

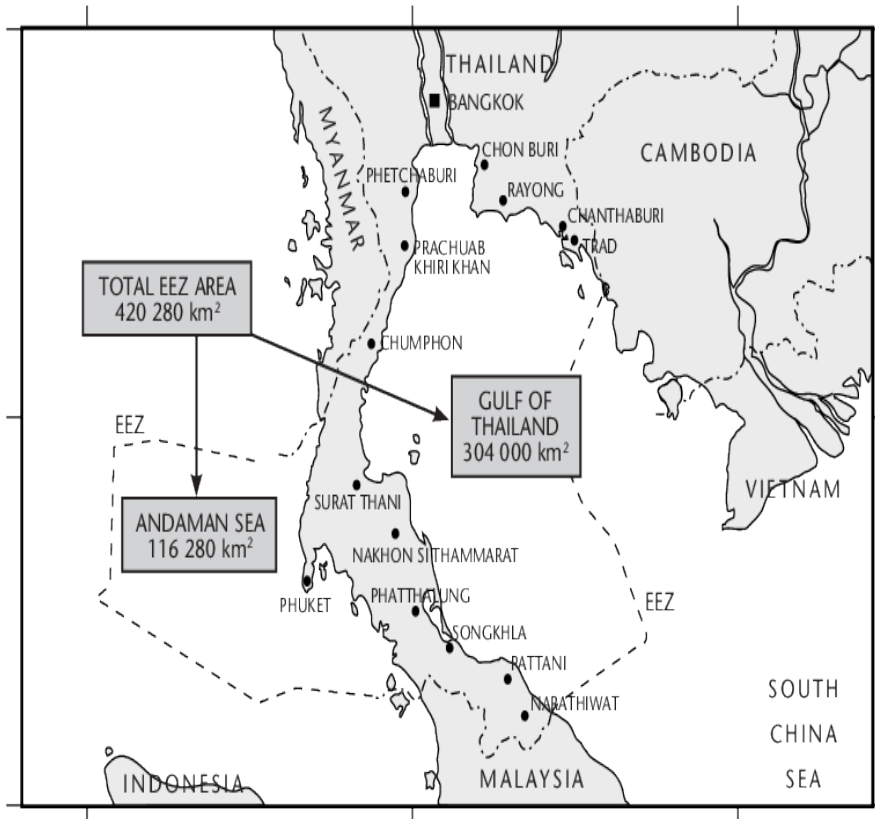


# Fisheries Resource Enhancement Program in Thailand

Marine Fisheries Research and Development Division  
Department of Fisheries

Regional Technical Meeting on Fisheries Resource Enhancement in Southeast Asia  
*Bangkok, Thailand, 24-26 April 2018*

