

COMPONENT 2

INTEGRATION OF NATURAL CAPITAL ACCOUNTS INTO LOCAL DEVELOPMENT PLANNING AND OPERATIONS

THE INTEGRATION OF NATURAL CAPITAL ACCOUNTING IN PUBLIC AND PRIVATE
SECTOR POLICY AND DECISION-MAKING FOR SUSTAINABLE LANDSCAPES

NATURAL
CAPITAL

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TDRI THAILAND
DEVELOPMENT
RESEARCH
INSTITUTE

INTEGRATION OF NATURAL CAPITAL ACCOUNTING INTO LOCAL DEVELOPMENT PLANNING AND OPERATIONS

OUTPUT 2.3.3

CONSERVE, MITIGATE IMPACTS AND
RESTORE DEGRADED HABITATS IN
WATERSHED FORESTS AND
COASTAL MARINE ECOSYSTEMS
(TOTAL AREA OF 40,000 HA IN
KRABI PROVINCE)

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Contents

Acknowledgement	i
Contents	ii
Figure	iii
Table	iii
Executive Summary	v
1. Introduction	1
2. Restoration of targeted mangroves, estuarine swamps, and coastal ecosystems, and management of marine debris	3
2.1 Development of interpretive and knowledge signage on mangrove forests, estuarine swamps, and coastal ecosystems in the Krabi Urban Forest.....	3
2.2 Study on the Ecological Adaptation to a New Equilibrium of Seagrass Beds at the Koh Sriboya – Had ChaoAud.....	23
3. Restoration/conservation of targeted coral reefs	45
3.1 Targeted coral reefs in Krabi restored and conserved through the Green Fins network	45
3.2 Monitoring and Evaluation of the Shallow Coral Reef Recovery at Had Phra Nang	56
3.3 Youth Capacity Building for Green Dive Guides at Koh Phi Phi (Ban Koh Phi Phi School).....	59
References	63
Appendix 1: Official Handover Ceremony of Knowledge Signage	64
Appendix 2: Posters and Vinyl Banners	66
Appendix 3: Green Fins and Reef Watch Monitoring Training Agenda	68
Appendix 4: Green Fins and Reef Watch Monitoring Training Participants	69
Appendix 5: Photos from the Green Fins and Reef Watch Monitoring Training	70
Appendix 6: Assessor Training Programme Agenda	75
Appendix 7: Advanced Green Fins Assessor Training Participants	77
Appendix 8: Photos from the Advanced Green Fins Assessor Training	78

Figure

Figure 1 Location of Krabi Urban Forest, Pak Nam Subdistrict, Mueang Krabi District, Krabi Province	4
Figure 2 Beach Profile of Had Thung Mai Pai, August 2025	30
Figure 3 Beach profile of Had Thung Mai Pai, March 2026.....	31
Figure 4 Beach profile of Had Jao Oud, September 2025	31
Figure 5 Beach profile of Had Jao Oud, May 2026	32

Table

Table 1 Activities and Key Benchmarks for Output 2.3.3	2
Table 2 Comparison of Ecological Parameters Inside and Outside Cages.....	44

Executive Summary

This report presents the implementation results of ecosystem restoration and conservation activities undertaken in Krabi Province to restore targeted mangrove forests, estuarine swamps, seagrass beds, and coral reefs through ecological restoration, environmental monitoring, public participation, and capacity building.

The project developed and installed educational signage in the Krabi Urban Forest to communicate knowledge about mangrove ecosystems, estuarine swamps, biodiversity, marine debris, migratory birds, and Ramsar sites. The initiative also improved visitor facilities to support environmental learning and ecotourism. These activities have strengthened public awareness of ecosystem services, promoted participation in restoration activities, and supported improved management of natural resources within the project area.

To assess ecosystem recovery following the seagrass degradation crisis, regular monitoring was conducted at Koh Sriboya and Had Chao Aud. The monitoring results indicate an overall recovery trend in seagrass habitats. At Had Thung Mai Pai, average seagrass cover increased from 1.2 percent during the baseline survey to 34 percent, while at Had Chao Aud it increased from 8 percent to 15 percent. In parallel, seagrass nursery experiments and habitat protection through the installation of protective cages were implemented to support long-term restoration. The project also strengthened community participation in ecological monitoring through a citizen science approach. Community volunteers received technical training and monitoring equipment, enabling them to collect ecological data using standardized methods and contribute to long-term monitoring programmes.

For coral reef conservation, the project promoted the implementation of the Green Fins programme through training for dive operators and Green Fins assessors. These activities strengthened knowledge and practical skills in environmentally responsible diving practices and standardized coral reef monitoring. Coral reef monitoring at Had Phra Nang was conducted using the Reef Watch technique, and the survey records were uploaded to the Green Fins Thailand Reef Watch Database to support long-term data management and future monitoring.

The project also initiated the Green Dive Guide programme for youth at Ban Koh Phi Phi School to encourage the participation of young people in marine conservation. Through collaboration among schools, local dive operators, volunteers, and community stakeholders, the programme established a foundation for developing future citizen scientists and strengthening local stewardship of marine resources.

1. Introduction

The Thailand Development Research Institute (TDRI), as the lead service provider, has coordinated cooperation with relevant agencies, namely the Department of Marine and Coastal Resources, the Marine and Coastal Resources Office 10 (Krabi Province), and Krabi Municipality, to implement activities under Output 2.3.3. The objective is to support the conservation, restoration, and mitigation of impacts on forest ecosystems, estuaries, beaches, mangroves and/or coral reefs within Krabi Province, which constitute an important natural resource base for sustainable economic and social development.

Under **Output 2.3.3**, TDRI, in its role as the **lead service provider**, facilitates and **co-finances** the implementation of restoration and conservation activities. The Institute works in close consultation with responsible institutions, including government agencies, local authorities, and local partners, to promote participatory processes, the use of scientific knowledge, and the development of collaborative mechanisms that contribute to effective and sustainable management of natural resources and the environment in Krabi Province.

Within this framework of cooperation, the **EnLive Foundation** has signed a **memorandum of understanding (MOU)** with the Thailand Development Research Institute (TDRI) to jointly implement the project of 1 year duration (July 2025 to June 2026). The objective is to preserve natural capital that be created sustainable economic value within the resources-based context through participatory processes; to support research and development of ecosystems in Krabi Province, particularly activities related to the conservation, mitigation of impacts, and restoration of degraded habitats in wetland and marine and coastal ecosystems.

Within this framework of cooperation, the Enlive Foundation has developed and implemented **3 projects** to achieve its stated goals: 1). Study on the Ecological Adaptation to a New Equilibrium of **Seagrass bed** at the Koh Sriboya -Had Jao Oud.; 2) **Youth Capacity Building for Green Dive Guides** at Phi Phi Islands (Ban Koh Phi Phi School) and 3) Monitoring and Evaluation of the Shallow **Coral Reef** Recovery at Had Phra Nang.

All of these projects align with the Blue Economy approach, SDG 14: Life below water, and the spatial development direction of Krabi Province. It can be used as a scientific and participatory database to support the afterward policy proposals.

Activities under **Output 2.3.3: Conserve, mitigate impacts, and restore degraded habitats in watershed forests and coastal marine ecosystems** cover a total area of approximately **44,650 hectares in Krabi Province**. These activities comprise five key activities, as follows as in Table 1.

Table 1 Activities and Key Benchmarks for Output 2.3.3

Activities	Key benchmark
1. Development of interpretive and knowledge signage on mangroves, estuarine swamps, and coastal ecosystems to promote conservation awareness, learning, and ecotourism in the Krabi Urban Forest	Improved conservation awareness and ecotourism management practices contributing to the sustainable management of mangrove ecosystems in the Krabi Urban Forest and surrounding estuarine areas, covering and benefiting a total of 36,926 ha of mangrove forests in Krabi Province.
2. Study on the Ecological Adaptation to a New Equilibrium of Seagrass Beds at the Koh Sriboya – Had ChaoAud	Enhanced understanding of ecological adaptation and sustainable management of seagrass beds at Koh Sriboya – Had ChaoAud, covering and benefiting a total of 5,478 ha of seagrass beds in Krabi Province.
3. Targeted coral reefs in Krabi restored and conserved through the Green Fins network	Restored and conserved coral reef ecosystems, with improved management, monitoring, and community engagement, covering and benefiting a total of 2,246 ha of coral reefs in Krabi Province
4. Monitoring and Evaluation of the Shallow Reef Recovery at Had Phra Nang	
5. Youth Capacity Building for Green Dive Guides at Koh Phi Phi (Ban Koh Phi Phi School)	
Total	44,650 ha

In addition, **restoration and conservation of targeted forests in water catchment areas** and **improvement of wastewater management for selected tourism enterprises** are also considered important activities for the restoration and protection of natural capital in Krabi Province. Accordingly, in future implementation, the **lead service provider** will, in close consultation with the responsible institutions (state agencies, NGOs, companies, etc.), facilitate and **co-finance**, under a **cost-sharing agreement with the Trust income**, the implementation of restoration and conservation activities, including contracting staff and procuring equipment and materials, in targeted forests, estuaries, beaches, mangroves, and/or coral reefs.

2. Restoration of targeted mangroves, estuarine swamps, and coastal ecosystems, and management of marine debris

2.1 Development of interpretive and knowledge signage on mangrove forests, estuarine swamps, and coastal ecosystems in the Krabi Urban Forest

Mangroves are a crucial ecosystem for marine and coastal resources and local communities. They serve as nurseries for aquatic life, prevent coastal erosion, absorb carbon, and support the local economy. Krabi Province is particularly rich in **mangrove forests, covering a total area of approximately 36,900 hectares**. It also boasts a diverse range of natural tourist attractions, such as Khao Khanab Nam in Pak Nam Subdistrict, Mueang Krabi District, Krabi Province. These areas offer significant potential for promoting ecotourism and public participation in wetland and natural resource conservation.

The Thailand Development Research Institute (TDRI), under the project *“The Integration of Natural Capital Accounting in Public and Private Sector Policy and Decision-making for Sustainable Landscapes”* (Output 2.3.3: *Conserve, Mitigate Impacts, and Restore Degraded Habitats in Watershed Forests and Coastal Marine Ecosystems—Covering a Total Area of 40,000 Hectares in Krabi Province*), recognizes the importance of promoting mangrove forests in the **“Krabi Urban Forest”**, a green space for recreation and learning, particularly within urban communities. *In collaboration with the Marine and Coastal Resources Office 10 (Krabi Province), the Department of Marine and Coastal Resources, and Krabi Municipality*, the project jointly implement activities that promote the conservation, restoration, and sustainable utilization of marine and coastal resources.

One important approach is the development of informational signs providing knowledge about mangrove forests, estuarine swamps, and coastal ecosystems. These signs are designed to be engaging, easy to understand, and suitable for students, tourists, and the public, helping to raise conservation awareness, learning, and ecotourism. The project also includes renovations and repairs to the roof of the resting pavilion and photo spots for tourists, and fosters learning through ecotourism.

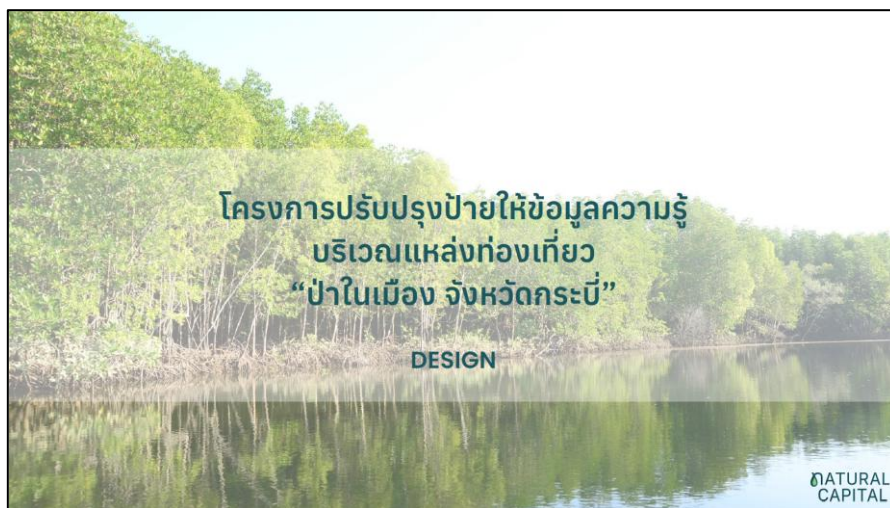
Therefore, this activity contributes directly to the project’s objectives under Output 2.3.3 by fostering environmental awareness, supporting the restoration of degraded mangrove habitats, and promoting improved management of marine debris within the Krabi Urban Forest and surrounding coastal areas (Figure 1).

Objectives

- 1) To support and promote mangrove forest areas under the “Krabi Urban Forest” initiative and ecotourism sites at Khao Khanap Nam, Pak Nam Subdistrict, Mueang Krabi District, Krabi Province.
- 2) To provide knowledge and understanding to create awareness of the importance of mangrove conservation and restoration.
- 3) To design and install knowledge signs indicating the importance of mangrove resources with relaxation areas and photo spots for tourists.

Media content

Knowledge about mangrove ecosystems, the situation of mangrove forests in Thailand and the world, their economic, social, and environmental importance, mangrove trees and animals, marine debris, local birds, and migratory birds, as well as Ramsar sites. The *design of the knowledge signage* is presented below.



	ตำแหน่งป้าย	จำนวน	เนื้อหา	วัสดุ และอื่นๆ
1	ลานจอดรถ	1	Backdrop ป้ายชื่อสถานที่	ติดไวนิลใหม่ แทนของเดิม
2	ทางเข้าหลัก (ข้อปฏิบัติ)	3	Welcome / แผนที่ป่าในเมือง จ.กระบี่ / ข้อปฏิบัติ / หน่วยงานรับผิดชอบ / เบอร์สำคัญสำหรับติดต่อ	ทำใหม่ เป็นชิ้นใหญ่ตรงทางเข้า
3	ป้ายข้างห้องประชุม	1	ชยะทะเล	Reprint inkjet ใช้โครงเดิม
4	จุดพัก 1 ตรงข้ามหอดูนก ป้ายเดิมหลุด	2	นกประจำถิ่น & นกอพยพ	ทำป้ายใหม่
5	ป้ายด้านบนหอดูนก	2	ป่าในเมืองและเขานางน้ำ / Ramsar site	ทำป้ายใหม่
6	จุดพัก 2 ปรับปรุงป้ายเดิม	2	ระบบนิเวศป่าชายเลน (รากไม้)	รีออกแบบโครงเดิม / เปลี่ยนบอร์ด เนื้อหาใหม่
7	ศาลาสูดทาง	4	ระบบนิเวศป่าชายเลน	ซ่อมแซมศาลา / ทำบอร์ดเนื้อหาใหม่ 2 ด้าน (ซ้าย-ขวา)
8	ระหว่างทางเดิน (ป้ายเล็ก)	10	ข้อมูลชื่อต้นไม้	ป้ายเล็กๆ ห้อยต้นไม้
9	ทางเข้าเล็ก ด้านข้าง	2	แผนที่ / ข้อปฏิบัติ / โลโก้	ทำป้ายใหม่

Signage 1 - ลานจอดรถ

ทำไว้นิลใหม่



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Signage 1 ลานจอดรถ
425 x 255 cm
scale 1:10

ARTWORK



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Signage 2 - ทางเข้า / ข้อปฏิบัติ



NATURAL
CAPITAL

Signage 2 - ทางเข้า / ข้อปฏิบัติ



NATURAL
CAPITAL

Signage 2 ทางเข้าหลัก

A 46 x 134 cm
B 134 x 156 cm
C 46 x 136 cm

ARTWORK



Signage 3 - ป้ายข้างห้องประชุม

reprint inkjet ใหม่มาปิดทับ



Signage 3 ป้ายข้างหอประชุม
120 x 120 cm



Signage 4 - จุดพักที่ 1 ทรงข้ามหอนก



Signage 4 - จุดพักที่ 1 ทรข้ำมหอดูนก



NATURAL CAPITAL

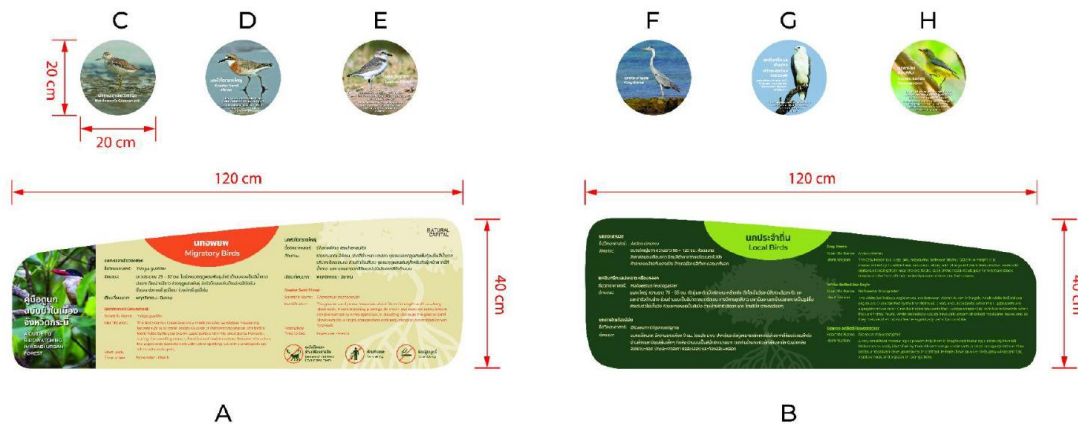
ARTWORK

Signage 4 จุดพักที่ 1 (นท)

