

Challenges for the conservation of coastal ecosystems in Asia-Pacific region at

27<sup>th</sup> November 2017, Sasakawa Peace Foundations (SPF) Building, Tokyo,  
Japan

# Conservation of coastal ecosystems in Thailand under environmental crisis



Ramkhamhaeng University, Thailand



**Thamasak Yeemin**

Marine Biodiversity Research Group  
Faculty of Science, Ramkhamhaeng University  
Bangkok, THAILAND  
E-mail: [thamasakyeemin@yahoo.com](mailto:thamasakyeemin@yahoo.com)

# Thai waters: the Gulf of Thailand and the Andaman Sea



## The Andaman sea

Area: 120,000 km<sup>2</sup>

Average depth: 870 m.

Maximum depth: 3,777 m.

## The Gulf of Thailand

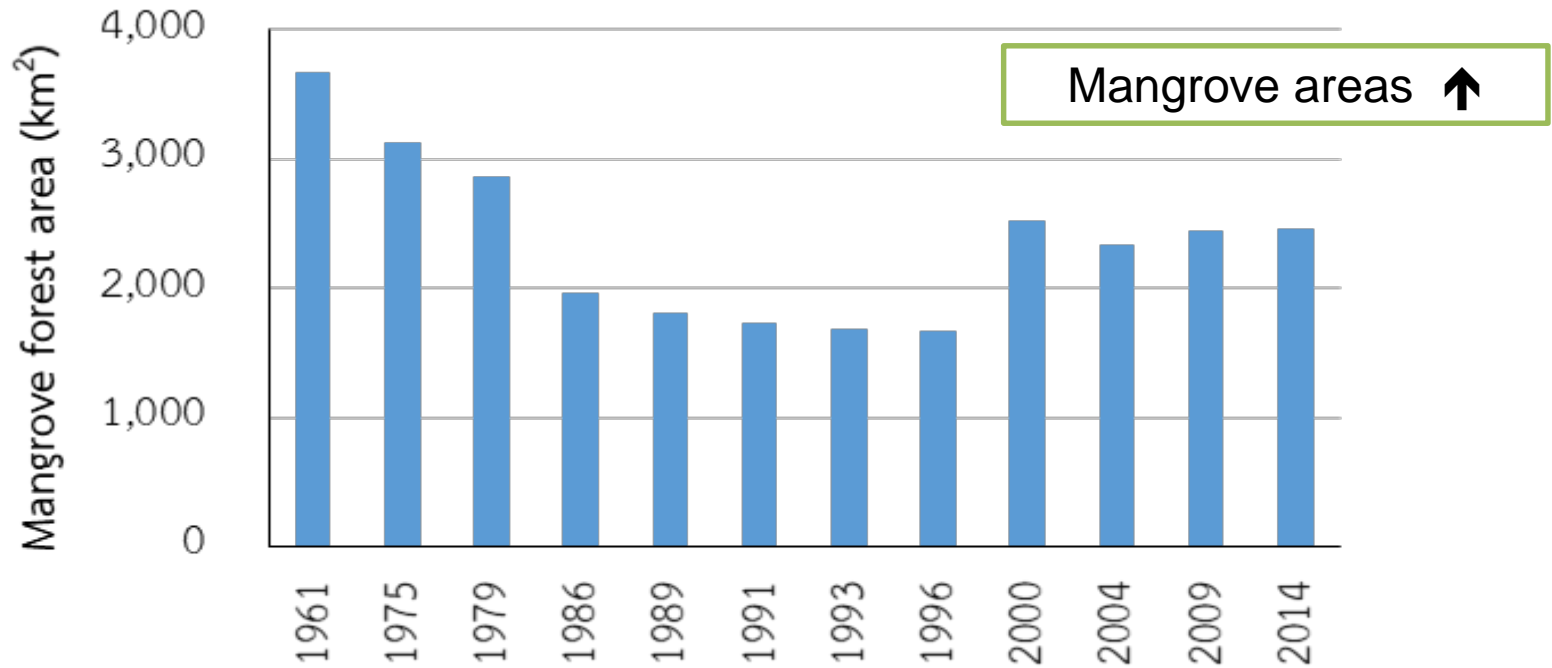
Area 200,000 km<sup>2</sup>

Average depth: 44 m.

Maximum depth: 86 m.

