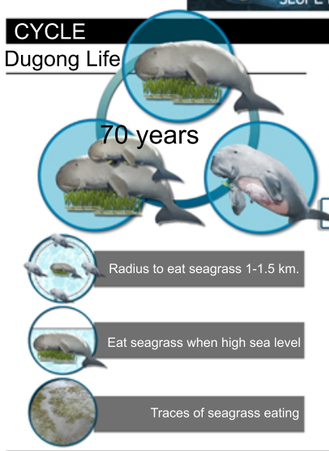
ISSUE

Libong Island, which covers an area of 25,000 rai, consisting of mangroves, rainforests, beach forests and sea grass. This island is the location of 3 villages.
- Batupute Village
- Koksatoen Village
- Langkhao Village

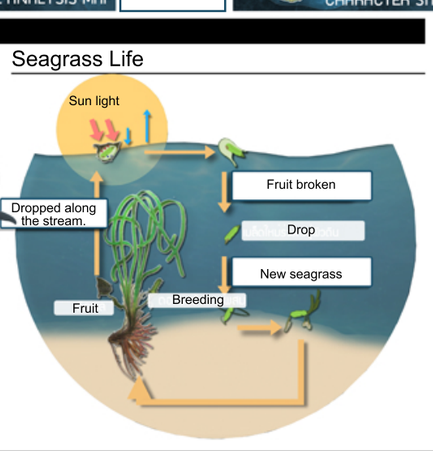
From slope analysis ,Libong island can be summarized into 3 types which affects the way of life of the community.

CYCLE

Dugong Life



Seagrass Life



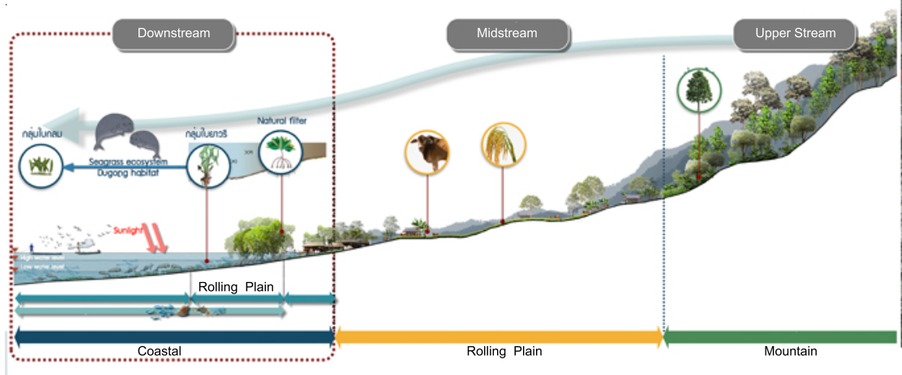
In the past, village on the undulating hills use rainwater for farming. Now,the growth of industrial agriculture, villagers change rice farming into rubber tapping. Over the 11,000 rai on the Libong turning into a monoculture of rubber (*Hevea brasiliensis*).

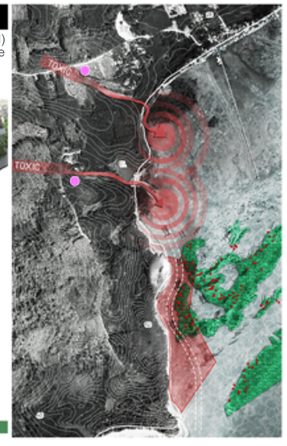
Libong island has 7 rubber processing factories.The south of the island is home to the dugong and seagrass.The career of rubber tapping starts with rubber planting, rubber tapping, rubber processing and latex washing.They use the chemical (formic acid) to make solid rubber.

From the analysis of wind currents and seacurrents, these chemicals are spreading directly affects the dugongs living in the southern part of the libong island.

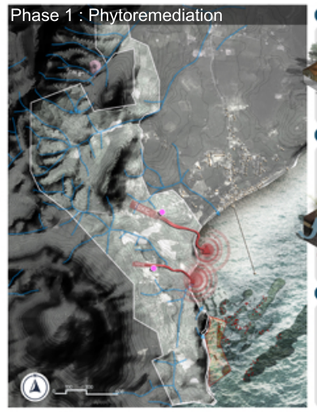
RELATIONSHIP OF ECOLOGY

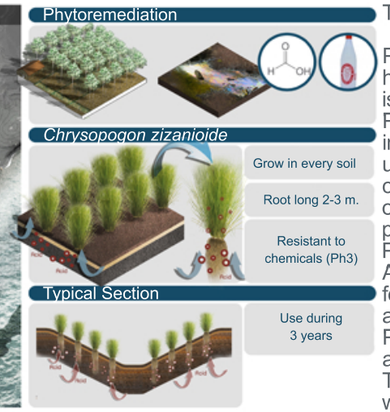
Topography of Libong consists of upstream, midstream and downstream areas. Seagrass located at the tidal zone (Between high sea level and low sea level) In line with the dugong's behavior that feeds seagrass during the high sea level. Seagrass is like walls between land and coastal areas. It is also a food source and helps prevent coastal erosion.Therefore, the chemicals that occur will affect downstream areas which destroy seagrass and dugongs' lives.