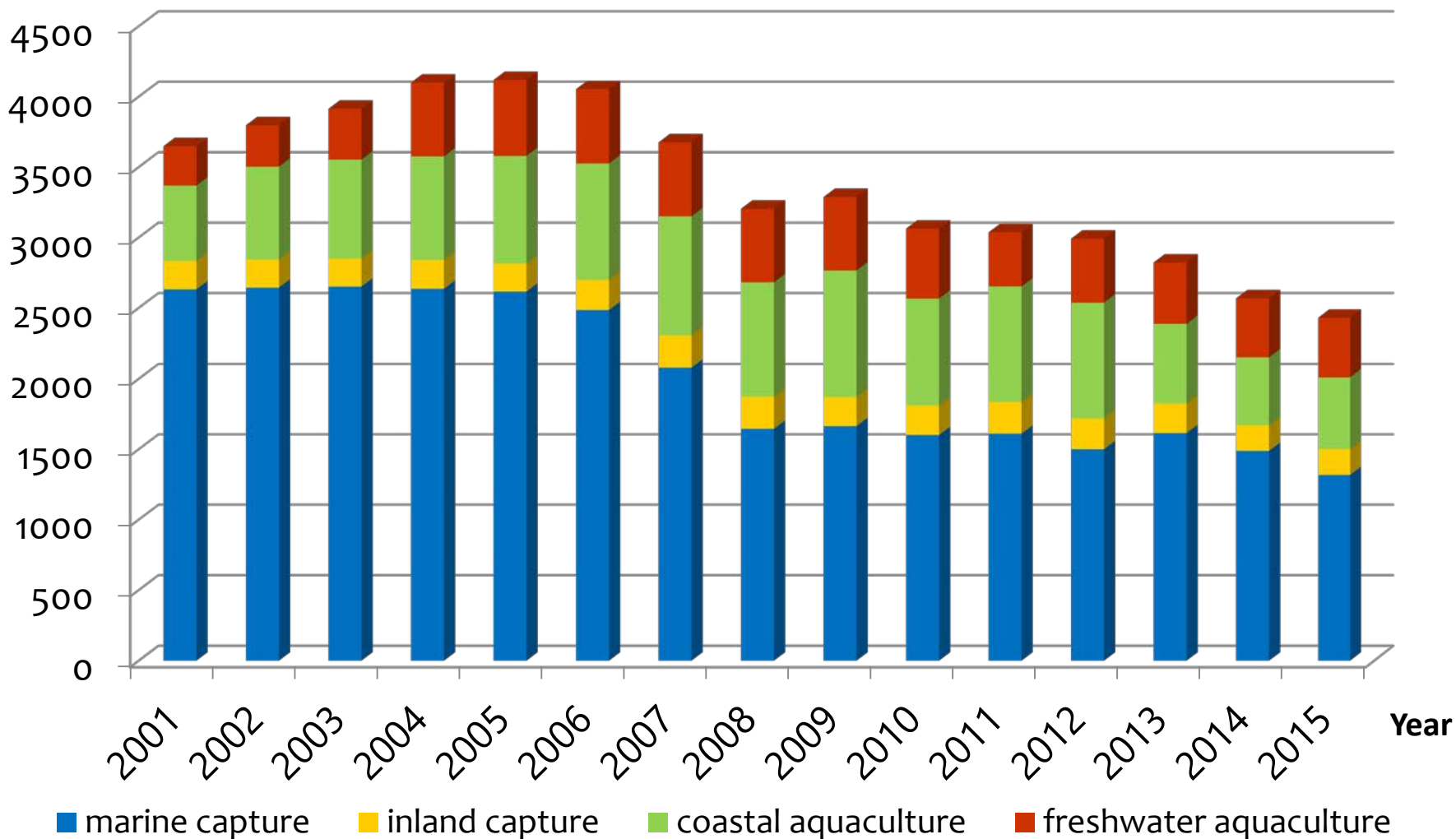
# Fisheries Background



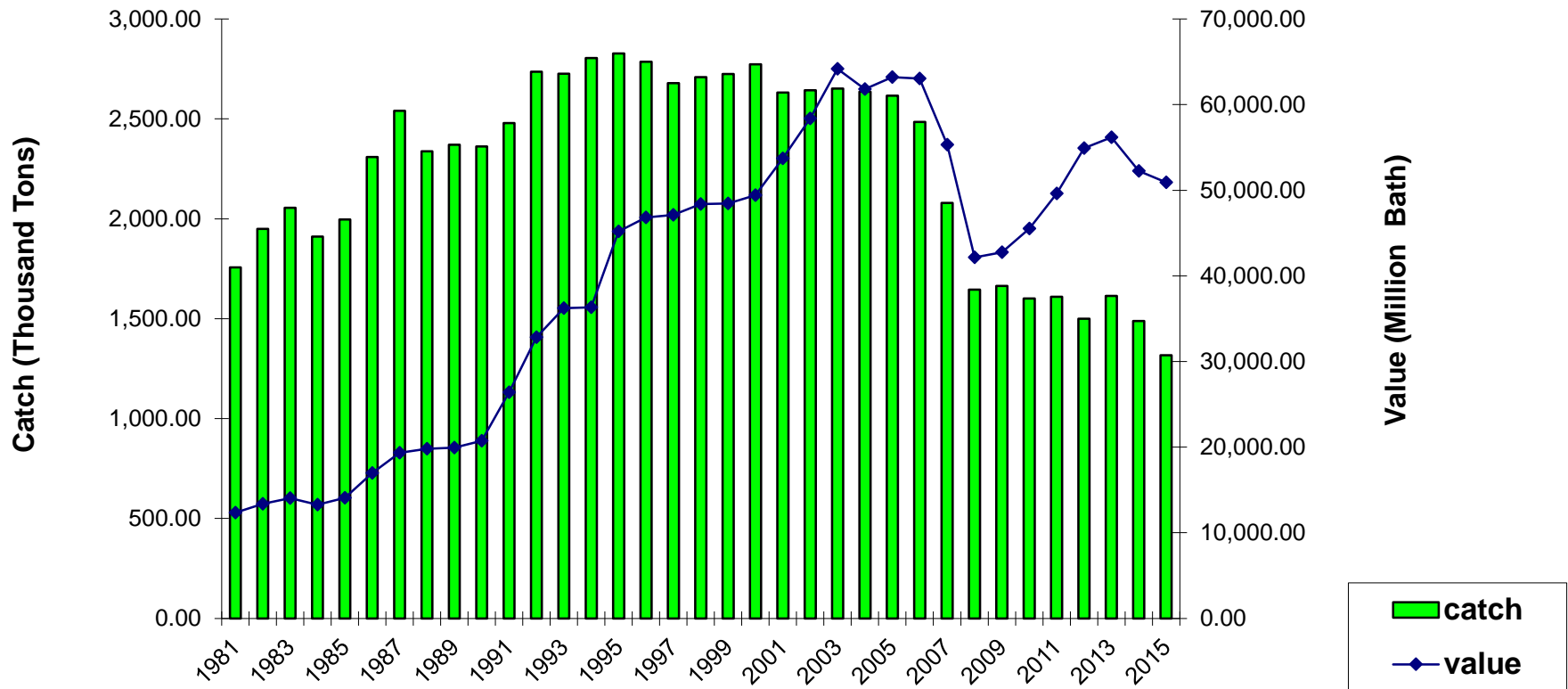
- \* Total land area: 514,000 km<sup>2</sup>
- \* Including 77 provinces
- \* Population: 66.2 million
- \* Coastal area: composing of 24 provinces with 2 sites; Gulf of Thailand and Andaman Sea
- \* Coastline: 2,614 km
- \* EEZ: 420,280 km<sup>2</sup>

# Total Catch by Sub-sector, 2001 - 2015

1,000 ton



# Catch and Value of marine capture



# Main Fishing Gear

**Trawl**



**Purse seine**



**Gill net**



**Trap**



**Lift net**

# Overview of Fisheries Resource Enhancement in Thailand

1. Establish the conservation measures of closed area and closed season with participating of community and fisher's organizations
2. Promote and monitor the results of ecosystem, fishery resource, and fishing ground rehabilitation e.g. Artificial Reefs Installation Program
3. Restock fishery resources by seed releasing / marine animal bank scheme
4. Restore and maintain of critical habitats

# National Policy on Fisheries Resource Enhancement

**Objective:** Rebuilding fish Resources through Artificial reefs and Restocking programs

**Target:** Increase number of effective artificial reefs at least 10 site per year and increase community stock enhancement projects 10 communities project per year

**Management measure**

- 1) Continue to build artificial reefs, especially along the zone border
- 2) Marine Animal Bank scheme for promoting stock enhancement



# Artificial Reefs Installation Program





# Background

- \* The artificial reefs (Ars) installation program has been developed since 1978 as the experimental period. The program has been widely implemented over the Gulf of Thailand and Andaman Sea since the Sixth National Economics and Social Development Plan (1985-1991) to present, the Twelfth Plan (2017-2021).