Source: DMCR, 2017

# Mangrove Forests



# Seagrass Communities

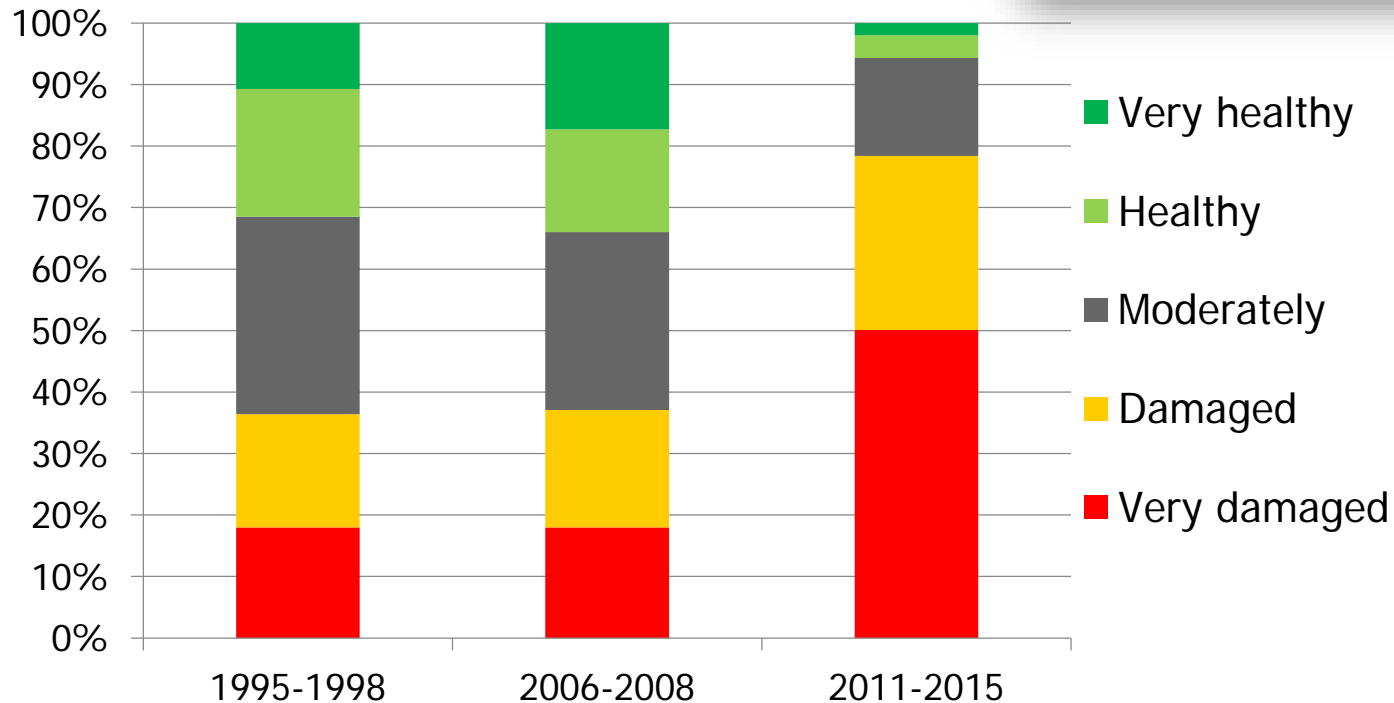
- ❑ Areas: 255.72 km<sup>2</sup> (2015)
- ❑ Seagrass communities (quality) ↓  
(anthropogenic disturbances)



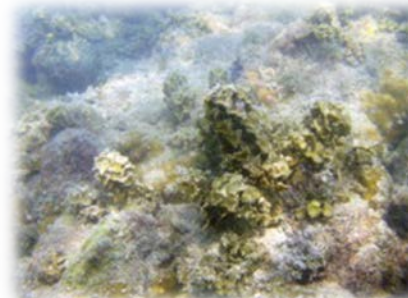
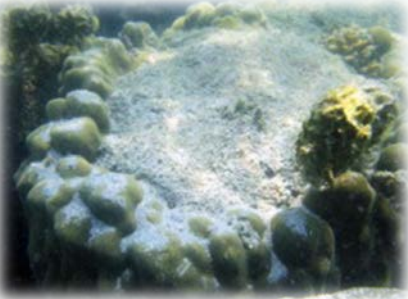
# Coral reefs