A 120 x 40 cm

B 120 x 40 cm

C, D, E, F, G, H 20 x 20 cm



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Signage 5 - ด้านบนหอดูนก



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Signage 5 - ด้านบนหอดูนก

**ป้ายนี้ตั้งฝั่งเมือง



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Signage 5 ป้ายด้านบนหอดูนก

A 120 x 40 cm
B 120 x 40 cm



Signage 6 - จุดพักที่ 2

เรือทอนหลังคา + ทำป้ายใหม่



Signage 6 - จุดพักที่ 2

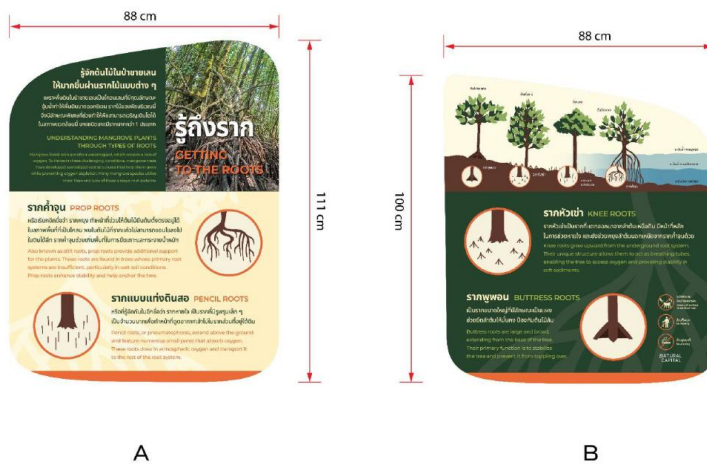


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Signage 6 จุดพักที่ 2 (ราก)

A 88 x 111 cm
B 88 x 100 cm

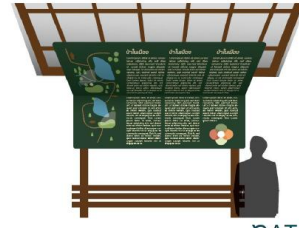
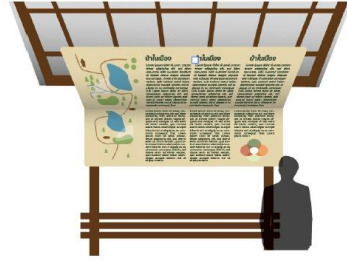
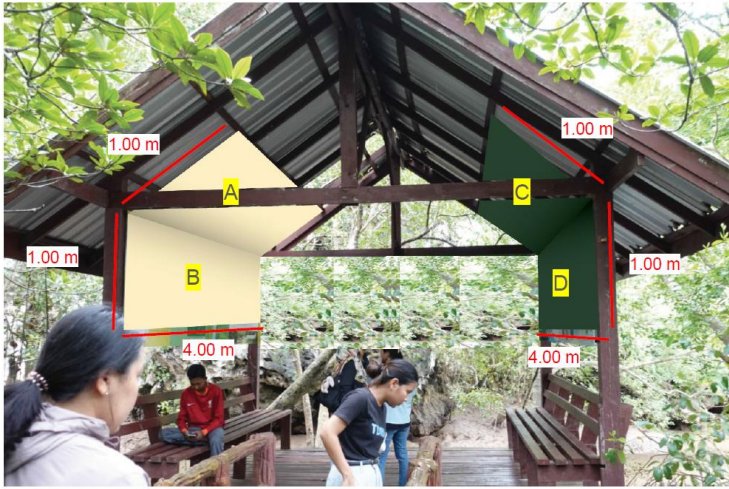
ARTWORK



NATURAL CAPITAL

Signage 7 - ศาลาจุดทาง

ซ่อมแซมศาลา + ทำบอร์ดเนื้อหาใหม่



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Signage 7: ศาลาจุดทาง (ป่าชายเลน)

A,B 400 x 100

ARTWORK

A

400 cm
100 cm

ป่าชายเลน คืออะไร?

What is a mangrove forest?

สถานการณ์ป่าชายเลนในไทย และในโลกเป็นอย่างไร?

What are the overall situations of mangrove forests in Thailand and in the world?

ประเภทพื้นที่	พื้นที่ (km ²)	ร้อยละ
ป่าชายเลนในไทย	333	33%
ป่าชายเลนในไทย (พื้นที่อนุรักษ์)	14.5	4.3%
ป่าชายเลนในไทย (พื้นที่เกษตรกรรม)	10.4	3.1%
ป่าชายเลนในไทย (พื้นที่ชุมชน)	7.5	2.2%
ป่าชายเลนในไทย (พื้นที่อุตสาหกรรม)	1.7	0.5%
ป่าชายเลนในไทย (พื้นที่อื่น)	14.5	4.3%
ป่าชายเลนในไทย (พื้นที่อื่น)	13.8	4.1%
ป่าชายเลนในไทย (พื้นที่อื่น)	1.7	0.5%

โลกมีป่าชายเลนทั้งหมดประมาณ 24 ล้านไร่ คิดเป็นร้อยละ 17 ของพื้นที่ป่าทั้งหมดของโลก มีประเทศไทยเป็นอันดับที่ 24 ของโลก มีพื้นที่ป่าชายเลนประมาณ 333,000 ไร่ คิดเป็นร้อยละ 1.7 ของพื้นที่ป่าทั้งหมดของโลก

ป่าชายเลนในประเทศไทยมีอยู่ประมาณ 333,000 ไร่ คิดเป็นร้อยละ 1.7 ของพื้นที่ป่าทั้งหมดของโลก

ประเทศไทยมีพื้นที่ป่าชายเลนประมาณ 333,000 ไร่ คิดเป็นร้อยละ 1.7 ของพื้นที่ป่าทั้งหมดของโลก

The mangrove forest in Thailand is found across 24 provinces in the southern, western, and central regions. The province of Phang Nga has the largest area of mangrove forests in the country. Globally, the total area of mangrove forests is approximately 10,000 square kilometers, and these forests are categorized into six different areas.

The main issue facing Thailand and the world regarding mangrove forests is the loss of forest area. This degradation is mainly driven by economic growth, particularly due to coastal development and tourism.

ความพิเศษของป่าชายเลนคืออะไร?

What makes mangrove forests unique?

ป่าชายเลนเป็นระบบนิเวศที่พิเศษและแตกต่างจากป่าชนิดอื่น ๆ เพราะมันสามารถทนต่อน้ำเค็มและน้ำกร่อยได้ นอกจากนี้ มันยังช่วยกักเก็บคาร์บอนไดออกไซด์ได้มากกว่าป่าชนิดอื่น ๆ อีกด้วย

The primary factor that sets mangrove forests apart from other types of forests is saline. Mangrove forests are salt-tolerant, they can tolerate or tolerate brackish water. In addition to their salt tolerance, they also have a significant capacity to store carbon. The ability of mangrove forests to store carbon is influenced by the type and the amount of nutrients that they receive from rivers.

B

400 cm
100 cm

ป่าชายเลนมีความสำคัญอย่างไร?

Why are mangrove forests important?

ป่าชายเลนเป็นระบบนิเวศที่พิเศษและแตกต่างจากป่าชนิดอื่น ๆ เพราะมันสามารถทนต่อน้ำเค็มและน้ำกร่อยได้ นอกจากนี้ มันยังช่วยกักเก็บคาร์บอนไดออกไซด์ได้มากกว่าป่าชนิดอื่น ๆ อีกด้วย

A mangrove forest is an ecosystem where various plants and animals coexist in muddy soils and brackish water, as well as swamps that overflow. The mangrove forests are known as "King of the Coast" or "King of the Mangrove" because they are commonly found in the coastal areas. These forests are typically located in coastal areas, estuaries, bays, and around islands in coastal regions.

ด้านสิ่งแวดล้อม ENVIRONMENTAL BENEFITS

- เป็นระบบนิเวศที่ช่วยกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งที่อยู่อาศัยของสัตว์น้ำและสัตว์บก
- เป็นแหล่งกักเก็บน้ำจืดและน้ำเค็ม
- เป็นแหล่งกักเก็บน้ำจืดและน้ำเค็ม
- เป็นแหล่งกักเก็บน้ำจืดและน้ำเค็ม
- เป็นแหล่งกักเก็บน้ำจืดและน้ำเค็ม
- เป็นแหล่งกักเก็บน้ำจืดและน้ำเค็ม

ด้านเศรษฐกิจ ECONOMIC BENEFITS

- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์

ด้านสังคม SOCIAL BENEFITS

- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์
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- เป็นแหล่งกักเก็บคาร์บอนไดออกไซด์

NATURAL CAPITAL

14

Signage 7: ศาลาจุดกาง (ป่าชายเลน)
C, D 400 x 100

ARTWORK

400 cm

100 cm

100 cm

NATURAL CAPITAL

C

ปัจจัยที่มีผลต่อสภาพแวดล้อมของป่าชายเลนคืออะไร?
What are the factors affecting the mangrove environment?

D

พันธุ์ไม้ที่สำคัญในป่าชายเลน
Mangrove Trees

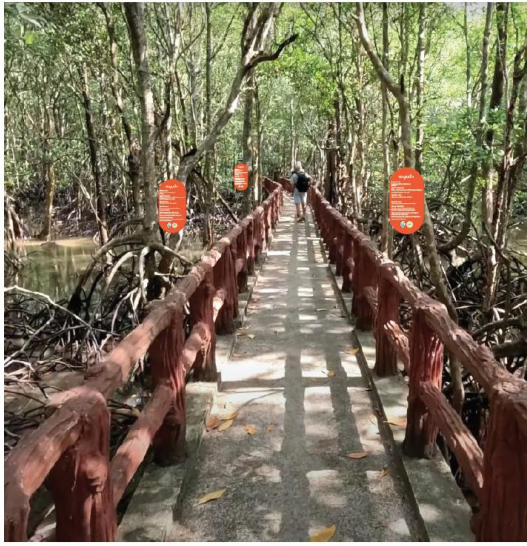
สัตว์ที่สำคัญในป่าชายเลน
Mangrove Animals

Signage 8 - ป้ายเล็ก ระหว่างทางเดิน

ป้ายข้อมูลเดิม



Signage 8 - ป้ายเล็ก ระหว่างทางเดิน



NATURAL CAPITAL

Signage 8 ป้ายเล็ก (พืชพันธุ์)

15 x 20 cm

มีป้ายต้นไม้ทั้งหมด 7 ชนิด
ผลิตจำนวน 10 ป้าย



ARTWORK

NATURAL CAPITAL

Signage 9 - ทางเข้าเล็ก

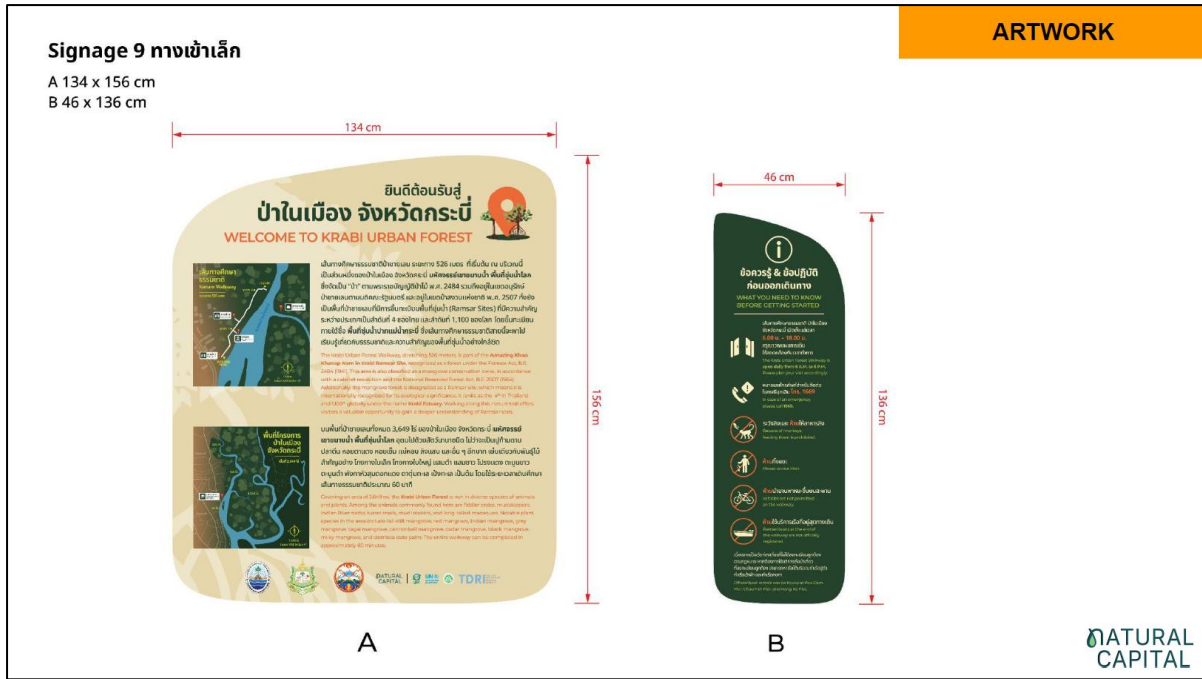


NATURAL CAPITAL

Signage 9 - ทางเข้าเล็ก



NATURAL CAPITAL



Output

Signage	Quantity	content	Dimensions
Signage 1	1	Backdrop: Venue Name	Width 425 cm x Height 255 cm
Signage 2	3	Welcome to Krabi Urban Forest /Map/What you need to know before getting started/Logo	A Width 46 cm x Height 134 cm B Width 134 cm x Height 156 cm C Width 46 cm x Height 134 cm
Signage 3	1	marine litter	Width 120 cm x Height 120 cm
Signage 4	8	Local birds & Migratory birds, Ramsar sites	A Width 120 cm x Height 40 cm B Width 120 cm x Height 40 cm C, D, E, F, G, H 20 x 20 cm
Signage 5	2	Urban Forest & Khao Khanap Nam	A Width 120 cm x Height 40 cm B Width 120 cm x Height 40 cm
Signage 6	2	Mangrove ecosystems, and getting to the roots	A Width 88 cm x Height 111 cm B Width 88 cm x Height 111 cm
Signage 7	4	Mangrove ecosystems	A, B, C, D Width 400 cm x Height 100 cm
Signage 8	10	Mangrove Species Profiles	Width 15 cm x Height 20 cm
Signage 9	2	Map/What you need to know before getting started/Logo	A Width 134 cm x Height 156 cm B Width 46 cm x Height 136 cm

Note. Design and Artwork: By WHAT IF Company Limited.

Signage 1



Before



After

Signage 2



Before



After

Signage 3



Before



After

Signage 4



Before



After

Signage 5



Before



After

Signage 6

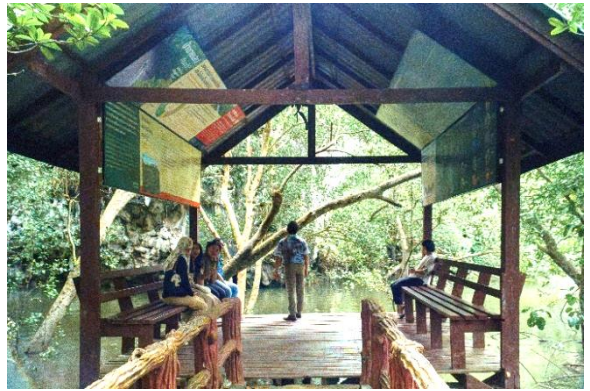


Before



After

Signage 7



Before

After

Signage 8



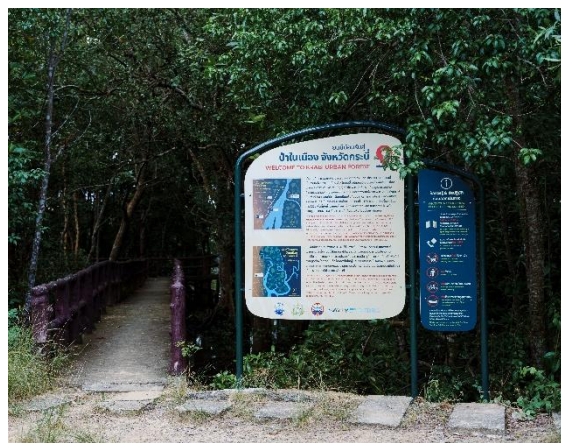
Before

After

Signage 9



Before



After

Outcome

- **Increased Awareness and Understanding:** Local communities and tourists will know the importance of mangroves and their role in maintaining the balance of the ecosystem.
- **Behavioral and Attitudinal Change:** Tourists and local communities will start to behave more responsibly towards environmental conservation, such as not littering in mangrove areas or avoiding destruction of the ecosystem.
- **Increased Participation in Restoration:** Public and private sectors, schools and gender groups are increasingly involved in mangrove restoration and conservation, such as mangrove planting or organizing activities with relevant organizations.
- **Sustainable Tourism:** Local communities and tourists will understand and be aware of the importance of sustainable tourism, which will help mangroves and other natural areas to be preserved and cared for in the long term.
- **Improved Management of Marine Debris:** Through interpretive signage and educational materials, visitors are encouraged to reduce, separate, and properly dispose of waste, contributing to cleaner coastal environments and better marine debris management within the Krabi Urban Forest area.

Under **Output 2.3.3**, the Thailand Development Research Institute (**TDRI**), as the lead service provider, in close consultation with relevant government agencies and local authorities, facilitates and co-finances the implementation of restoration and conservation activities in targeted mangroves and estuarine ecosystems within Krabi Province. This activity under the **Krabi Urban Forest** initiative directly supports the **Key Activities** of the project, which focus on **conserving, mitigating impacts, and restoring degraded habitats in watershed forests and coastal marine ecosystems, covering a total area of 40,000 hectares**. The initiative demonstrates participatory implementation, cost-sharing arrangements, and local collaboration consistent with the Output's objectives.

Aligned with the project's **Key Deliverables**, the activity contributes to the **restoration and conservation of targeted mangroves and estuarine swamps, and promotes improved management of marine debris** through awareness raising, interpretive signage, and community engagement. By integrating environmental education with sustainable tourism and local participation, the project strengthens ecosystem resilience and fosters long-term stewardship of coastal and marine resources. The Krabi Urban Forest thus serves as a practical model for integrated coastal habitat restoration and management in Krabi Province.

2.2 Study on the Ecological Adaptation to a New Equilibrium of Seagrass Beds at the Koh Sriboya – Had ChaoAud

The seagrass meadows around the **Sriboya Islands and Had Jao Oud in Krabi Province** is considered an important coastal ecosystem in the Andaman Sea due to the area is a habitat, food source and breeding ground for a variety of aquatic animals, including rare marine animals and economic animals that are a source of income for the community. In addition, seagrass ecosystems absorb and store significant amounts of carbon, thus playing a crucial role in mitigating the impacts of climate change (Blue Carbon Ecosystem).