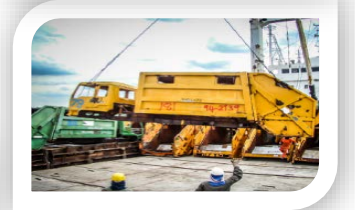
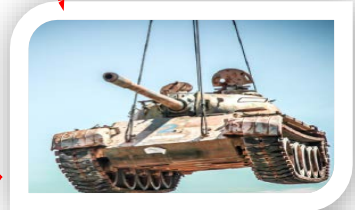
In 1978



To present



In 2011



# Objectives

- \* To rehabilitate the coastal fishing ground
- \* To promote conservation measures and manage coastal fisheries
- \* To develop and extend job opportunity for increasing small scale fisher income
- \* To reduce conflicts among different resources users



# ARs in Thailand

Two type of ARs construction were deployed.

## 1. The small reef set

- For better fishing grounds of small scale fisheries
- near shore (3 - 7 kilometers from shoreline)
- near or in front of small scale fishing villages
- shallow water (6 - 20 meters sea depth)
- area of ARs site is 1.0 square kilometer
- dice block of size 1.5 meters (600 - 700 pcs)
- 10 – 15 ARs site in a year

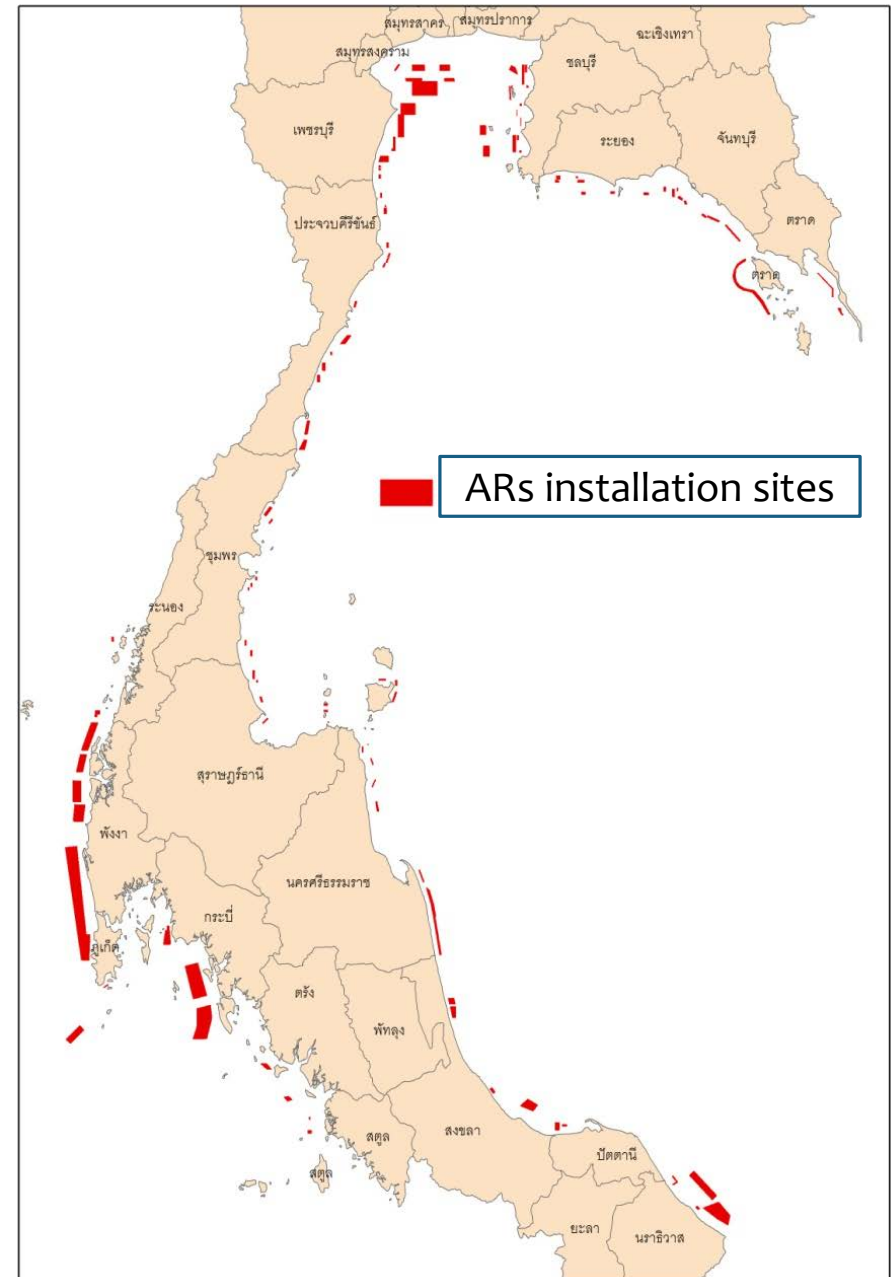
# ARs in Thailand

## 2. The Large reef group

- Large area to intercept migration path of pelagic fish
- expand to 10 - 15 kilometers from shoreline
- more deeper water (20 - 25 meters sea depth)
- total area of ARs site is 25 - 30 square kilometers  
separate in 2 - 9 reef sets to cover fishing grounds in  
one province.
- dice block of size 1.5 meters (3,000 - 5,000 pcs)
- 1 – 2 ARs site in a year

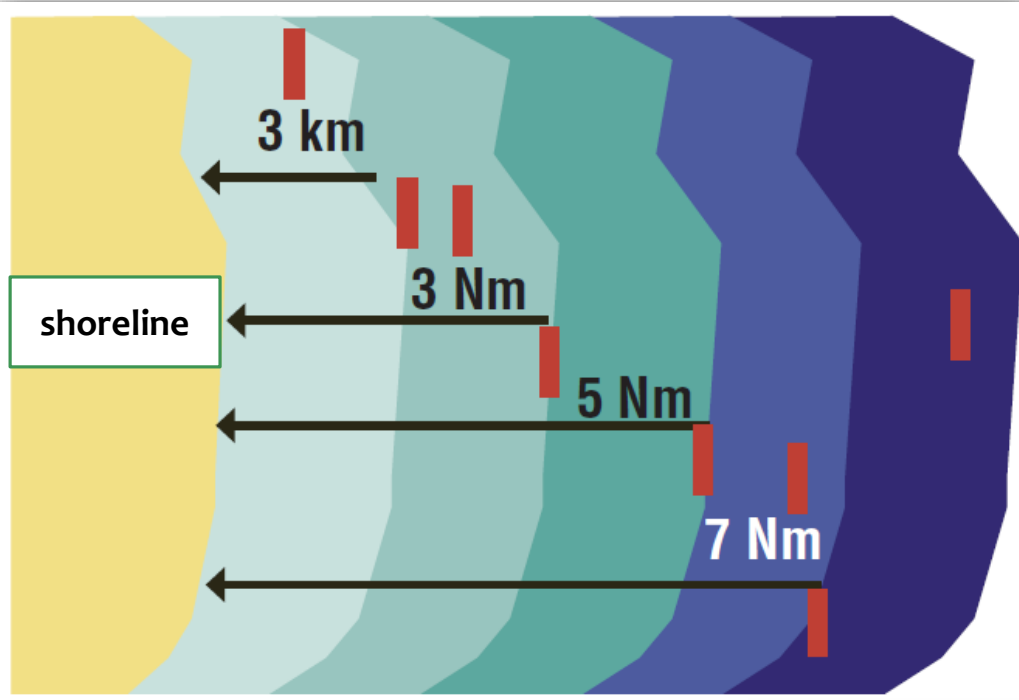
# Outputs

- \* DOF has installed 477 sites of ARs since 1985 to 2017 including 440 small area of ARs and 37 large area of ARs along the coastal areas in the Gulf of Thailand and Andaman Sea
- \* The total areas of ARs installation covered 1,981.99 km<sup>2</sup>
- \* The budget was 1,730 million Baht