□ Areas: 238 km<sup>2</sup> (2015)

□ Coral reefs (quality) ↓



# Impacts of Climate Change on Marine and Coastal Ecosystems



## Elevated seawater temperature

### *Coral bleaching*

- Our long-term studies of coral reefs in Thai waters clearly showed that there was a link of climate change and coral mortality.
- **The coral reefs are more severe to elevated seawater temperature anomalies, for examples, widespread coral mortality were observed during the 1998 and 2010 mass coral bleaching events.**
- However, the susceptibility on the bleaching also varied among coral taxa (Sutthacheep et al., 2013).

# Impacts from tourism

- Rapid tourism development without appropriate management caused degradation of marine and coastal ecosystems.
- Especially the sensitive marine ecosystems like coral reefs which are important marine resource for both tourism and fishery sectors (Yeemin et al. 2011).
- Tourism also affects the socio-economic structures and native community's livelihoods.









# Major policy initiatives and challenges






## ➤ Challenges

- Unsustainable extraction from marine resources, such as unsustainable fishing
- Destruction of marine and coastal habitats and landscapes, and biodiversity loss
- Marine pollution
- Climate change

# Blue economy initiatives in Thailand

	Case Study
<b><i>Pollution reduction</i></b>	<b>Laem Phak Bia Project</b> <ul style="list-style-type: none"><li>- <u>Area</u>: Phetchaburi Province</li><li>- <u>Best practice</u>: The project has built wastewater and waste treatment models ideal for Thai communities, which are simple, natural, and low cost</li></ul>  
<b><i>Climate change response</i></b>	<b>Low Carbon Tourist Destination Project</b> <ul style="list-style-type: none"><li>- <u>Area</u>: Koh Mak, Trat Province</li><li>- <u>Best practice</u>: Using alternative energy, waste management, and preserve traditional way of life.</li></ul>    

# Blue economy initiatives in Thailand

	Case Study
<b><i>Habitat restoration and conservation</i></b>	<b>Bor Hin Farmstay</b> <ul style="list-style-type: none"><li>- <u>Area</u>: Amphor Sikao, Trang Province</li><li>- <u>Best practice</u>: Ecotourism, the mangrove reforestation, seagrass seeding bank</li></ul>  
<b><i>Sustainable fisheries</i></b>	<b>Crab Bank Model</b> <ul style="list-style-type: none"><li>- <u>Area</u>: Chumporn and Surat Thani Provinces</li><li>- <u>Best practice</u>: Education, stock assessment co-management with fisher communities</li></ul>   