However, over the past 3 years, the seagrass area of Sriboya Islands and Had Jao Oud has experienced a severe degradation crisis due to a combination of factors, including climate variability, sedimentary deposition, coastal land use, and pressure from fishing and tourism activities. This has resulted in a significant decrease in seagrass cover, posing a risk to the stability of the ecosystem and the livelihoods of communities that rely on coastal resources in the area.

When an ecosystem is disrupted and loses its balance, recovery to its “original balance” may not occur immediately or may never return to its original state. The ecosystem therefore needs to move into “**a new equilibrium**”, a state in which the components of the ecosystem attempt to adapt to the new environment, achieving stability and maintaining ecosystem function over the long term.

To create knowledge, understanding and lead to appropriate resource management guidelines, the Enlive Foundation has developed three important activities;

- 1) **Monitoring the status of seagrass beds after the degradation crisis.**
- 2) **Experiments on seagrass nursery in earthen ponds.**
- 3) **Protection of seagrass habitats by creating cage.**

In some areas of the Sriboya Islands, seagrass species with potential to serve as seed banks and propagule sources are still found. Therefore, the project to study the seagrass meadow re-equilibrium in Sriboya Islands-Had Jao Oud is essential to support learning and understanding of post-crisis seagrass ecosystems through scientific data, community participation, collaboration in finding way to identify the appropriate resource restoration and long-term protection of seagrass genetic resources for the local context, including supporting sustainable coastal resource management.

Objectives

- 1) To study the natural recovery trends of seagrass and areas with potential for recovery for use in scientific planning.
- 2) To experiment the rehabilitation by nurturing seagrass seedlings in earthen ponds to be strong before returning them to nature.
- 3) To construct the barriers for protecting the seagrass species with potential to serve as seed banks and propagule sources from external threats.
- 4) To enable the pilot areas to maintain its potential for propagation and effectively support the recovery of the surrounding area.

Monitoring the status of seagrass beds after the degradation crisis

Activities

- 1) Monitor and assess the status of seagrass using Seagrass Watch methods for establishing the database of seagrass re-equilibrium in 2 pilot areas:
- 2) Had Tungmaipai, M.7 Koh Sriboya Sub-district, Nuaklong District.
- 3) Had Jao Oud, M.9 Koh Klang Sub-district, Koh Landa District.
- 4) Provide the training and support the citizen scientists to participate in monitoring and assessing the status of seagrass.

Output

- 1) Regular bimonthly Seagrass Watch monitoring protocol/pilot areas, collaborate with the related agencies and citizen scientists,
 - 4 times at Had Tungmaipai.
 - 3 times at Had Jao Oud.
- 2) Beach profiling to compare beach morphological changes on Monsoon and Dry Season.

A total of 32 participants completed citizen science training for Seagrass Watch monitoring, consisting of 12 people from the Ban Tha Khlong - Had Jao Oud community and 20 students from the Koh Si Boya Center, Department of Learning Encouragement.

The three permanent 50-meter Seagrass Watch transects at Had Jao Oud are presented below.



The three permanent 50-meter Seagrass Watch transects at Had Thung Mai Pai are presented below.



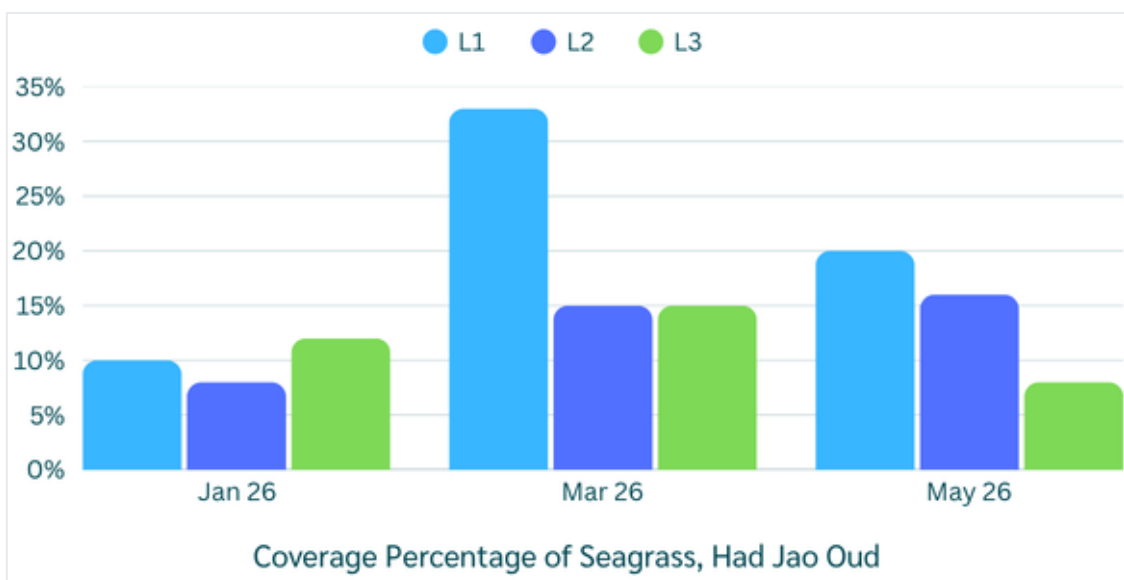
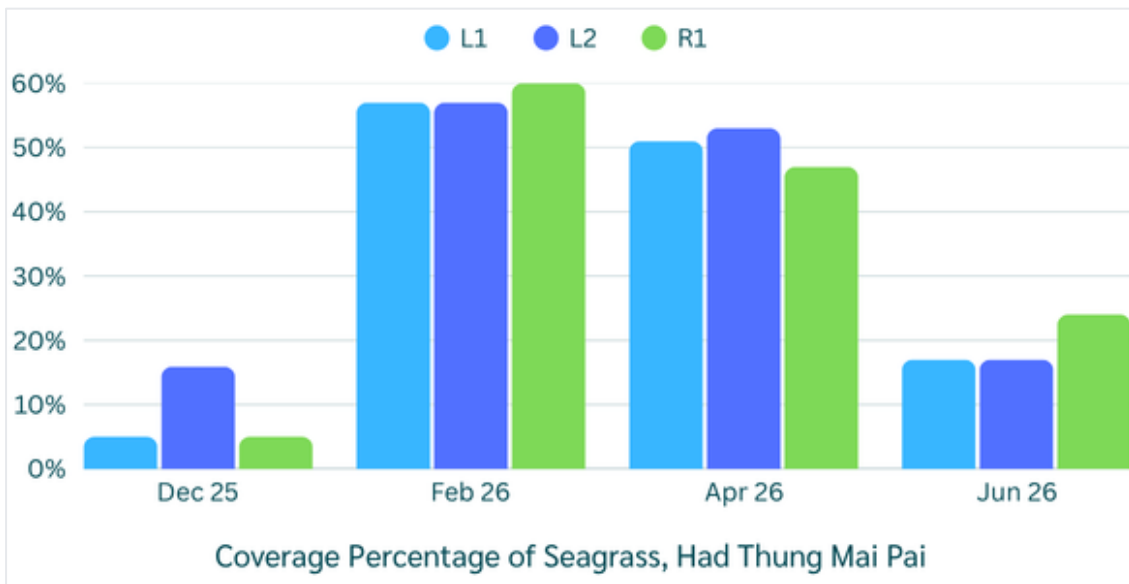
Outcomes

Based on the implementation of regular bimonthly seagrass monitoring in the pilot areas, in integration with citizen scientists, the Marine and Coastal Resources Research Center (Lower Andaman Sea), Department of Marine and Coastal Resources and Green Guardians, the key outcomes regarding the re-equilibrium of the seagrass ecosystem can be summarized as follows:

1) Quantitative Changes and Seagrass Population Structure

During low tide, a survey line was established to 3 permanent 50-meter transects along the coastline and placed the 50x50 cm. quadrats for measuring at equal intervals (5 M.) along the line. The coordinates of the survey points were recorded using a Global Positioning System (GPS) device. Various variables were recorded, including percentage of seagrass cover and seagrass species. Samples of seagrass species that could not be identified visually were collected for laboratory identification.

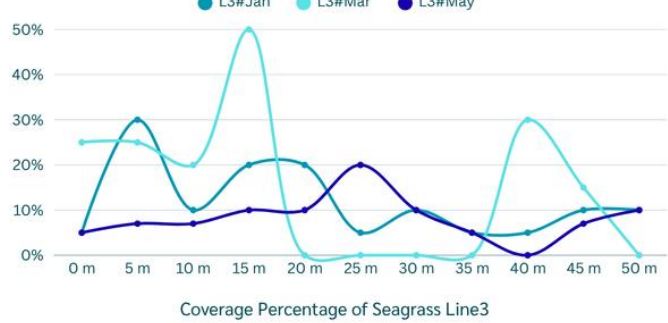
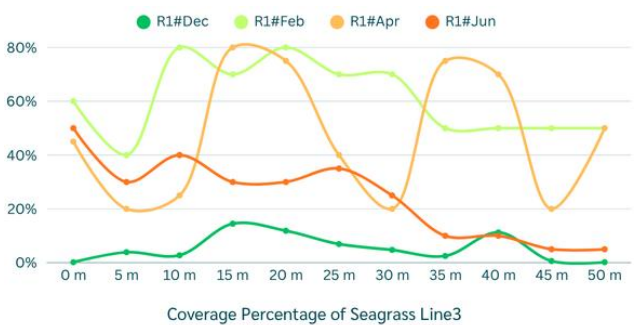
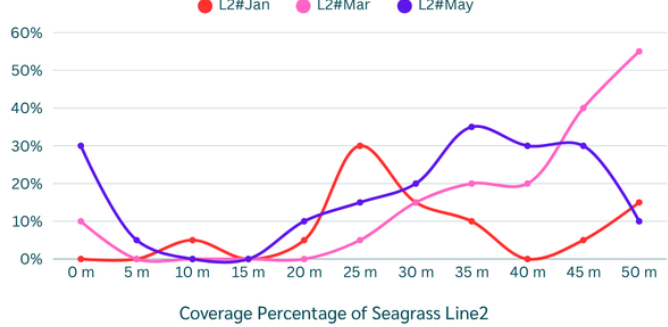
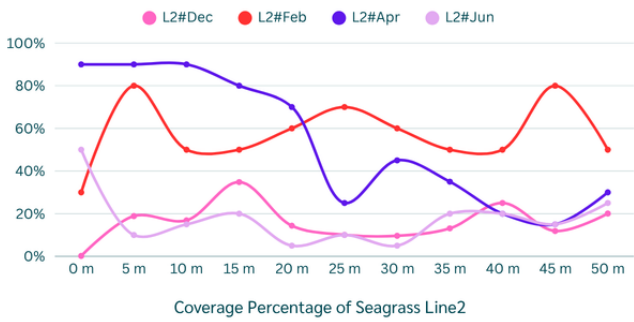
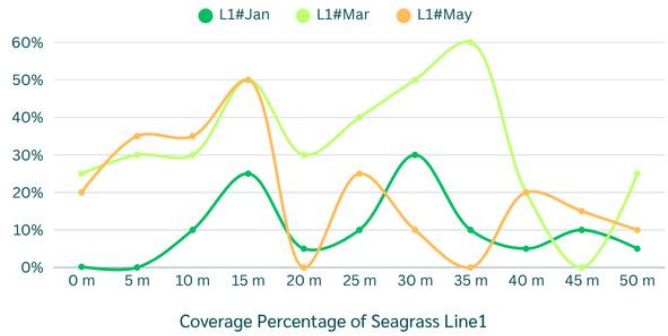
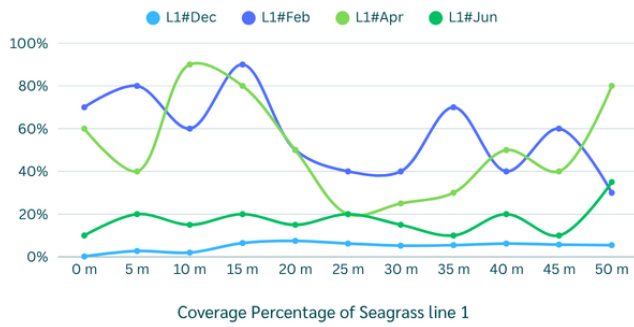
- **Seagrass Coverage area**



Regular field surveys and data collection reveal a positive recovery trend in previously degraded seagrass habitats. At Had Thung Mai Pai, the average coverage percentage **has increased to 34%** (status indicator = Medium, ranging between 9% to 58%) from **a baseline of 1.20% during the August–October 2025 survey** by UNEP Line Transect Method (2004). In comparison, the DMCR's report on the situation of Marine and Coastal Resources and Coastal Erosion in Thailand (2024) showed that 75% of the seagrass beds in Krabi Province were in poor condition, with coverage between 1% and 20%. Similarly, at Had Jao Oud, the average coverage percentage increased to 15% (status indicator = Poor, ranging between 8% to 33%) from a baseline of 8% during the September–November 2025 survey by Spot Check method.

When comparing the coverage area across all survey transects, the highest seagrass coverage generally occurred in February to April, with upward trend moving in the same direction across all pilot areas. This peak coincides with the dry season, during which low rainfall reduces water turbidity and suspended sediments, thereby providing optimal light conditions for seagrass growth. Therefore, variations in seagrass distribution are highly likely driven by seasonal as the part of factor. This observation aligns with the research titled “Seasonal effect on distribution of seagrass in coastal areas of Rayong Province” (Sirimungkara et al., 2016), which found that February exhibited the highest seagrass cover in Ban Phe and Huahin Pungrad subdistrict with the exception of the Rock Garden Village beach area, which peaked in December, Consequently, seasonal variations serve as a major factor influencing seagrass coverage.

However, a comprehensive assessment of seagrass status requires systematic and continuous long-term monitoring. Such long-term data is essential to gain a genuine understanding of the specific impacts affecting these “a new equilibrium” of seagrass ecosystems.



Had Thung Mai Pai

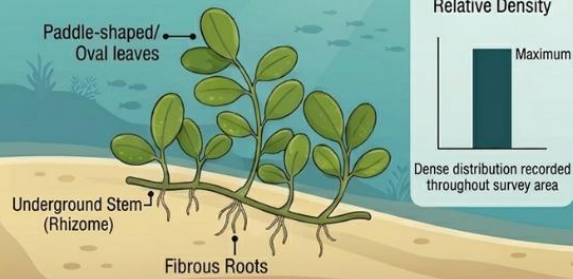
Had Jao Oud

• Distribution and Species Composition

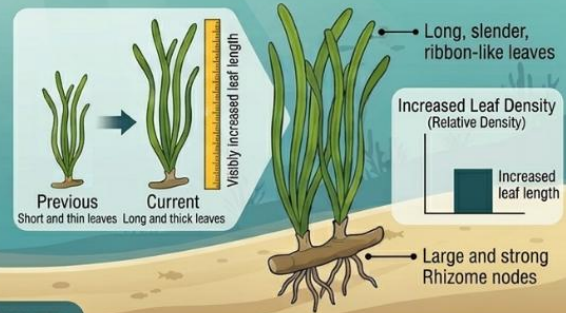
A prominent growth trend is evident among the pioneer species. Specifically, *Halophila ovalis* which have begun to shoot and rapidly expand their coverage over very fine sandy and fine sandy mud substrates. *Halodule uninervis* and *Halodule pinifolia* was additionally recorded. Meanwhile, dominant species with high tolerance and substrate-stabilizing capabilities, such as *Enhalus acoroides*, have shown a steady increase in shoot density. This serves as a positive indicator of the natural recovery process.

Seagrass Species Recorded in Coastal Survey: Thung Mai Phai Beach

Primary Dominant Species: Paddle Grass (*Halophila ovalis*)



Additionally Recorded: Ribbon Grass (*Enhalus acoroides*)



Survey Summary



Paddle Grass is the primary dominant species covering most of the area.



Ribbon Grass shows significantly increased leaf length.

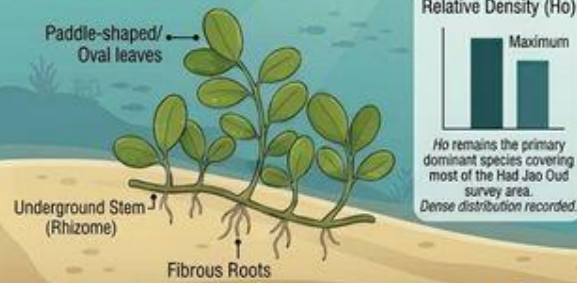


The overall environment remains suitable for seagrass growth.

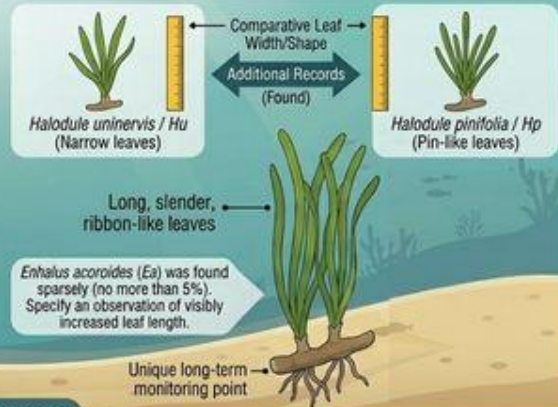


Seagrass Species Recorded in Coastal Survey: Had Jao Oud Beach

Primary Dominant Species: Paddle Grass (*Halophila ovalis* / Ho)



Additionally Recorded Species: *Halodule* spp. & *Enhalus* sp.



Survey Summary



Halophila ovalis (Ho) is confirmed as the primary dominant species across most zones of Had Jao Oud.



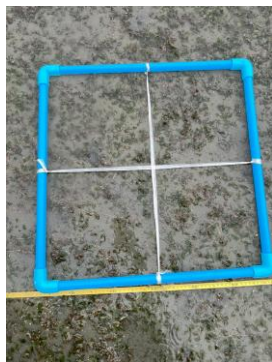
Halodule uninervis (Hu) and *pinifolia* (Hp) were additionally recorded in the survey area.



Enhalus acoroides (Ea) was found sparsely (< 5%), with notable increased leaf length observed.



The ecosystem remains stable and suitable for diverse seagrass growth.