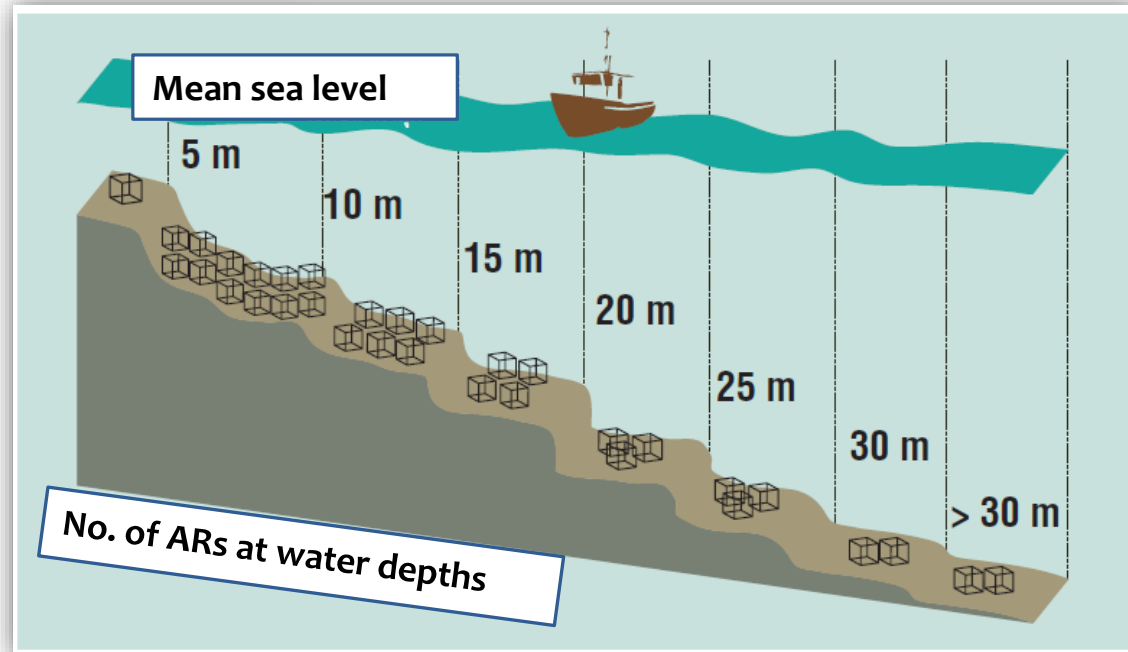


# ARs in Thailand

Located at 0.150 - 30.50 kilometers from the shoreline



Located at water depth of 3.50 - 50 meters





# Main Activities

- \* Site selection
- \* Public hearing or meeting in the fishing communities
- \* Reef design & pattern
- \* Submit to DOF, Marine Department and Royal Thai Navy for permission
- \* Construction
- \* Public announcement the project to the stakeholders
- \* Installation in the sea
- \* Monitoring and report





# Monitoring and report

- \* Water quality and some parameter of oceanography
- \* Seabed and conditions of installed ARs
- \* The biodiversity of the marine lives inhabited in the ARs by scuba diving
- \* Catch and value of small scale fishery production from fishing around ARs
  - \* Before installation of ARs
  - \* After installation of ARs
- \* Fisher's satisfaction survey on ARs