# Policy Initiatives

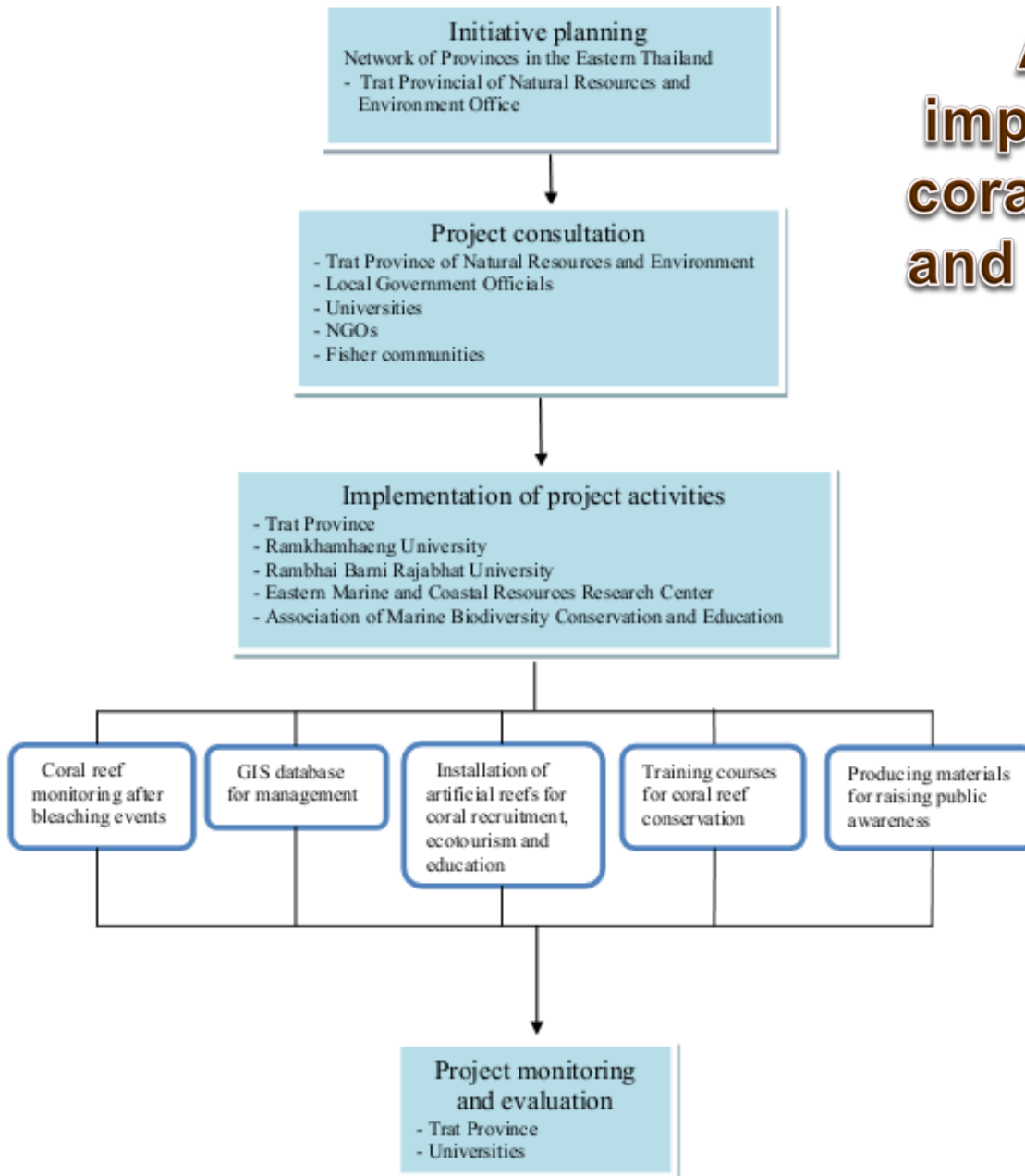
- **The 20-Year National Strategy (2017-2036)**
- **The 12th National Economic and Social Development Plan (2017-2022)**
- **The National Environmental Quality Management Plan (2017-2021)**
- **The National Maritime Security Plan (2015-2022)**
- **Marine Fisheries Management Plan of Thailand (2015-2019)**
- **Strategic Plan and Action Plan for Seagrass and Dugong Management (2008)**
- **Strategic and Action plan for Reef Management (2009)**

# The 20-Year National Strategy (2017-2036)

- ❑ building stability and competitive ability;
- ❑ developing and empowering people;
- ❑ providing equal opportunities;
- ❑ strengthen stability and reduce economic and social disparities;
- ❑ generating growth with environmentally friendly and improving quality of life;
- ❑ balancing and developing the governmental management system.

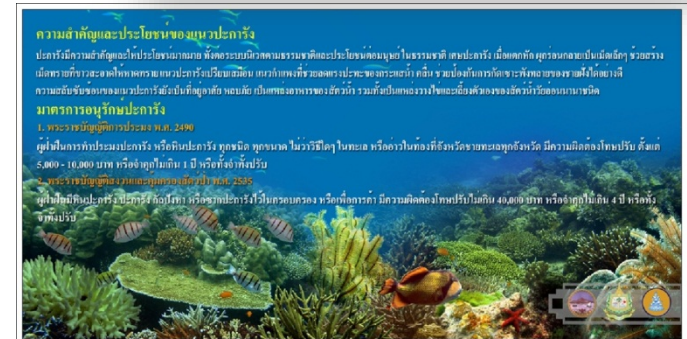
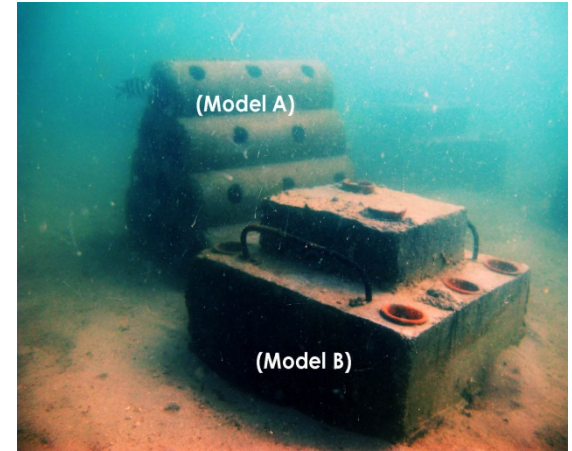
# Management of coral bleaching in Thailand