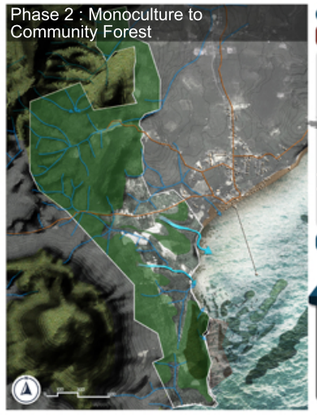
DESIGN STRATEGY

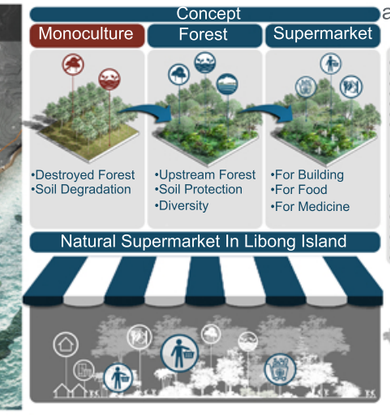


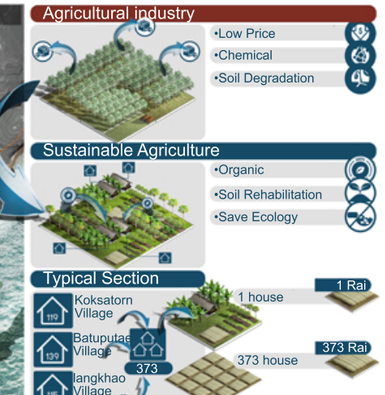


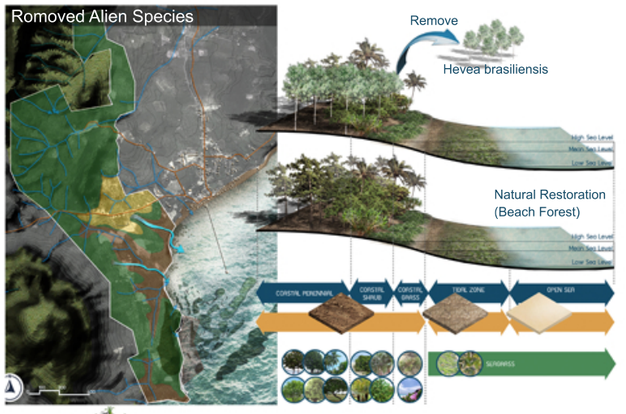
The project development is divided into 4 phases.

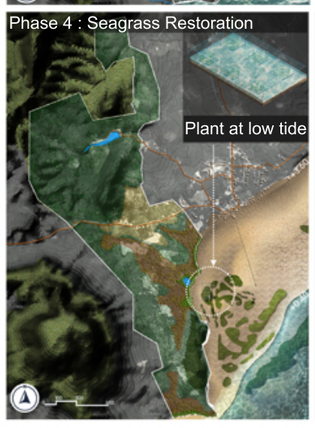
Phase 1 : Eliminate chemical using phytoremediation. The research has shown that *'chrysopogon zizanioide'* can grow in all soil types and is effective in absorbing acidic chemicals up to ph 3.
Phase 2 : Return upstream forest, watershed area that has been invaded by monoculture restoration to community forest for the upstream ecology. Modification guidelines will gradually adjust the community lifestyle without cutting down all the rubber. From the original 84 rubber trees /rai changed to 52 trees /rai + 32 rubber plants per rai.
Phase 3 : Industiral agriculture change to sustainable agriculture. Agriculture will allow the community to participate in the harvest used for household and sold to tourists in Libong island. The agriculture use a crop rotation system every 4 years to rehabilitate the soil.
Phase 4 : Seagrass Restoration. Because seagrass grows in areas around the tidal zone and areas where the sunlight reaches. Therefore,the restoration and positioning of the best seagrass plots was analyzed from the shade and shadow Analysis and the highest and lowest sea level line maps.