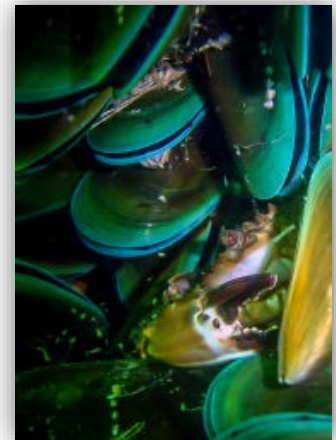
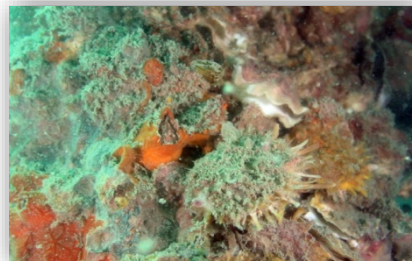
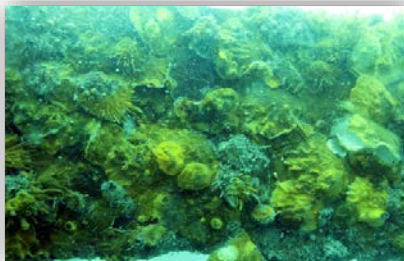
# ARs Monitoring : Biodiversity

Monitoring biodiversity of the marine lives inhabited in the ARs by SCUBA diving (visual census, photographic and video recording)



# Biodiversity on ARs The sessile organisms

- Thanintorn, et al., (1998) found aquatic animal around ARs in Rayong province
  - \* gastropod and bivalves 61 genus, 200 species
  - \* other aquatic animal 63 species  
(amphipod, sea anemone, sea fan, polychaete, sea urchin, sea cucumber, barnacle, shrimp, crab and etc.)
  - \* 14 species of seaweeds



# Biodiversity on ARs - Fish larvae -

- \* Manoch, et al., (2003) study of fish larvae diversity in ARs areas of Pattani and Naratiwas provinces
  - \* Before the construction found 32 families
  - \* Later for 2 months found 37 families, almost were Carangidae, Nemipteridae, and Engraulidae
- \* DOF (2012) study of fish assemblages after 5 years old of ARs in Pattani and Naratiwas provinces

The study found 54 families, 111 genus, 182 species. Almost were Carangidae (19 species), Gobiidae (18 species) and Lutjanidae (12 species).

# The catch rate

- \* After installed ARs : Catch rate of small-scale fishing gears were increased such as
  - \* Crab gill net
  - \* Trammel net
  - \* Hook and lines
  - \* Mackerel gill net
  - \* Whiting Sillago gill net
- \* However, if there were not measure to control number of fishing gear and fishing boat, the catch rate was decreased during 4 - 8 years.





# Supplementary activities

## Conservation Group formation

- \* To encourage fishers and local people to work together in conservation and rehabilitation fishery resources activities



## Consulting meeting

- \* To promote people participation on fishery management in coastal area and around ARs areas



# Supplementary activities

## Maintain and Repair ARs

- \* Collect the lost and abandoned fishing gear
- \* Replace lost signal buoys



## Seed releasing

- \* Release proper species and size of aquatic animal





# Achievements

- \* Fisheries resources enhancement; some disappeared species has been recovered
- \* Fishers have certain and plentiful fishing ground nearby the ARs area that not far from communities
- \* Fishers have alternative of income by tourism activities around ARs
- \* Fishers have satisfaction to ARs; many communities request for ARs installation near their villages
- \* More participating from other private organization as CSR program

# Constraints of the program

- \* Since there are more interesting from many organization, several kind of material are used as ARs that might affect to marine environment.
- \* The knowledge and understanding of function of ARs should be enhanced to people and local organization to avoid creating problem to marine ecosystem.
- \* The monitoring is the important process that every organization who construct ARs, should concern and allocate budget.
- \* The management measures on utilization around ARs should be implemented for balancing between economic benefit of fishing community and recruitment of fisheries resources at the sustainable level.