**A flow chart for implementation of the coral reef management and restoration project**



# The project outputs

- Designed and established artificial reefs.
- Training courses and workshops for raising public awareness.
- Produced permanent boards, brochures and posters for raising public awareness and distributed to local people, students and tourists at the four locations.



# Lessons Learned

❑ The project showed effective collaboration between scientists, local communities and local government officials as decision-makers to integrate scientific data into policy and adaptation practices.

❑ Artificial reef sites can be used to support ecotourism and learning rooms for students.

❑ Capacity building, public awareness and education through disseminating printed materials and conducting training courses, workshops and seminars for stakeholders, youth, students and local government officials can enhance resilience in coastal communities.

# Healthy Corals

Heat & Sunshine

# Bleached corals

Prolonged heat + Other stress

# Dead Corals

Return to normal

No return



## Thailand's Coral Bleaching Taskforce 2016



Need more collaboration from private sectors, GOs, & NGOs



# Protection of Vulnerable Species



*Montipora angulata*



*Montipora caliculata*



*Montipora turgescens*



*Acropora aculeus*



*Acropora dendrum*



*Acropora donei*



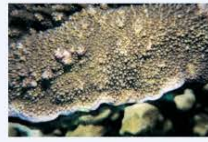
*Acropora horrida*



*Acropora listeri*



*Acropora microclados*



*Acropora palmerae*



*Acropora polystoma*



*Acropora rudis*



*Acropora vaughani*



*Astreopora cucullata*



*Pocillopora eydouxi*



*Pocillopora meandrina*



*Montipora turgescens*



*Alveopora allingi*



*Caulastrea tumida*



**REVERSING ENVIRONMENTAL DEGRADATION TRENDS  
IN THE SOUTH CHINA SEA AND GULF OF THAILAND  
[WWW.UNEPSCS.ORG](http://WWW.UNEPSCS.ORG)**





## **Coral Management Demonstration Site**

UNEP/GEF Project on Reversing Environmental Degradation Trends in the  
South China Sea and Gulf of Thailand

**Mu Ko Chang, the Eastern Gulf of Thailand**

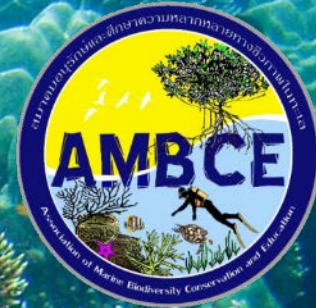
- 
- 1. Public awareness and education**
  - 2. Networking among agencies**
  - 3. Sustainable tourism development**
  - 4. Capacity Building**
  - 5. Sustainable livelihoods**
  - 6. Improvement of site management to support coral reef rehabilitation**

# Coral Reef Restoration Plan of Thailand

- **Develop a decision flow chart for coral reef restoration**
- **Determine priority sites for coral reef restoration**
- **Develop a management plan**
  -  **Tourism management**
  -  **Wastewater treatment**
  -  **Reduction of sediment from coastal development**
  -  **Management of reef based fisheries**

# Future Cooperation

- **Coordinating Body on the Seas of East Asia (COBSEA)**
- **Partnership on Environment Management of the Sea of East Sea (PEMSEA)**
- **International Coral Reef Initiative (ICRI),**
- **Japan Society for the Promotion of Science (JSPS)**
- **Asia Pacific Coral Reef Society (APCoRS)**
- **ASEAN communities**
- **Etc.**



**THANK YOU FOR YOUR  
ATTENTION**

**Marine Science Association of Thailand**

**Marine Biodiversity Research Group**

Department of Biology, Faculty of Science

Ramkhamhaeng University, Thailand

Tel./Fax: +66 2 310 8415

Email: [thamasakyeemin@yahoo.com](mailto:thamasakyeemin@yahoo.com)

Website: <http://www.thaicoralreef.in.th>