Halophila ovalis



Halodule pinifolia



Halodule uninervis



Enhalus acoroides

2) Indicators of Re-equilibrium

During seagrass bed surveys, Various variables were determined, including exposed or algal cover, the surface type (sand, gravel, and other visible seagrass species), seawater quality data and other environmental data. Additionally, beach profiling was carried out to assess beach morphological changes.

- **Substrate and Sediment Stability**

The root and rhizome structures of the *Halophila ovalis* in the pilot areas effectively trap sediment and reduce tidal and wave energy. This has minimized changes to sandbars and the seabed, creating a favorable environment for seed deposition and seedling establishment. Therefore, Beach profiling is of paramount importance and is directly linked to the recovery of seagrass beds. Because beach ecosystems and shallow-water seagrass ecosystems are interconnected, physical changes to the beach shoreline directly impact the environment where seagrasses live. Integrating biological data (such as the percentage of seagrass cover from the Seagrass Watch methodology) with physical data from beach profiling provides a comprehensive overview. It allows researchers and local communities to clearly understand the correlation between shoreline changes and seagrass health.

Figure 2 Beach Profile of Had Thung Mai Pai, August 2025

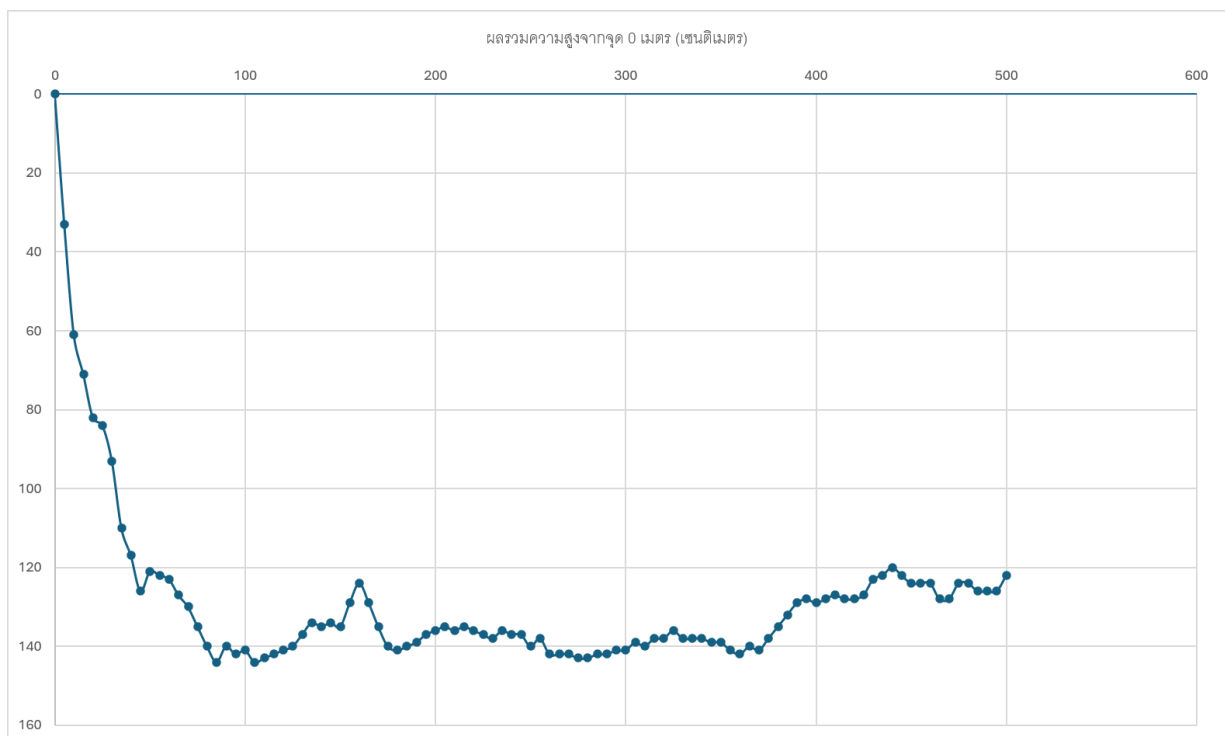


Figure 3 Beach profile of Had Thung Mai Pai, March 2026

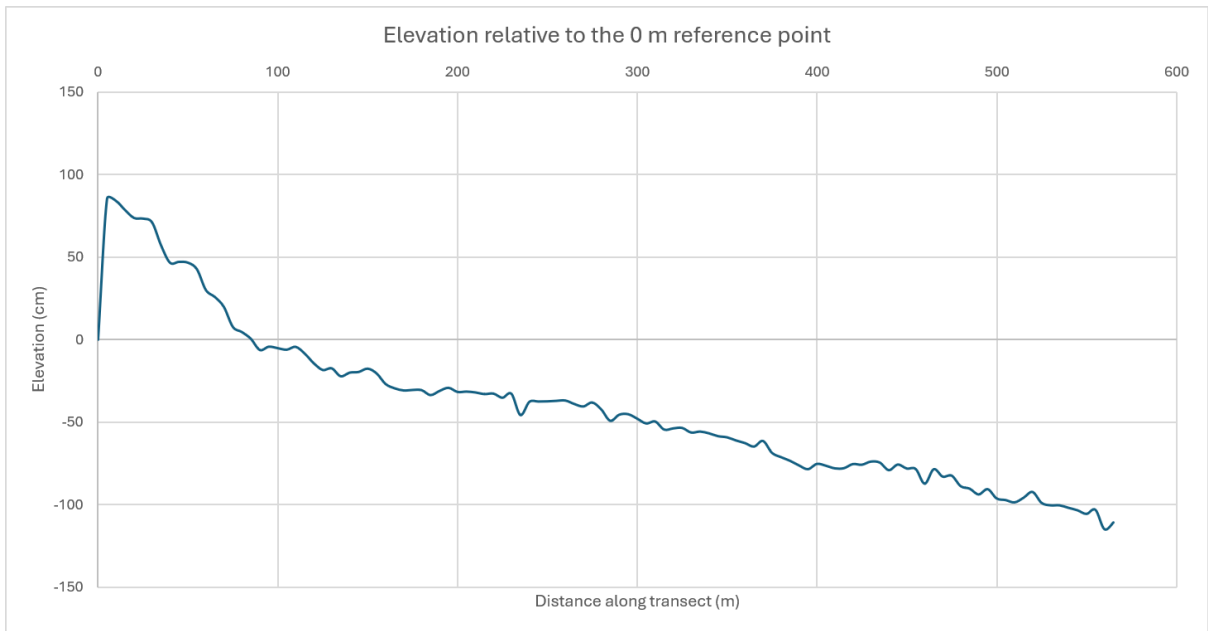


Figure 4 Beach profile of Had Jao Oud, September 2025

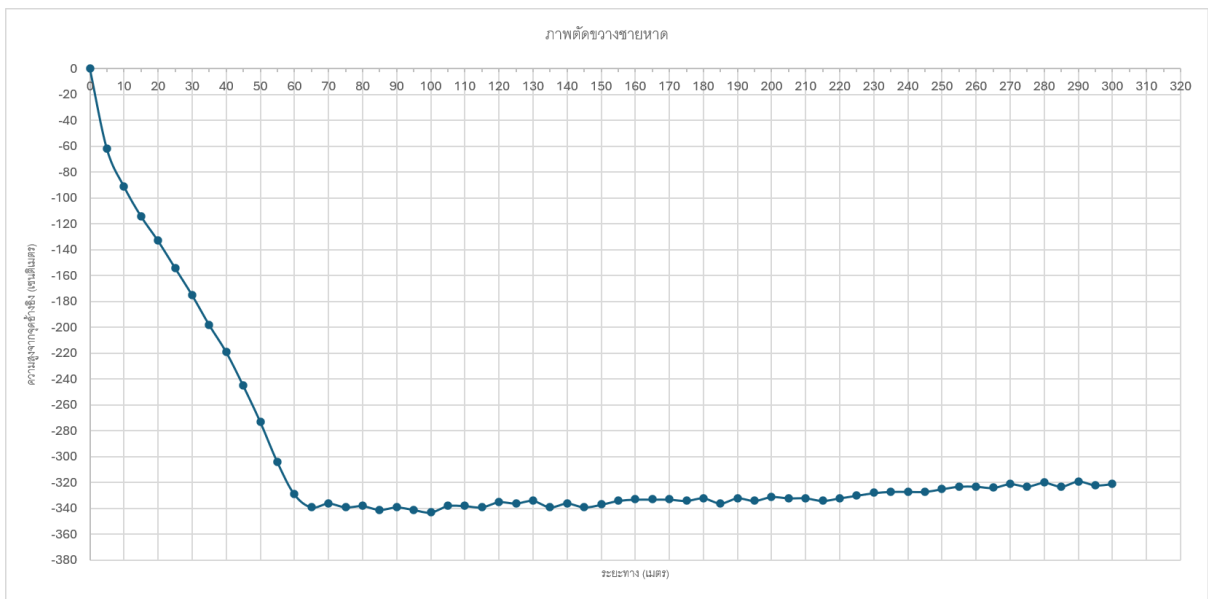
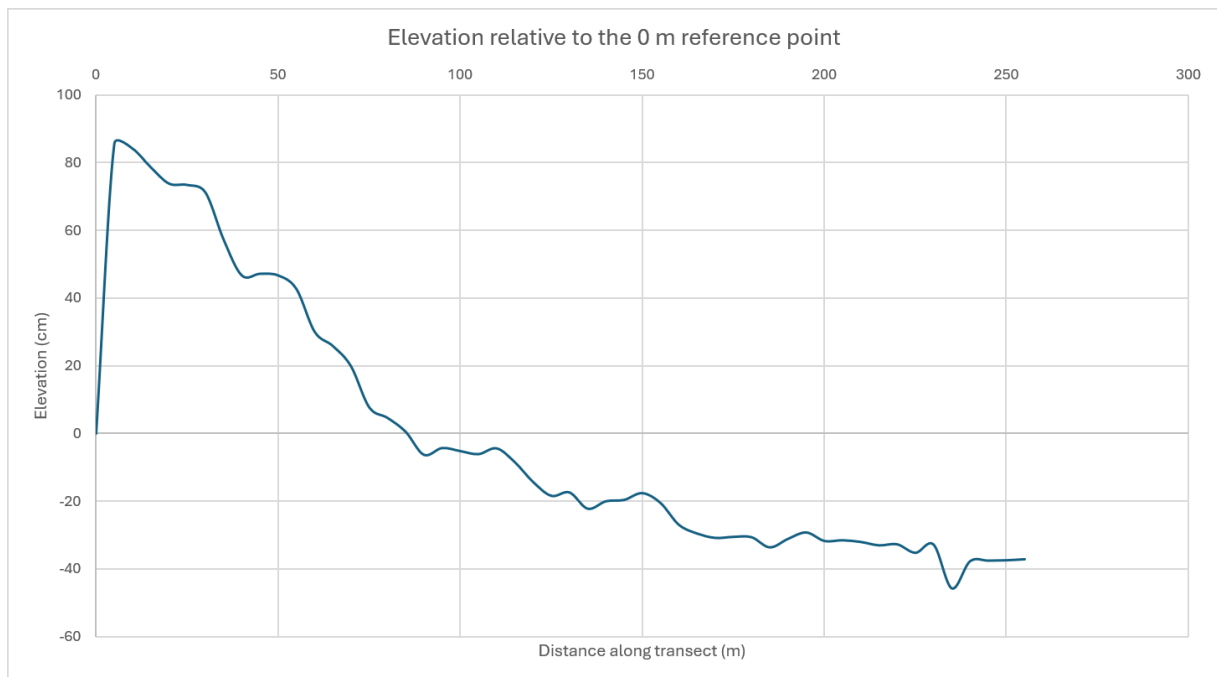


Figure 5 Beach profile of Had Jao Oud, May 2026



Comparing beach profiles between the monsoon and dry seasons helps determine if a decline during specific periods is driven by natural seasonal cycles, wherein beach morphology shifts temporarily and sand naturally returns during the dry season, allowing the seagrass to recover on its own. However, changes in the beach slope measured through profiling on early monsoon indicate the occurrence of beach erosion, which has resulted in massive amounts of sand covering the seagrass bed. This potentially leads to burial, depriving them of sunlight and causing die-offs.

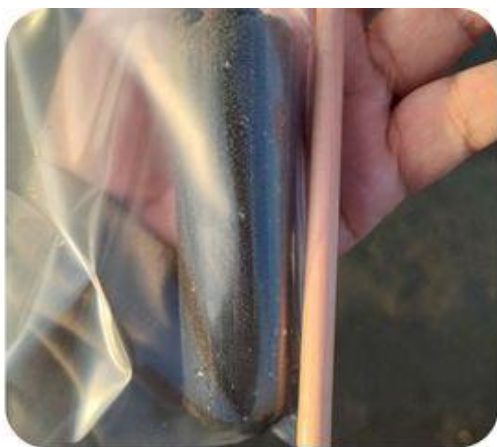


Baseline analysis of soil core samples collected at a depth of 15 cm at Had Thung Mai Pai and Had Jao Oud on August and July 2025, in collaboration with the Marine and Coastal Resources Research Center (Lower Andaman Sea), revealed that sediment particle sizes range from fine sand to very fine sand. When considering the overall picture of the seagrass beds, the area around Had Thung Mai Pai exhibited very fine sand grain size (average 3.20 ± 0.13) while the area around Had Jao Oud exhibited fine sand grain size (average 2.95 ± 0.13).



The organic matter (OM) of Had Thung Mai Pai and Had Jao Oud showed low values at 0.38-0.48% and 0.26-0.46%, in southern Thailand's seagrass beds, the OM value is typically in the range of 1% - 5%. It indicates the soil may lack essential nutrients for growth, causing stunted seagrass growth, clearly evident from the percentage of seagrass cover assessment is 1.20% at Had Thung Mai Pai on October 2025, and 8% at Had Jao Oud on November 2025.

Further observations from the survey at the site revealed that the seagrass (*E. acoroides*) had elongated leaves. This may indicate that the sediment in that area is rich in nutrients and organic matter, or that there has been increased sedimentation of mud, which facilitates the elongation of the leaves to receive sunlight and absorb nutrients. Enlive Foundation collected soil samples for laboratory analysis in monitoring of January and February 2026 because additional observations the *Enhalus acoroides* (Ea) was found showed elongated leaves. It may indicate the sediment in that area has abundant nutrients and organic matter, or there has been increased sedimentation of silt, which facilitates the elongation of the leaves to receive sunlight and absorb nutrients.



Had Thung Mai Pai seagrass bed
(sampling date 02/2026)



Had Jao Oud seagrass bed
(sampling date 01/2026)

- **Return of the Ecological Food Web**

Various small organisms and macrofauna have increasingly begun to inhabit and seek shelter in the area. Furthermore, in certain pilot sites, signs of utilization by large and rare marine animals, such as seagrass feeding tracks, have been detected. This reflects that the ecosystem is successfully transitioning toward a new equilibrium capable of supporting other trophic levels within the food web as shown below.



- **Algae observation and Seawater quality**

On March 7, 2026, EnLive Foundation and a Marine Scientist from Green Guardians joined them assessing the seagrass in the defined area to take a sample of algae, as it covered the seagrass underneath with a thick layer. Three species were identified: *Lyngbya*, *Hypnea*, *Ceramium brevizonatum* as shown below.

These algae were found in dense mats and when touched they appeared to be degrading. About their toxicity, only one of them seems highly toxic to living organisms. *Lyngbya* is a cyanobacteria that forms dense mats and produces toxins like lyngbyatoxin-a and debromoaplysiatoxin. They can cause severe dermatitis with skin and eyes irritation in humans and poisoning in fish and invertebrates (Elsevier, n.d.).

As for *Hypnea* (red alga), these algae show a low toxicity at certain levels. It has anti-inflammatory and antioxidant properties, but they it can also accumulate heavy metals causing potential environmental risks (Seydi et al., 2024). Regarding *Ceramium brevizonatum*, there is no research found on its toxicity. Therefore, it would be interesting to realize observations about their toxicity in the environment.



Lyngbya



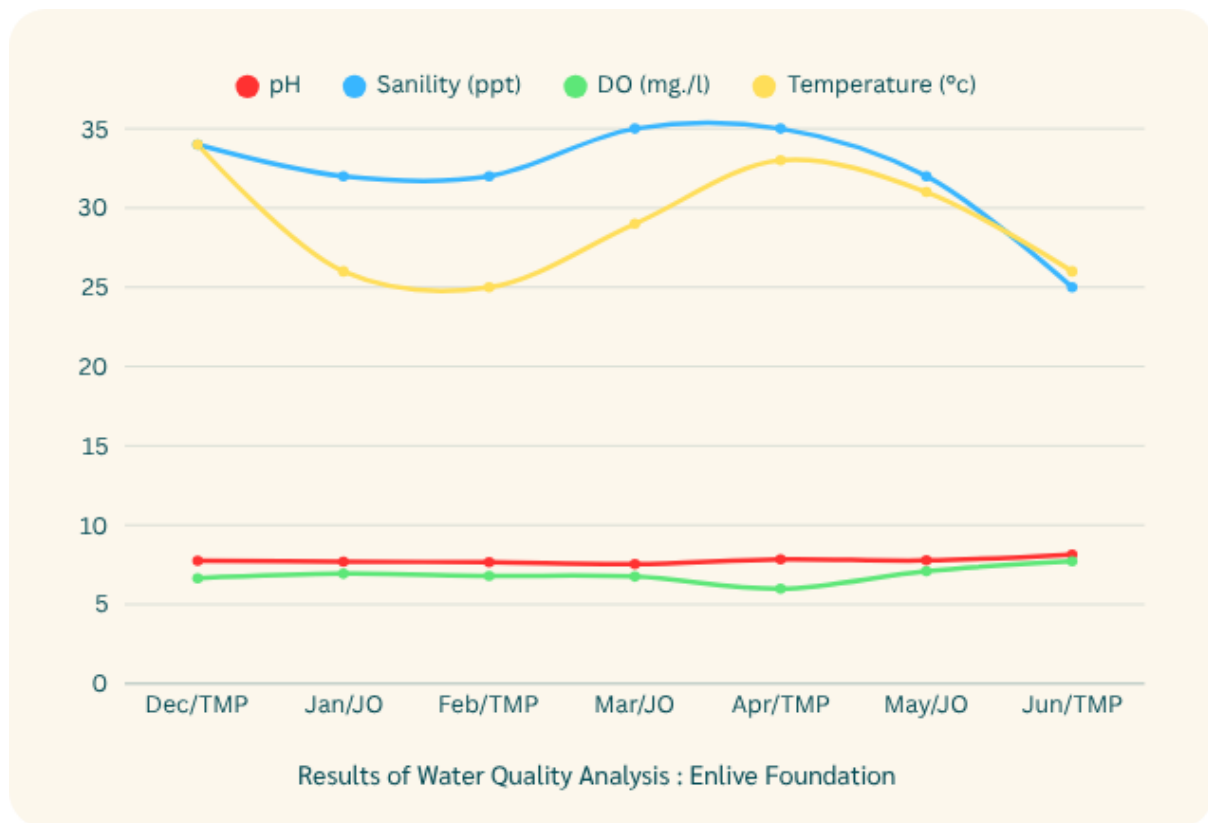
Hypnea



Ceramium brevizonatum



Four parameters of seawater, which include pH, Dissolved oxygen, Salinity and Temperature was measured. The seawater parameters showed normal values. The temperature recorded is within the normal range at 25°C - 34°C. As for the pH value between 7.54 – 8.15, it indicates alkaline conditions which are typical for marine environments where normal values generally range. Dissolved oxygen was measured between 6 and 8 mg/L, indicating good oxygen availability for marine organisms of various sizes. Also, salinity was within the normal range at 32 and 35 ppt and measured at 25 ppt in the monsoon season as shown below.