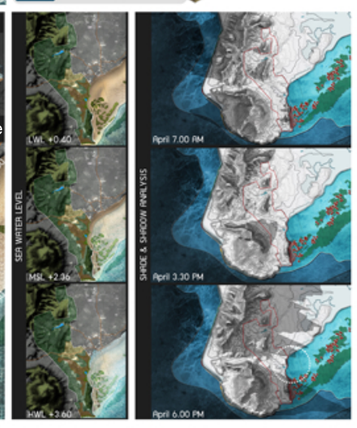


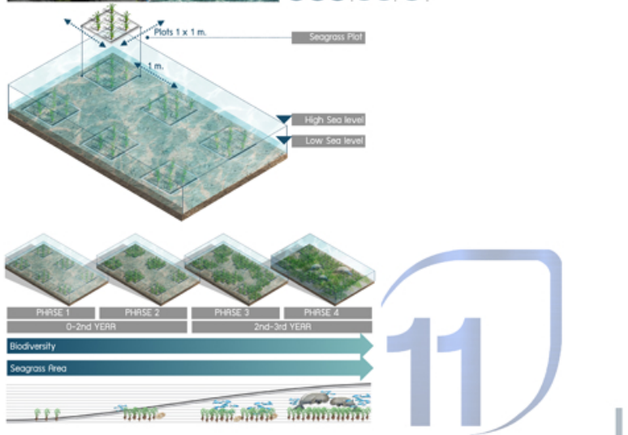












DUGONG & SEAGRASS EDUCATION ZONE

1. Skylab Station
2. Drop Off
3. Pavillion
4. Souvenir & Cafe
5. Indoor Exhibition
6. Outdoor Exhibition
7. Dugong Sculpture Lawn
8. Pavillion
9. Monoculture Exhibition
10. Community Forest Exhibition
11. Activity Lawn
12. Viewpoint Station
13. Dugong Pavillion
14. Wc.
15. Seagrass Plots Pavillion
16. Amphithetre
17. Multifunction Lawn
18. Beach Forest Pavillion
19. Andaman Pavillion
20. Seagrass Nursery
21. Kayak Station

RESEARCH HOUSE & CAMPING

22. Office / Meeting Room
23. Canteen
24. Camping Station
25. Bathroom
26. Back Of House

COMMUNITY & AGRICULTURE

27. Rotation Crops
28. Activity Pavillion
29. Multifunction Lawn
30. Libong's Organic Restaurant
31. Reservior
32. Biogass

LEGEND

- Skylab Circulation
- Walk Circulation
- Site Boundary
- Dugong Water Channel Line
- Dugong Nursery Area
- Sea Level
- Seagrass
- Seagrass Plots
- Skylab Station

MASTERPLAN

0 100 300 600

DUGONG & SEAGRASS EDUCATION ZONE

The dugong viewpoint, 8 meters above sea level opens up to the Andaman Sea. The viewpoint change every 12 hours according to the tide calendar. Rising tide, seeing a large group of dugongs, low tide seeing a seagrass.

RESEARCH HOUSE & CAMPING

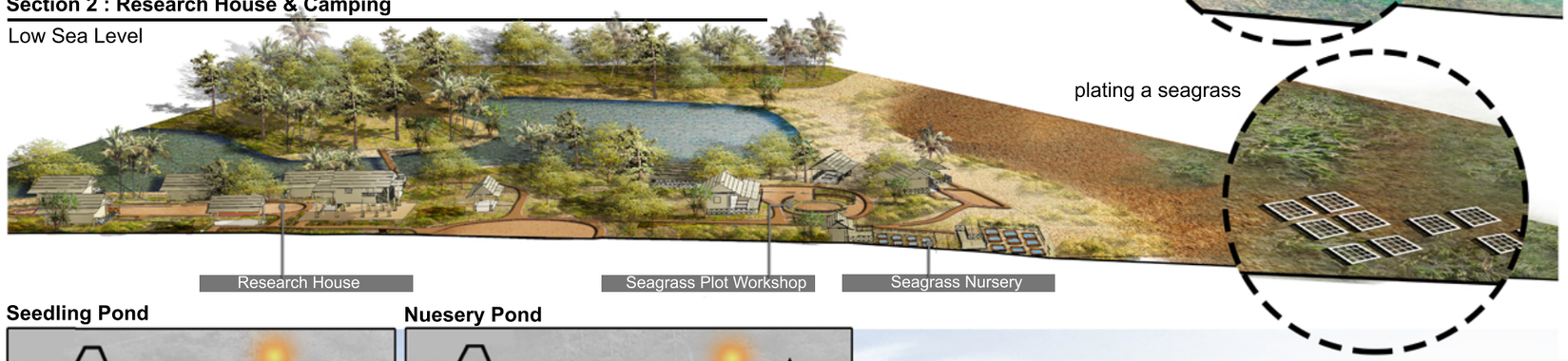
Seagrass plots workshop area.The building is a southern local architecture and using all natural materials such as bamboo.There is a pavilion and a small activity lawn for demonstrating how to make seagrass plots by the Libong villagers.

Section 1 : Dugong & Seagrass Education Zone

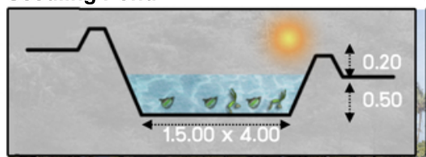
High Sea Level

Section 2 : Research House & Camping

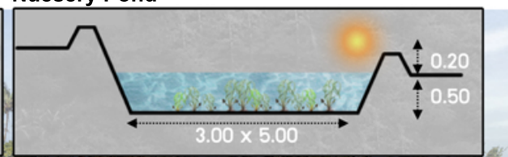
Low Sea Level



Seedling Pond



Nuesery Pond



Seagrass nursery and kayak station.Seagrass nursery is divided into three 3 different pond sizes from seedling ponds, nursery ponds and ponds to prepare for planting.The activity will change every 12 hours. Rising tide, kayaking to see of dugongs, low tide planting a seagrass.

COMMUNITY & AGRICULTURE

The community collects forest products and rice fields, which are the main agricultural products.Harvesting for household usage, including processing into the local market and selling to tourists who come to do activities on the island.

Section 3 : Community & Agriculture