Furthermore, Enlive Foundation in collaboration with Green Guardian collected the water samples from Had Thung Mai Pai to measure the levels of potentially toxic substance, such as Nitrates, Nitrites, Phosphate, Hydrogen sulfide, Ammonium, Dissolved Oxygen and pH, please see the details on QR code.



3) Achievements in Public Participation (Citizen Science Empowerment)

- **Database Accuracy and Acceptance**

Through systematic training and the provision of field monitoring equipment, citizen scientists and community volunteers are now fully capable of co-creating and updating the seagrass status database with technical accuracy and academic standards.

- **Continuous Surveillance**

The community is actively monitoring and guarding against external threats (such as destructive fishing practices or sedimentation from coastal construction) in conjunction with the regular bimonthly monitoring cycles. This has established an effective and sustainable community-led protection mechanism for the prototype areas.

Experiments on seagrass nursery in earthen pond

Activities

- 1) Nursing of 300 *Thalassia hemprichii* seedlings for evaluate the feasibility of rehabilitation and propagation of seagrass in earthen pond systems.
- 2) Monitor the survival and growth rates, including the optimal environmental factors (water and soil quality).

Output

- 1) Summary of experimental results at 15, 65, and 105 Days post-transplantation of seagrass seedlings in an earthen pond.

Outcomes

On November 2025, Enlive Foundation, in collaboration with Koh Sriboya community, Koh Sriboya Subdistrict Learning Encouragement Center, Department of Learning Encouragement, and Koh Sriboya School, transplanted 300 *Thalassia hemprichii* seedlings in 18 mesh trays, arranged in three rows A, B, and C, with 6 trays per row.

1) Survival and growth rates of the seagrass seedlings

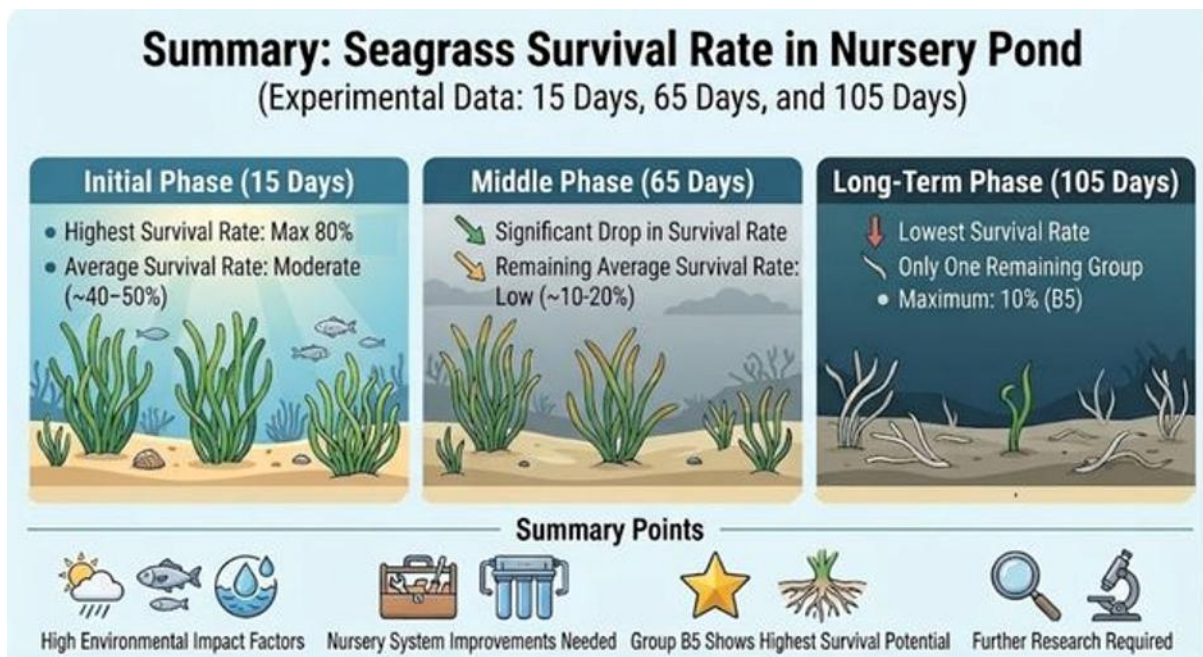
The nursing of seagrass seedlings in an earthen pond system over a 105-day period demonstrated distinct developments across three major phases. The behavioral and growth outcomes are summarized below.

- **Initial/Establishment Phase (15 Days Post-Transplantation):** Seagrass seedlings successfully established themselves in 39% of the trays (7/18), exhibiting rapid rhizome elongation and extensive new shoot production driven by the rich nutrients in the pond sediment. Meanwhile, 33% of the trays (6/18) maintained living seedlings but displayed clear signs of stress, including mild leaf yellowing and shedding within the first week.



- Middle/Significant Survival Decline Phase (65 Days Post-Transplantation):** The Plastochrone Interval (PI), defined as the time required for a single new leaf to emerge in *Thalassia hemprichii*, is significantly shorter than that of *Enhalus acoroides*, typically ranging between 6 and 14 days. Because *T. hemprichii* is classified as an intermediate species with an inherently faster growth rate and a more rapid leaf turnover cycle, the canopy density was expected to show a distinct and noticeable increase by day 65. However, in this experiment, 56% of the trays (10/18) exhibited a complete loss of stems and rhizomes, while the remaining 44% (8/18) maintained a low average survival rate of only 10–20%.
- Loss/Mortality Phase (105 Days Post-Transplantation):** During the 65 – 105 days, detrimental issues such as sediment accumulation on leaf and tray surfaces became prominent. High water turbidity became the primary limiting factor, blocking the sunlight vital for seagrass photosynthesis. Consequently, this prolonged lack of light led to 94% of the trays (17/18) experienced a complete loss of both stems and rhizomes by the end of the study.





2) Experimental Design and Methodology

In conclusion, Seagrass nursing in earthen pond systems for rehabilitation is still feasible. The key to effective management lies in maintaining water clarity to ensure sufficient light penetration to the pond bed, while strictly controlling salinity to prevent excessive fluctuations. The findings from this experiment provide the practical foundation for establishing seagrass hatcheries, ultimately supporting future ecological restoration efforts in natural habitats.

- **Target seagrass species and planting method:** Based on this experimental result, the following methodologies are highly recommended for future experimental trails.
 - Using *Halophila ovalis* as a benchmark will effectively validate the operational efficiency of the earthen pond system and the water management protocols and defer the cultivation of *Thalassia hemprichii* until issues regarding water turbidity and filamentous algae proliferation during the 65–105-day phase is fully resolved, as evidenced by the critical 10–20% survival rate in this experiment.
 - Implement a Polyculture System by experiment with co-planting target seagrass species alongside marine algae, serves as an effective ecological approach to enhance water quality and mitigate turbidity water. The primary mechanism involves nutrient competition; fast-growing macroalgae absorb excess dissolved nutrients (such as nitrogen and phosphorus) derived from decomposing organic matter on the pond bed. Additionally, the physical structure of macroalgae can function as a natural sediment trap, slowing down localized water movement to promote the deposition of suspended solids and ultimately improving water clarity for the underlying seagrass.

Gracilaria spp. is highly recommended because it thrives well in earthen ponds and tolerates wide salinity fluctuations. This species possesses a high capacity for nutrient and waste absorption. Crucially, it does not attach to or entangle seagrass leaves, making it easy to harvest and thin out when biomass becomes excessive. To prevent the macroalgae from outcompeting seagrass for space or causing light limitation

through shading, spatial management approaches such as zoned polyculture or floating mesh/cage systems are strongly recommended.

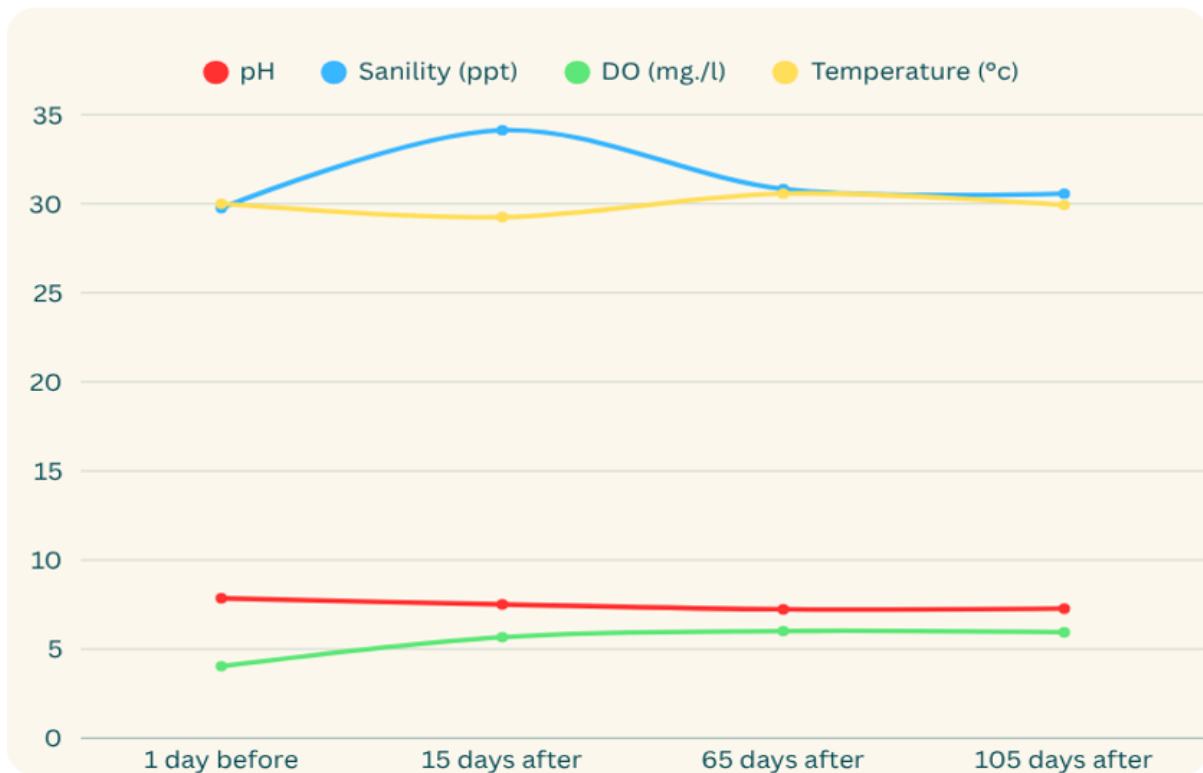
- **Environmental factors (water and soil quality) management:** The Seagrass Nursery Observation by the Enlive Foundation and Green Guardians revealed that certain water quality parameters within the nursery pond limited seagrass growth. In fact, the water temperature was much higher (30°C - 31°C). Then, the pH was lower indicating less alkaline water and so a less suitable environment for seagrass growth. However, dissolved oxygen remained high, suggesting a good availability of oxygen for the organisms as well as the salinity level with a suitable concentration for the environment.

As mentioned earlier, this nursery pond lacks adequate water flow due to its single inlet (red circle), whereas other ponds have multiple inlets (blue circles), which facilitates superior water exchange and minimizes both suspended sediment and benthic accumulation. Furthermore, the lack of vegetation on the earthen dikes exacerbates soil erosion, increasing sedimentation and water turbidity. Additionally, because these dikes are completely unshaded and exposed to direct sunlight, they absorb significant solar radiation. This thermal energy is subsequently transferred to the water through conduction, elevating the water temperature and hindering thermal cooling.



Note. Green Guardians on March 6, 2026

Results of Water Quality Analysis : Enlive Foundation



Seagrass seedlings or rhizomes are planted in trays filled with natural donor sediment represents a highly effective ecological methodology. This muddy sand substrate contains an optimal amount of organic matter, allowing roots and rhizomes to penetrate and anchor effectively. However, water movement in earthen pond systems is naturally more restricted than in open environments. Therefore, the following pre-treatment and preparation protocols are recommended:

- Physical Modification. Prior to planting, the sediment must be sifted to remove large shell fragments, debris, stones, and decaying roots that could mechanically obstruct the elongation of seagrass rhizomes. Furthermore, natural muddy sediments contain high fractions of fine clay particles susceptible, it is highly recommended to apply a 1–2 cm capping layer of clean, coarse sand over the substrate surface after planting.
- Nutrient Management. Such sediments should be blended with clean marine sand at a 70:30 or 60:40 (native soil to sand) ratio to improve substrate porosity and oxygenation. If the native sediment is nutrient-deficient, controlled-release fertilizer (such as Osmocote 13-13-13) may be carefully introduced. The fertilizer granules must be deeply placed at the bottom of the planting trays (approximately 5–7 cm below the sediment surface) to ensure direct root uptake.

Protection of seagrass habitats by creating cage

Activities

- 1) install the appropriate cage with the local context for protection the potential seagrass species and sustainable recovery at Had Thung Mai Pai M.7 Koh Sriboya Sub-district, Nuaklong District.
- 2) Monitor and assess the status of seagrass.

Output

- 1) Phototype of 4x4 m² pyramid-shape cage, installation by collaboration with Koh Sriboya community, Koh Sriboya Subdistrict Learning Encouragement Center, Department of Learning Encouragement.
- 2) Regular monthly seagrass monitoring dataset.



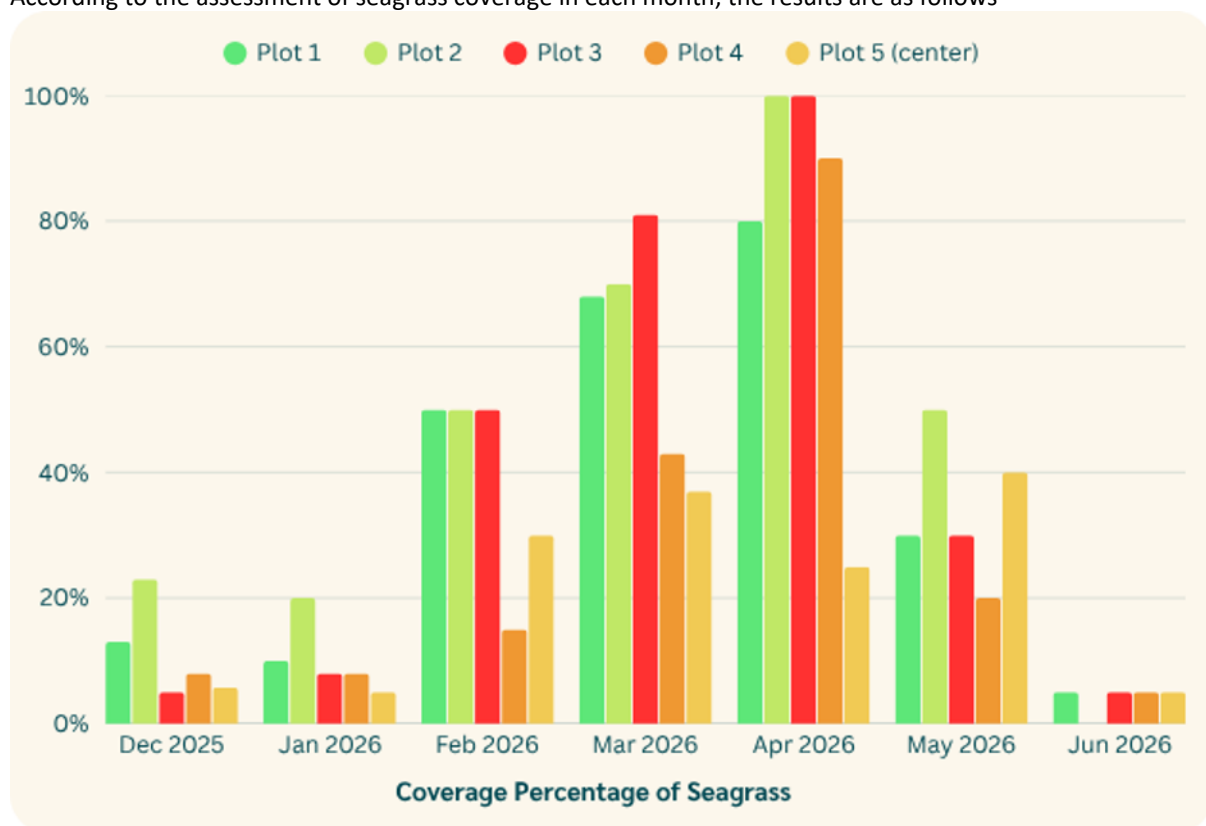
Coordinates: 7.855606°N 98.985128°E , 500 meters distance from the shore.

Outcomes

Concept of a cage installation is not a constraint, but rather the creation of a “Temporary Sanctuary Zone” designed to mitigate grazing pressure from marine herbivores such as dugongs, green turtles, or sea urchins that prefer feeding on tender young leaves or shoots. Constructing a cage provides seagrass with sufficient time to accumulate nutrients in its rhizomes and extend its leaves long enough to withstand grazing. Once the root and rhizome systems are fully established and resilient, the cage can be relocated to restore other degraded patches. Therefore, the mesh must be wide enough to allow seawater, sediments, and small organisms (e.g., crabs, pipefish) to circulate freely, preventing excessive siltation and muddy sediment accumulation. Concurrently, it must be narrow enough to prevent turtles or dugongs from penetrating the enclosure (a mesh size of approximately 5–10 cm is commonly utilized).

1) Quantitative Changes and Seagrass Population Structure

According to the assessment of seagrass coverage in each month, the results are as follows



- **Overall seagrass coverage** showed an increasing trend during the dry season across all permanent plots, with coverage rising from over 50% in February to a peak of 80–100% in April. This upward trajectory indicates successful rhizome anchoring and lateral expansion, which is consistent with the seagrass coverage trends observed outside the cages. However, with the onset of the monsoon season, a heavy accumulation of sediment was observed covering the seagrass beds both inside and outside the cages. Seagrass coverage inside the cages dropped drastically to just 5%, compared to 20% in the outside control areas. This suggests

that water circulation within the cages was restricted, preventing the effective flushing of trapped sediments and subsequently leading to their accumulation on the seagrass blades.

- **Seagrass species** were determined to 2 species, *Halophila ovalis* as the primary dominant species (95%) and *Enhalus acoroides* was sparsely recorded, no more than 5%, with specify an observation of visibly increased leaf length. Particularly in April, the canopy height of *Enhalus acoroides* inside the cages reached a maximum of 53 cm. In contrast, when surveying outside the cages, the maximum leaf length found was only 15 cm. Moreover, the highest response to cage protection was observed both *Halophila ovalis* and *Enhalus acoroides*, which demonstrated a significantly greater rate of shoot density increase than the outside control plots.



Inside the cage



Outside the cage

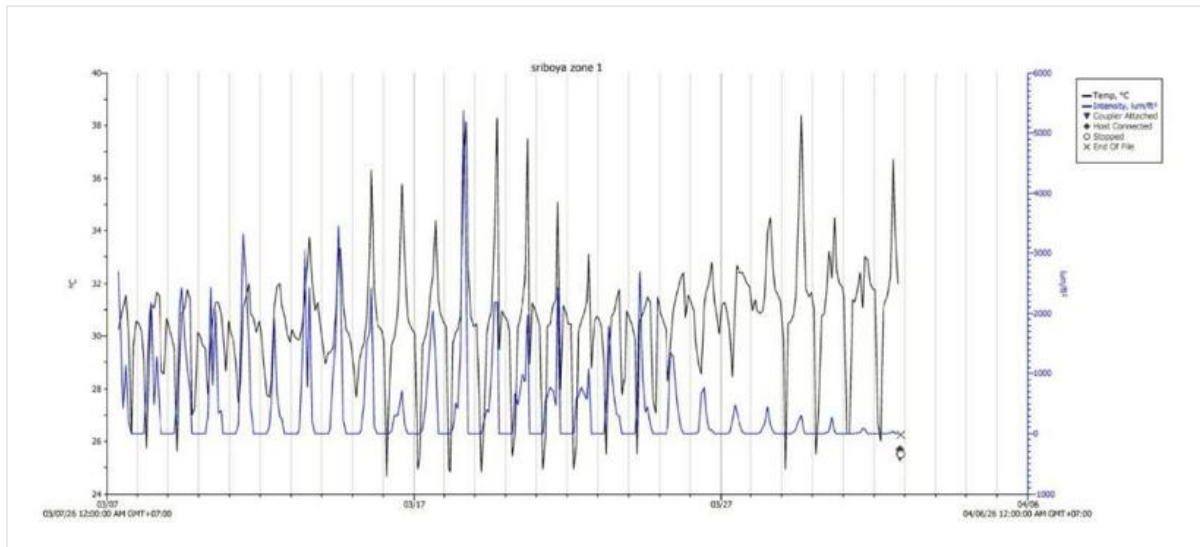
2) Comparison of Ecological Parameters Inside and Outside Cages

The comparison of ecological parameters inside and outside the protective cages is presented in Table 2.

Table 2 Comparison of Ecological Parameters Inside and Outside Cages

Comparison Parameter	Inside	Outside
Herbivore Grazing Pressure	Extremely low (100% effective protection against dugongs and sea turtles)	High (continuous grazing on shoots and leaves)
Leaf Growth & Development	Long leaves, growing to the species' full genetic potential	Short leaves, stunted growth with visible bite marks
Rhizome Health & Maturity	Maximum starch and nutrient accumulation; healthy clonal branching	Rhizomes may be damaged or traumatized by excavation
Environmental factors	No significant difference was found	No significant difference was found
Algae observation	Less coverage was observed	More coverage was observed
Sediment accumulation	High rate of sediment accumulation in Monsoon season	Low rate of sediment accumulation in Monsoon season

Additionally, data loggers have been installed to record temperature and light intensity, as shown below. These critical indicators enable a more continuous and efficient analysis, serving as the cornerstone for establishing a reliable and sustainable Seagrass Re-equilibrium database.



3. Restoration/conservation of targeted coral reefs

3.1 Targeted coral reefs in Krabi restored and conserved through the Green Fins network

Krabi Province is an important area for marine tourism in Thailand, with outstanding natural resources, especially coral reefs, which are fragile ecosystems but are of great importance to local biodiversity and the economy of the area. However, marine tourism activities, especially snorkeling and scuba diving, can affect coral reefs, such as coral breakage, marine animal disturbances, and marine debris problems.

Therefore, to conserve, mitigate impacts, and restore this coral ecosystem, the Thailand Development Research Institute (TDRI), under the project “The Integration of Natural Capital Accounting in Public and Private Sector Policy and Decision-making for Sustainable Landscapes”, has implemented activities according to Output 2.3.3: Conserve, mitigate impacts, and restore degraded habitats in watershed forests and coastal marine ecosystems—covering a total area of 40,000 hectares in Krabi Province.

The project is organized in collaboration between TDRI, Marine Resources Conservation Division and the Marine Resources Research and Development Institute, Department of Marine and Coastal Resources (DMCR), through a workshop on Project to Raise the Standards of Marine Tourism Operators in Accordance with the Environmentally Friendly Operations Guidelines (Green Fins) in Krabi Province.

The aim is to reduce the environmental impact of scuba diving, snorkeling and other water sports by setting 15 environmental standards: 1) No stepping or stand on coral reefs; 2) No stirring the sediment; 3) No chasing or touching marine wildlife; 4) No feeding fish; 5) No littering in the sea; 6) No collecting marine life, dead or alive; 7) No gloves; 8) No shark fining; 9) No spear fishing; 10) No anchoring on coral reefs; 11) Don't buy coral or

marine life souvenirs; 12) Use mooring buoys; 13) Wear a life jacket; 14) Volunteering in environmental work; and 15) Supporting environmental conservation to protect coral reefs and marine life.

Coral Reef Conservation in Krabi, through the Green Fins network, aims to provide training to diving tourism operators on the implementation of Green Fins standards and to organize training courses for Green Fins assessors and to conduct assessments and provide advice to tourism business operators, as well as to create learning materials for participation in monitoring the status of coral reefs using the Reef Watch method. The training was held from 24-30 May 2025 at the Phi Phi Harbor View Hotel, Phi Phi Island, Krabi Province (as in Appendix 3: Poster and vinyl banner).

The results of the training are as follows:

3.1.1 Green Fins and Reef Watch Monitoring Training

Objectives

- 1) To support and participate in activities to improve the standards of marine tourism operators in Krabi Province according to the guidelines for environmentally friendly operations (Green Fins) to achieve concrete results.
- 2) To promote Green Fins environmental standards.
- 3) To develop the potential of diving operators to participate in monitoring coral reef health through Reef Watch monitoring.
- 4) To protect and conserve coral reefs to maintain their completeness, beautiful and sustainable use, especially the coral reefs in Krabi Province, which **cover a total area of approximately 2,246 hectares**.

Training details

Training venue and date

The Green Fins and Reef Watch Monitoring training was held on May 24, 2025, from 08:30 AM to 05:30 PM at the Phi Phi Harbour View Hotel, located on Phi Phi Island in Krabi Province, Thailand (as in Appendix 4).

Participants

Participants in the Green Fins and Reef Watch Monitoring training included officials from the Department of Marine and Coastal Resources, Department of National Parks, Wildlife and Plant Conservation, Thailand Development Research Institute, Department of Tourism, marine tourism operators, divers and related personnel, totaling 33 persons (11 males and 22 females). There were a total of 22 applicants for the training, of which 18 people actually attended the training (16 diving and snorkeling tour operators) and 15 related personnel (as in Appendix 5).

Keynote Speakers

- 1) Mr. Niphon Phongsuwan – Green Fins Network Leader, Thailand
- 2) Ms. Petchrung Sukpong – Green Fins Assessor Trainee, Thailand

Training Activities

The Green Fins and Reef Watch Monitoring Training commenced with participant registration, followed by the Opening Ceremony and Welcome Remarks delivered by Ms. Suhatai Praisankul from the Department of Marine and Coastal Resources (DMCR) and Assoc. Prof. Dr. Adis Israngkura from the Thailand Development Research Institute (TDRI), as per the attached agenda (Appendix 6).

Morning Session: Theory

The morning session focused on theoretical knowledge, covering the following topics:

- Operation of Environmentally Friendly Diving Tourism Activities (Green Fins)
- Coral Reef Monitoring and Survey using the Reef Watch Method

These sessions were led by Mr. Niphon Phongsuwan from the Department of Marine and Coastal Resources and Ms. Petchrung Sukpong from the Biodiversity-Based Economy Development Office (Public Organization).

Afternoon Session: Practical and Theory

In the afternoon, participants engaged in the Practical Session of coral reef survey training (snorkeling) at Ao Sam Had, Phi Phi Island, Krabi Province, under the guidance of Mr. Niphon Phongsuwan.

Following the field session, participants returned to the conference room to continue with theoretical sessions, which included:

- Summary of Coral Reef Survey Results and Data Entry into the Reef Watch Database, presented by Mr. Niphon Phongsuwan
- Questionnaire on the Benefits of Green Fins Certification, conducted by Assoc. Prof. Dr. Adis Israngkura and the research team from TDRI

Closing Session

The training concluded with the Certificate Ceremony and Closing Remarks, delivered by Ms. Suhatai Praisankul from the Department of Marine and Coastal Resources.

Training content

Theory Session

- Operation of Environmentally Friendly Diving Tourism Activities (Green Fins)
 - What is Environmentally Friendly Diving Tourism (Green Fins)?
 - Green Fins Code of Conduct
 - Benefits of Green Fins Membership
 - Certification Process for Environmentally Friendly Dive Operators (Green Fins)
- Coral Reef Monitoring and Survey using the Reef Watch Method

Practical Session

- Reef Watch monitoring training (Snorkeling)

Output

- Conducted a one-day training session on 24 May 2025 for 20 diving and snorkeling tour operators in Krabi Province on Green Fins and Reef Watch monitoring.
- Published 60 copies of learning materials for monitoring the status of coral reefs using the Reef Watch method.
- Diving and snorkeling tour operators gained knowledge about Green Fins standards and coral reef conservation.
- Dive operators in Krabi adopt the Green Fins Code of Conduct and become the Green Fins network after the training.

Outcome

- Dive operators have the skills, knowledge and understanding operating according to Green Fins standards.
- Participation of dive tourism operators, tourists, officials, and relevant stakeholders in the protection and conservation of coral reefs, while promoting the role and image of the private sector in caring for coral reef tourism in Thailand.
- Coral reefs in various tourist destinations remain healthy, beautiful, and can be used sustainably, especially coral reefs in Krabi Province.

Budget

Budget to support Green Fins and Reef Watch monitoring training under the project “Integration of Natural Capital Accounting in Public and Private Sector Policy and Decision-making for Sustainable Landscapes”, Output 2.3.3: Conserve, mitigate impacts and restore degraded habitats in watershed forests and coastal marine ecosystems (total area of 40,000 ha in Krabi province) totaling THB 255,360.00.

3.1.2 Advance Green Fins Assessor Training

Objectives

- 1) To support and participate in activities to improve the standards of marine tourism operators in Krabi Province according to the guidelines for environmentally friendly operations (Green Fins) to achieve concrete results.
- 2) To promote Green Fins environmental standards.
- 3) To protect and conserve coral reefs to maintain their completeness, beautiful and sustainable use, especially the coral reefs in Krabi Province, which cover a total area of approximately 14,000 rai.

Training details

Training venue and date

Advance Green Fins Assessor Training was held on May 25-29, 2025, from 08:30 AM to 04:30 PM at the Phi Phi Harbour View Hotel, located on Phi Phi Island in Krabi Province, Thailand. As per the attached agenda (Appendix 7).

Participants

Participants in the Advance Green Fins Assessor Training included officials from the Department of Marine and Coastal Resources, Thailand Development Research Institute, Department of Tourism, potential professional divers and related personnel, totaling 20 persons (8 males and 12 females).

The Green Fins assessors are a total of 7 persons (4 males and 3 females), 6 from government agencies, namely the Department of Marine and Coastal Resources and the Department of National Parks, Wildlife and Plant Conservation, and 1 from the private sector (as in Appendix 8).

Keynote Speakers

- 1) Mr. Niphon Phongsuwan – Green Fins Network Leader, Thailand
- 2) Ms. Petchrung Sukpong – Green Fins Assessor Trainer, Thailand
- 3) Ms. Ornanong Pengchumru – Green Fins Assessor Trainer, Thailand
- 4) Ms. Sathika Phaokant – Green Fins Assessor Trainer, Thailand
- 5) Ms. Nararat Chantarawa - Green Fins Assessor, Thailand



Part 2: Agenda

DAY 1

Location: Classroom

Participants: Candidates and Reef-World trainers

Objectives:

- Understand the Green Fins approach
- Understand the role of National Teams
- Develop a site-specific Green Fins awareness raising presentation for operator staff
- Feel confident in delivering the presentation

Facility and equipment requirements:

- Classroom access 9am - 5.30pm
- Refreshments and lunch

Subject	Content
Overview of the Green Fins Approach	What is Green Fins?
	Who is Green Fins?
	Green Fins application in country or site
	Green Fins memberships
Understanding the assessor role	Green Fins National Teams
	Outline of assessor tasks
Awareness raising workshop	The aim of these sessions
	How to incorporate behaviour change principles and deliver inspiring presentations
	Presentation demonstration
	Adapt the presentation for site
An overview to the Green Fins assessment system	Introduction to the assessment system
	Familiarising candidates with the Assessor Manual

DAY 2

Location: Classroom and visit to local operators (if applicable)

Participants: Candidates and Reef-World trainers

Objectives:

- Understand the Green Fins assessment process in detail
- Understand how to use the Assessor Manual criteria to score assessments and choose action points for operators
- Feel confident in delivering a feedback session
- Learn how to talk about Green Fins to local operators and recruit them to the network

Facility and equipment requirements:

- Classroom access 9am - 5.30pm
- Refreshments and lunch
- Transport to operators (if not walking distance)

Subject	Content
The assessment day	Assessment preparation
	How to conduct the assessment
	Scoring an assessment and selecting action points
	How to deliver a feedback session
	Member packs
Member recruitment workshop	Aims of recruitment
	How to recruit new operators
	Demonstration of operator registration on Green Fins Hub
	Practice with local operators

DAY 3

Location: Classroom and local diving

Participants: Candidates and Reef-World trainers

Objectives:

- Demonstrate diving skills to a standard to become a Green Fins assessor
- Learn how to deliver in-water aspect of assessment
- Feel confident in using Green Fins assessor digital tools

Facility and equipment requirements:

- Classroom access for a half day (morning or afternoon)
- Refreshments and lunch
- Dive gear for candidates
- Swimming pool hire or dive site with a sandy bottom for skills dive
- Boat and transport hire (if applicable)

Subject	Content
Assessor dive skills (in water)	Pre-dive briefing
	Practice safety and buoyancy skills
	Practice assessor positioning
	Debrief
Green Fins digital workshop	Demonstrations of key features of Green Fins Hub
	Interactive session with candidates (laptops needed)
	A guide to the Community Forum
Preparation for the following two days	Assign groups, roles and confirm other logistics
	Practice delivering the awareness raising presentation
	Brief for the assessment days



DAY 4 AND 5

Location: Local operators to complete assessments

Participants: Candidates and Reef-World trainers

Objectives:

- Participate in all aspects of real assessments including gathering information, in-water assessment, awareness raising presentation, feedback session delivery and reporting.

Facility and equipment requirements:

- Dive gear for candidates
- Transport to and from operators
- Refreshments and lunch

Subject	Content
Assessments of operators	3x candidates join each of the Reef-World trainers on real Green Fins assessments
	Upload reports to Green Fins Hub
	Daily debrief

DAY 6

Location: Local operators to complete assessments

Participants: Candidates, Reef-World trainers and other key decision makers for Green Fins implementation

Objectives:

- Complete all administrative tasks from assessment days
- Graduate as assessors or coordinators
- Complete a Site Action Plan

Facility and equipment requirements:

- Classroom access 9am - 5.30pm
- Refreshments and lunch

Subject	Content
Administrative tasks from assessment days	Finalise all assessment reports
	Complete any leftover tasks to graduate
Graduation ceremony	Assessors and coordinators receive their ID cards and certificates
Site Action Plan	Recap of the Green Fins approach
	Learnings and assessment data analysis from the training week
	Develop a Site Action Plan <ul style="list-style-type: none"> • What roles does everyone expect to be able to play within the Green Fins structure? • Develop a clear strategy with targets and timelines and plan for conducting Green Fins activities at the site • Consider long term application of Green Fins, and the locally applicable objectives to address

Output

- Conducted the Advanced Green Fins Assessor Training Course (5 days: 25–29 May 2025) for 10 potential professional divers, and 10 organizer team.
- Evaluate and provide advice to diving tourism operators in Krabi Province.
- Publish various printed media related to raising the standards of marine tourism operators in accordance with environmentally friendly operations (Green Fins).

Outcome

- Green Fins assessors in Thailand increase
- Dive shop operators in Krabi province are assessed and passed the Green Fins standard.
- Coral reefs in various tourist areas are restored.
- Cooperation between the government and private sectors in conserving marine resources.

Budget

Budget to support Advance Green Fins Assessor Training under the project “Integration of Natural Capital Accounting in Public and Private Sector Policy and Decision-making for Sustainable Landscapes”, Output 2.3.3: Conserve, mitigate impacts and restore degraded habitats in watershed forests and coastal marine ecosystems (total area of 40,000 ha in Krabi province) totaling THB 570,444.00.

Links to Summary Videos

Summary videos of the Green Fins and Reef Watch Monitoring Training, along with the Advanced Green Fins Assessor Training, please visit the Green Fins website: https://drive.google.com/file/d/1j3BeDHaxJ_TWukNDh867YWMriO1QScCN/view?usp=sharing, and <https://naturalcapital.care/>

Under **Output 2.3.3**, the Thailand Development Research Institute (TDRI), as the lead service provider, in close consultation with relevant government agencies and the Green Fins network, facilitates and co-finances the implementation of restoration and conservation activities in targeted coral reefs within Krabi Province. These activities directly support the **Key Activities** of the project, which focus on **conserving, mitigating impacts, and restoring degraded habitats in coastal marine ecosystems, covering a total area of 40,000 hectares**. The initiative demonstrates participatory implementation, capacity building, and collaboration between government and private sectors, consistent with the Output’s objectives.

Aligned with the project’s **Key Deliverables**, the activity contributes to the **restoration and conservation of selected coral reefs**, adoption of Green Fins environmentally friendly standards by local diving and snorkeling operators, and enhanced coral reef monitoring through the Reef Watch program. By integrating training, environmental awareness, and sustainable tourism practices, the project strengthens ecosystem resilience, promotes long-term stewardship of coral reefs, and ensures the sustainable use and protection of marine resources in Krabi Province.

3.2 Monitoring and Evaluation of the Shallow Coral Reef Recovery at Had Phra Nang

The shallow coral reef ecosystem around Railay-Pranang Beach, Krabi Province, is one of the marine ecosystems that is economically, socially, and environmentally important due to its high biodiversity, which has played a role as a nursery for marine life and has been an important resource base for the ecotourism economy in the Ao Nang-Railay area for a long time. However, in the past decade, the coral reefs are experiencing degradation due to a number of factors, including climate change, coral bleaching, degradation from seasonal storms, and increased tourist and tour boat activities that may unintentionally impact the reefs.

Following the massive coral bleaching phenomenon of the past several years, the Railay-Laem Phra Nang tourism entrepreneurs' network has reported signs of recovery in some coral species and marine life, indicating the abundance of several coral reef groups. However, systematic empirical data is still lacking, which is essential for assessing the "recovery trajectory" and appropriate management. This information is also an important basis for planning resource management and managing the coastal tourism areas of Krabi Province in the long term.

One effective and sustainable approach is to establish a network of citizen scientists, empowering community members, tourism businesses, dive operators, students, and youth with the knowledge, understanding, and skills to monitor coral reef status using accepted standards. The project utilizes the "Reef Watch" coral reef assessment technique, a tool developed by the Green Fins Network, designed to enable citizens to accurately collect basic coral reef data and align with responsible marine tourism principles. The analyzed data can be uploaded and stored in the Green Fins Thailand database for use in planning and resource management by relevant agencies.

Public participation as "Reef Watchers" not only continuously increases ecological data sets, but also fosters awareness, cherish, and co-management among local stakeholders, which is the heart of sustainable marine resource conservation at the provincial and national levels.

Objectives

To strengthen the entrepreneur as the role of citizen scientists for monitoring the shallow coral reef, use the Reef Watch Assessment Technique, in Laem Pranang-Railay, Ao Nang Sub-district, Muang District.

Activities

- 1) Organizing the Reef watch workshop and conducting the shallow coral reef monitoring.
- 2) Reporting in the Green Fins Thailand database

Outputs

- 1) Reef Watch training workshop held on September 21 - 22, 2025 and June 15-16, 2026
- 2) Reef Watch Dataset of September 2025 and June 2026 reported in the Green Fins Thailand Website.

Outcomes

The Enlive Foundation utilized the "Reef Watch" coral reef assessment technique—a tool developed by the Green Fins Network to empower citizens to accurately collect basic marine data while aligning with responsible tourism principles.

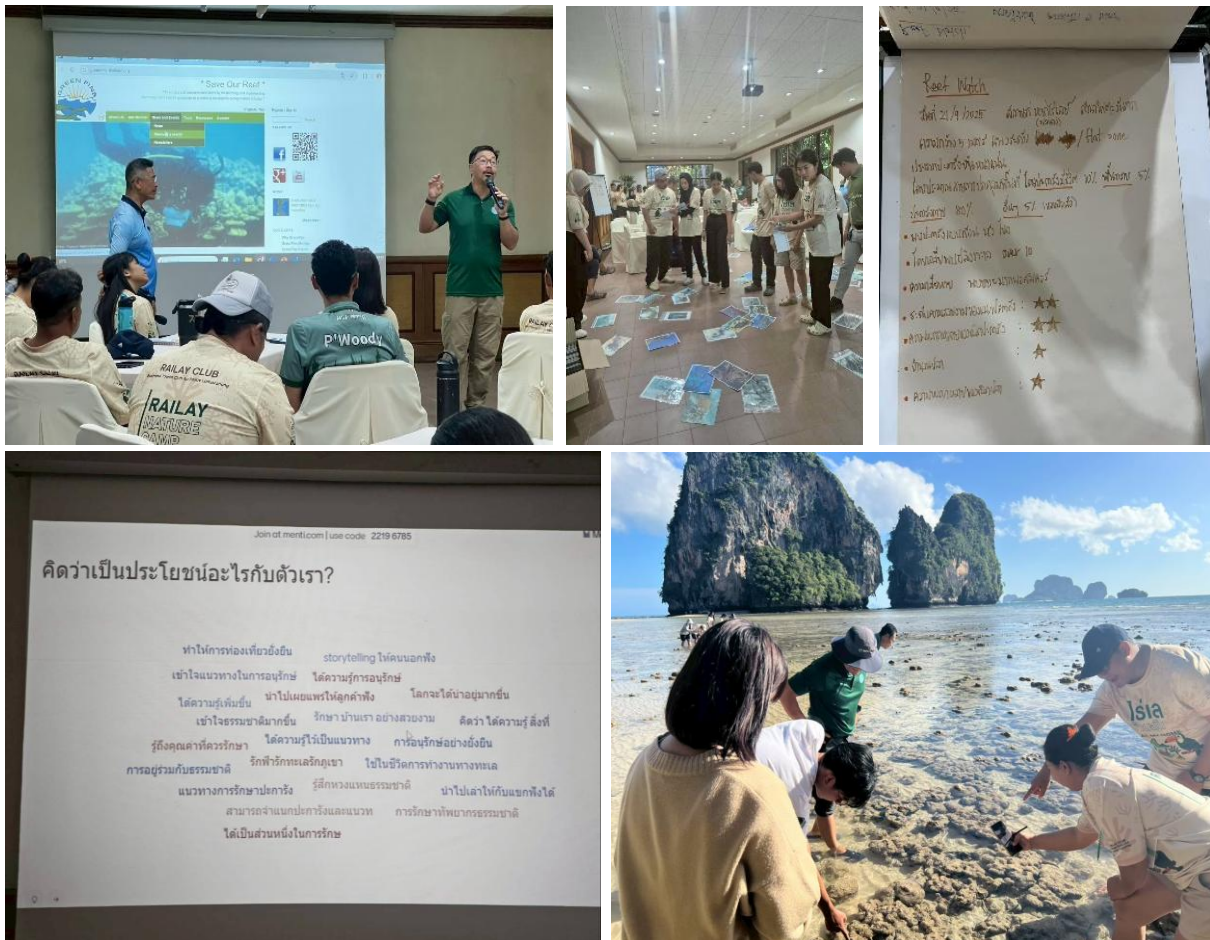
Supported by expert lecturers graciously provided by the Marine and Coastal Resources Research Center (Upper Andaman Sea), Phuket Province, the foundation organized training workshops for entrepreneurs, employees, and officers of the Ao Railay Laem Phra Nang Tourism Business Club. The initiative successfully trained 28 participants on September 21–22, 2025, and another 31 participants on June 15–16, 2026.

This initiative reflects a strong collaboration between the Enlive Foundation, local stakeholders, and both government and private organizations. Its goal is to strengthen the capacity and skills of a volunteer citizen scientist network to monitor shallow coral reefs in the Had Phra Nang and Railay areas, which face ongoing pressures from mainstream tourism and coral bleaching. Past surveys have shown that various shallow coral species recovered significantly during the COVID-19 pandemic, making it imperative that local stakeholders actively monitor and protect these fragile resources. The key outcomes can be summarized as follows

- 1) Significant Ecological Recovery (Post-COVID Recovery): Past surveys revealed that various shallow coral species in the Ao Railay and Had Phra Nang areas recovered significantly during the COVID-19 pandemic, largely due to the temporary halt in tourism activities which allowed nature to regenerate.
- 2) Persistent Environmental Threats (Ongoing Threats): Despite this period of recovery, these fragile marine ecosystems continue to face intense, ongoing pressures from mainstream tourism and coral bleaching events.
- 3) Strong Multi-Stakeholder Collaboration: The initiative fostered concrete cooperation among the Enlive Foundation, government bodies (the Marine and Coastal Resources Research Center, Upper Andaman Sea), private sectors, and local businesses under the Ao Railay Laem Phra Nang Tourism Business Club.
- 4) Growing Citizen Scientist Network: Local volunteers successfully enhanced their skills to become capable citizen scientists, utilizing the Green Fins Network's "Reef Watch" technique to collect accurate, scientifically sound coral reef data.
- 5) Improved Knowledge & Skills: Assessment scores for 'Reef Watch' techniques, coral species identification, and reef status assessment in the second training session showed clear improvement compared to the first, with the average score improving from 50% to 70%.

Had Phra Nang Shallow coral reef survey analysis, using the Reef Watch Technique, has been uploaded and stored in the Green Fins Thailand database. Had Phra Nang Shallow coral reef survey analysis, using the Reef Watch Technique, has been uploaded and stored in the Green Fins Thailand database. Follow the data is available at: <https://www.greenfins-thailand.org/module.php?name=reefwatch&pg=view&rwid=30931>

Reef Watch Training on September 2025




Reef Watch Training on June 2026



The Green Fins Thailand Reef Watch Database survey record is presented below.

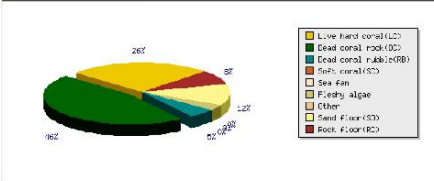
6/25/20 7:28 PM Reef Watch Result



Reef Watch Result

Date: Jun 15, 2020
 Location (Province/Island): Krabi / Happy Island
 Latitude:
 Longitude:
 Reef width: 0 m.
 Maximum depth of reef: 0 m.
 Reef topography at the dive site: Gentle Slope from shore
 Reef type: Patch reef (patches of corals scattering on sandy floor)
 Zone of the reef where you observed: Reef flat
 Common type of coral:
 - Massive (umpy, boulder shape)
 - Branching (can be short or long)
 - Table (short branches spreading horizontal/y)
 - Encrust (thin layer covering an floor)
 - Mushroom

Percentage cover (visual estimate)



Reef fish and invertebrates in the area approximately 10x10 m - you find

	None	Small number	Fair number	Large number	Total/dive
Needle spined urchin	0				
Crown-of-thorns starfish	0				
Sea cucumber				0-10	

<https://www.greenfins-thailand.org/modules.php?name=reefwatch&page=overview&site=30970>

6/25/20 7:28 PM Reef Watch Result

Parrot fish	0				
Bumphead parrot fish	0				
Grouper	0				
Snapper	0				
Butterfly fish	0				
Napoleon wrasse	0				

Damage in the reef

	None	Possible/Little	Some	Moderate	Extensive/Severe
Fishing gear					
Spear fishing					
Dynamite blasting					
Diving					
Shell collecting					
Stepping/holding on to coral					
Oil slick					
Anchoring on coral					
Sediment					
Sewage					
Crown of thorns star fish Infestation					
Dead from coral bleaching					

Dive site rating (your opinion)

Reef attractiveness: ★★★★★
 Hard coral variety: ★★★★★
 Reef fish number: ★★★★★
 Reef fish variety: ★★★★★

Water visibility: 5 m.
 Water temperature: 29 °C
 Sea floor: Coarse sand
 Additional comments: -

Reporter: Rai by my Home
 Dive Operator: Rai by my Home

<https://www.greenfins-thailand.org/modules.php?name=reefwatch&page=overview&site=30970>

3.3 Youth Capacity Building for Green Dive Guides at Koh Phi Phi (Ban Koh Phi Phi School)

Thailand’s marine and coastal resources, particularly around the Phi Phi Islands in Krabi Province, are presented the immense significance both in terms of biodiversity and the marine tourism economy. However, over the past several years, these marine ecosystems are currently under the increasing pressure from tourism activities, climate change, and human impact, that have resulted in the degradation of key natural resources—most notably coral reefs—and the marine life that depends on these delicate ecosystems.

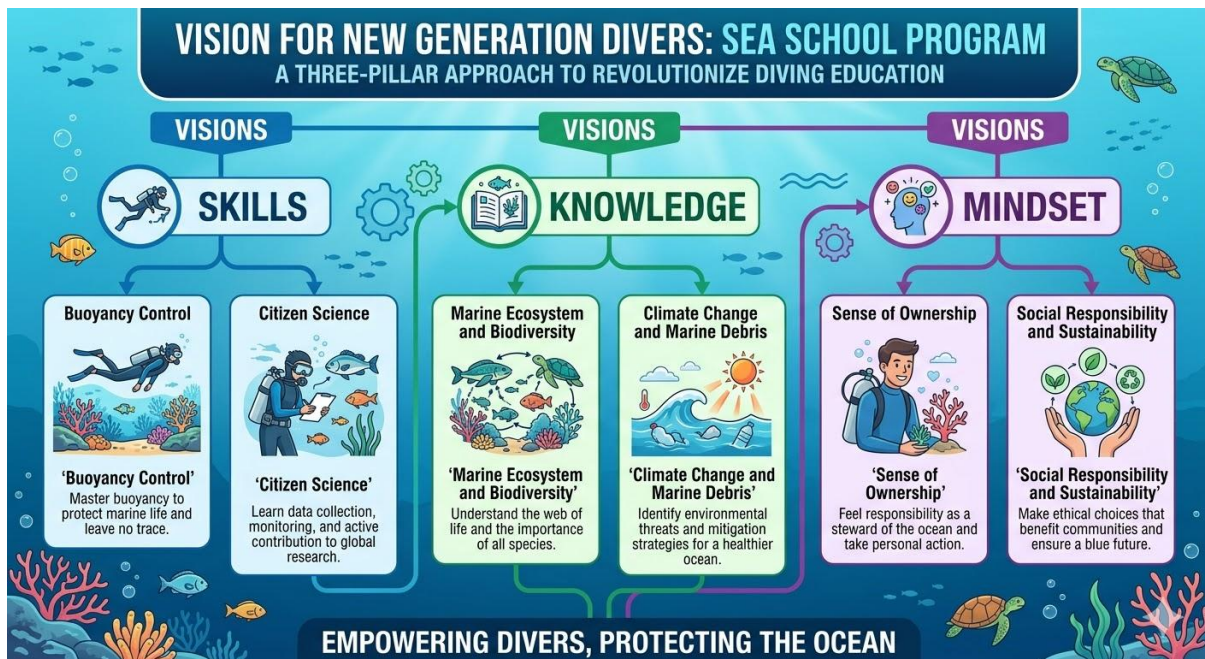
Awareness building and promoting the marine stewardship mindset among local youth is a vital mechanism for cultivating a new generation of “Ocean Guardians”. This initiative individuals possess the knowledge, understanding, and a profound bond with their local natural resources, especially for those growing up in marine tourism destinations. They are opportunity as the essential stakeholders and the pivotal role of future conservation efforts.

The Enlive Foundation has therefore initiated the Youth Capacity Building for Green Dive Guides at Phi Phi Islands (Ban Koh Phi Phi School) project #Sea School Program, in collaboration with the Koh Phi Phi Diving Operators Club, to integrates the marine ecosystem education alongside safe and environmentally responsible diving skills. The activities feature experiential learning, foundational diving skills, underwater nature exploration and volunteer activities for marine resource conservation.

The multi-sectoral collaboration between the education sector, CSOs, relevant government agencies, and local business create the learning environment that link the academic knowledge with hands-on marine experience.

Furthermore, it establishes a local conservation network, positioning youth as the center of learning and change mobilizing.

#Sea School Program aims to empower the youth to become “The New Generation Divers” equipped with the technical skills, ecological knowledge, and a deep-rooted conscience for marine conservation, also to establish a model for Ocean Citizenship at the local level, who will play a pivotal role in the conservation and sustainable use of marine resources for the future.



Objectives

To empower the Youth Capacity for Green Dive Guides at Phi Phi Islands (Ban Koh Phi Phi School) and become the “New Generation Divers”.

Activities

Diving Training of #Sea School program.

Output

- 1) Diving Training of #Sea School program on snorkeling, total 23 participants.
- 2) Diving Training of #Sea School program on Discover Scuba Diving in a pool (DSD), total 5 participants.
- 3) Diving Training of #Sea School program on PADI Open Water Diver (18 Meters), total 5 participants.

Outcomes

Enlive Foundation conducted the consultative meeting with the stakeholders, including Ban Koh Phi Phi School Executive and Teachers, Phi Phi Diving Club and Volunteer Divers. This objective to discuss on diving program and activity platforms for youth training, also define the qualification and criteria of youth who participate in

the #Sea School program. Currently, we are in the process of conducting the three sub-programs on 23-25 June 2026, detailed below;

Day 23 June, 2026: Theory and Knowledge Review

- Introduction to Scuba Diving
- Marine Hazardous Life & Venomous Creatures Education
- First Aid and CPR Training
- “Discover the Underwater World” (Guest Speaker Session by Local Dive Centers)
- Video Editing Tutorial via CapCut
- Tourism Video Creation Workshop

Day 24 June 26, 2026: Practical Sessions

- Snorkeling Session at Monkey Bay (Ao Ling)
- Discover Scuba Diving in a pool (DSD)

Day 25 June 26, 2026: Wrap-up and Achievement Showcase

- Overall Project Summary and Reflection
- Certificate Presentation Ceremony
- Project Handover to Partner Dive Centers for Future Initiatives
- Souvenir Presentation to School and Dive Center Partners
- Award Ceremony for the "Sea School" Tourism Video Contest

Diving Training of #Sea School program on BEGINNER COURSES 3 days

PADI Open Water Diver (18 Meters) - The Adventure Club website: www.adventureclubthailand.com

Schedule - PADI Open Water Diver Course - Option 2 ✕

AFTERNOON START

Option 2 is suitable for students that wish to complete all of the theory in one day.


Day 1
1200h – 2100h: Classroom theory all sections

Day 2
0730h – 1200h: Confined water training
1300h – 1700h: Boat trip with 2 open water dives

Day 3
0700h – 1200h: Boat trip with 2 open water dives

Notes
With this schedule you need to stay at least 2 nights on Phi Phi Island, however you will be able to take the afternoon ferry back to the mainland, on the last day.

Must not fly for at least 18 hours after the last dive!!


CLOSE

References

- Faculty of Marine Technology, Burapha University Chanthaburi Campus. (2016). *Seasonal effect on distribution of seagrass in coastal areas of Rayong Province*. https://marine.chanthaburi.buu.ac.th/documents/research/file_research/2016-05.pdf
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Appendix 1: Official Handover Ceremony of Knowledge Signage





Appendix 2: Posters and Vinyl Banners

Poster invitation to join Green Fins and Reef Watch Monitoring Training

CALLING ALL DIVE & SNORKEL OPERATORS IN KRABI

JOIN GREEN FINS & REEF WATCH
TRAINING WORKSHOP

OUR CORAL REEF, OUR RESPONSIBILITY
BECOME AN ENVIRONMENTALLY-FRIENDLY
DIVE/SNORKEL OPERATORS

**24 MAY
2025**

PHI PHI HARBOURVIEW HOTEL,
PHI PHI ISLAND, KRABI

- FREE OF CHARGE!
- INCLUDES MEALS AND ROUND-TRIP
BOAT TRANSFERS
(KRABI-PHI PHI-KRABI)
- LIMITED TO 35 PARTICIPANTS ONLY
- REGISTRATION CLOSES ON 15 MAY 2025

SCAN TO REGISTER



NATURAL CAPITAL | Funded by  **UN** environment programme | Executing Agencies  **THE REEF-WORLD FOUNDATION** |  **GREEN FINS INTERNATIONAL COORDINATOR** |  **TDRRI** THAILAND DEVELOPMENT RESEARCH INSTITUTE |  Facilitator

Green Fins and Reef Watch Monitoring Training vinyl banner



Advance Green Fins Assessor Training vinyl banner



Appendix 3: Green Fins and Reef Watch Monitoring Training Agenda



Green Fins and Reef Watch Monitoring Training

24 May 2025

at Phi Phi Harbour View Hotel, Phi Phi Island, Krabi province, Thailand

08.30 – 09.00 AM	Registration
09.00 – 12.00 AM	Theory Session <ul style="list-style-type: none">- Operation of Environmentally Friendly Diving Tourism Activities (Green Fins)<ul style="list-style-type: none">- What is Environmentally Friendly Diving Tourism (Green Fins)?- Green Fins Code of Conduct- Benefits of Green Fins Membership- Certification Process for Environmentally Friendly Dive Operators (Green Fins)- Coral Reef Monitoring and Survey using the Reef Watch Methodh
12.00 – 13.00 PM	Lunch Break
13.00 – 15.00 PM	Practical Session Coral Reef Survey Training (Snorkeling)
15.00 – 16.30 PM	Theory Session Summary of Coral Reef Survey Results and Data Filling into the Reef Watch Database
16.30 – 17.00 PM	Questionnaire on the Benefits of Green Fins Certificate
17.00 – 17.30 PM	<ul style="list-style-type: none">- Certificate Ceremony- Closing Ceremony

Remarks

- Participants must bring their own mask, fins, and snorkel
- Boat to Phi Phi: Departs at 7:30 AM from Koh Phi Phi Tour Pier (private pier), krabi
- Return boat: Departs at 5:30 PM from Tonsai Pier, Phi Phi Island

Appendix 4: Green Fins and Reef Watch Monitoring Training Participants

1	Tuulikki Viitaniemi	Local Diving Krabi
2	Wutthichai Bunnak	Lovelay Andaman
3	Monphon Thongmi	Barracudas Company Limited
4	Thipawan Phumkhakhon	Boat and Beyond Company Limited
5	Kraiphurit Kraithaweecho	Lay suay Tour
6	Caroline Lecky	Blue view divers
7	Suwijak Kaewthong	Blue view divers
8	Saranporn Samart	Escape to Krabi
9	Sommat Butkhaek	Escape to Krabi
10	Tippamas Injun	barracudas tour krabi
11	Theerakan Boonthong	Scuba Expert Krabi
12	Nurawadee Samae	Golden Sand&Sea Travel
13	Parichat Engchuan	Kanok body health care
14	Kanokrat Huanak	Aonang scuba
15	Prapha Masosot	Koh phi phi tour krabi
16	Natthaphon Saman	Yacht Master Company Limited
17	Michelle Almeida	The Adventure Club
18	Teerapong Sommat	Boat and Beyond Company Limited
19	Tippawan Jitmung	Srisawat travel & Tour Ltd
20	Panisara Thongchit	Srisawat travel & Tour Ltd
21	Acting Captain Inthanon Naksorn	Department of Tourism
22	Petchrung Sukpong	Biodiversity-Based Economy Development Office (Public Organization)
23	Nipphon Phongsuwan	Department of Marine and Coastal Resources
24	Suhatai Praisankul	Department of Marine and Coastal Resources
25	Kruewon Apiratakan	Department of Marine and Coastal Resources
26	Yodsapat Inberd	Department of Marine and Coastal Resources
27	Adis Israngkura	Thailand Development Research Institute
28	Kanjana Yasen	Thailand Development Research Institute
29	Panida Phranphanat	Thailand Development Research Institute
30	Pichamon Keakij	Thailand Development Research Institute
31	Peerawat Suriyaburaphakul	Thailand Development Research Institute
32	Chonticha Homklinkaew	WHAT IF
33	Panachanok Malakul na Ayudhya	WHAT IF

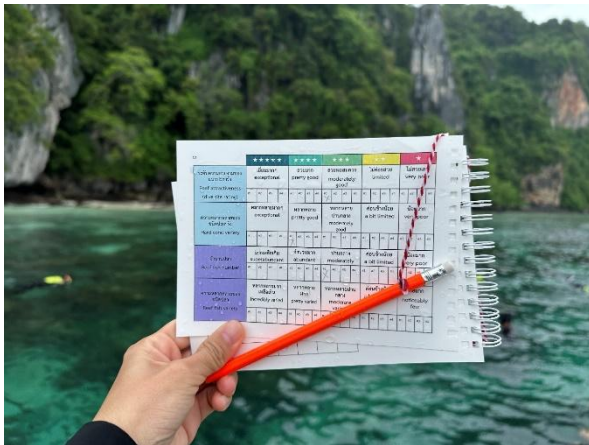
Appendix 5: Photos from the Green Fins and Reef Watch Monitoring Training

Theory Session





Practical Session



Certificate Ceremony





Appendix 6: Assessor Training Programme Agenda



Advance Green Fins Assessor Training

25–30 May 2025

at Phi Phi Harbour View Hotel, Phi Phi Island, Krabi province, Thailand

25 May 2025 (Day 1 – Theory Session)

08.30 – 09.00 AM	Registration
09.00 – 12.00 AM	Introduction to Green Fins <ul style="list-style-type: none">- Overview of Green Fins- Green Fins Code of Conduct- Roles and Responsibilities of Green Fins Assessors
12.00 – 13.00 PM	Lunch Break
13.00 – 17.30 PM	Green Fins Assessment System

26 May 2025 (Day 2 – Theory and Dive shops visit)

08.30 – 09.00 AM	Registration
09.00 – 12.00 AM	<ul style="list-style-type: none">- Green Fins Assessment System- Green Fins Hub Login
12.00 – 13.00 PM	Lunch Break
13.00 – 17.30 PM	<ul style="list-style-type: none">- Membership Application System- Dive shops visit

27 May 2025 (Day 3 – Theory and Practical Session)

08.30 – 09.00 AM	Registration
09.00 – 12.00 AM	<ul style="list-style-type: none">- Green Fins (Theory Session)- Practice and test floating skills in water (Practical Session)
12.00 – 13.00 PM	Lunch Break
13.00 – 17.30 PM	Presenting Green Fins to Dive operators (Practice)

Appendix 5: Assessor Training Programme Agenda (Continued)



Advance Green Fins Assessor Training

25–30 May 2025

at Phi Phi Harbour View Hotel, Phi Phi Island, Krabi province, Thailand

28 May 2025 (Day 4 – Practical Session)

- 08.30 – 09.00 AM Registration
09.00 – 17.30 PM Field Training: Practice Dive Operator Assessment on Phi Phi Island

29 May 2025 (Day 5 – Practical Session)

- 08.30 – 09.00 AM Registration
09.00 – 17.30 PM Field Training: Practice Dive Operator Assessment on Phi Phi Island

30 May 2025 (Day 6 – Theory Session)

- 08.30 – 09.00 AM Registration
09.00 – 12.00 AM
 - Summary of Field Training
 - Reporting Assessment Results into the Green Fins Database12.00 – 13.00 PM Lunch Break
13.00 – 17.30 PM
 - Reporting Assessment Results into the Green Fins Database (Continued)
 - Planning Future Green Fins Assessment Work
 - Certificate Ceremony
 - Closing Ceremony

31 May 2025 – Travel Day

- Phi Phi Island – Krabi
Krabi – Bangkok

Appendix 7: Advanced Green Fins Assessor Training Participants

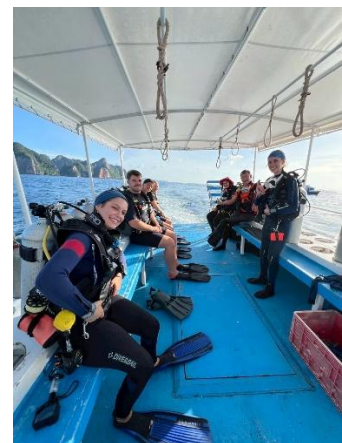
1	Niphon Phongsuwan	Green Fins Network Leader, Thailand
2	Petchrung Sukpong	Green Fins Assessor Trainer, Thailand
3	Ornanong Pengchumru	Green Fins Assessor Trainer, Thailand
4	Sathika Phaokant	Green Fins Assessor Trainer, Thailand
5	Nararat Chantarawa	Green Fins Assessor, Thailand
6	Chonticha Homklinkaew	WHAT IF
7	Chatchai Pucksachad	Department of Marine and Coastal Resources
8	Itsaret Pongthonga	Department of Marine and Coastal Resources
9	Wanwalee Nuchdumrong	Department of Marine and Coastal Resources
10	Natchanon Jaowatana	Department of Marine and Coastal Resources
11	Paweekorn Chankum	Department of Marine and Coastal Resources
12	Chinda Srisupphatphong	Department of National Parks, Wildlife and Plant Conservation
13	Acting Captain Inthanon Naksorn	Department of Tourism
14	Suhatai Praisankul	Department of Marine and Coastal Resources
15	Kruewon Apiratakan	Department of Marine and Coastal Resources
16	Yodsapat Inberd	Department of Marine and Coastal Resources
17	Adis Israngkura	Thailand Development Research Institute
18	Kanjana Yasen	Thailand Development Research Institute
19	Panida Phranphanat	Thailand Development Research Institute
20	Panachanok Malakul na Ayudhya	WHAT IF

Appendix 8: Photos from the Advanced Green Fins Assessor Training

Theory Session



Practical Session



Certificate Ceremony



Assessor Training Programme Folders

Assessor Training Programme Agenda

This document aims to provide detailed information about the Green Fins Assessor Trainer Programme (ATP). It is divided into two sections; Part 1 provides essential information about the programme and Part 2 outlines a detailed agenda.



The Green Fins Guide to environmentally friendly diving and snorkelling

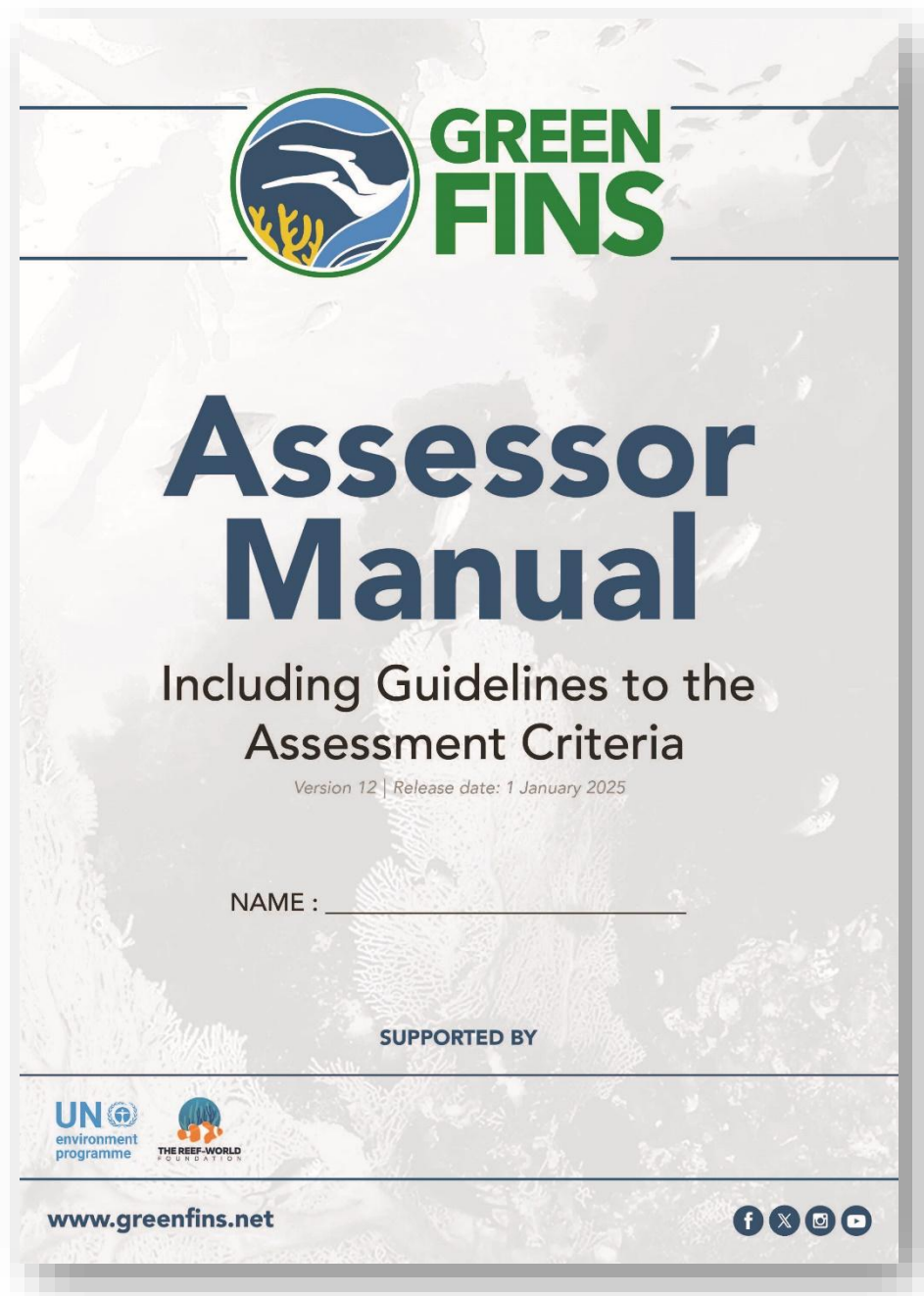
This guide contains all the information you need to show your staff and customers how they can join the environmentally friendly diving and snorkelling movement. Feel free to use the posters in this guide for people to read. All these materials are freely available on the Green Fins website.



Green Fins Assessor Manual

The Green Fins Assessor Manual Version 12, launched in 2025. This manual is a reference for qualified Green Fins assessors to deliver Green Fins certified membership assessments.

This is a confidential document and must never be circulated with individuals who have not been trained as Green Fins assessors. Never share this document with the marine tourism industry. This manual only covers Green Fins certified membership process, not the digital membership. If you are looking for information regarding digital membership, please visit the Green Fins website: <https://greenfins.net/digital-membership/>

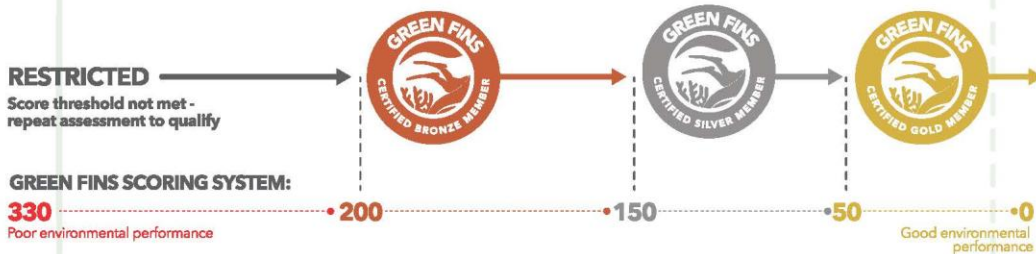


Green Fins Certified Membership Process



**GREEN
FINS**

CERTIFIED MEMBERSHIP PROCESS



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THE INTEGRATION OF NATURAL CAPITAL ACCOUNTING IN
PUBLIC AND PRIVATE SECTOR POLICY AND DECISION-MAKING
FOR SUSTAINABLE LANDSCAPES

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