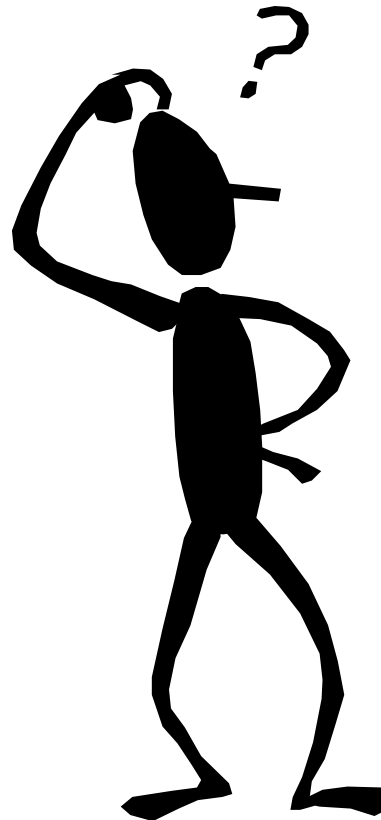


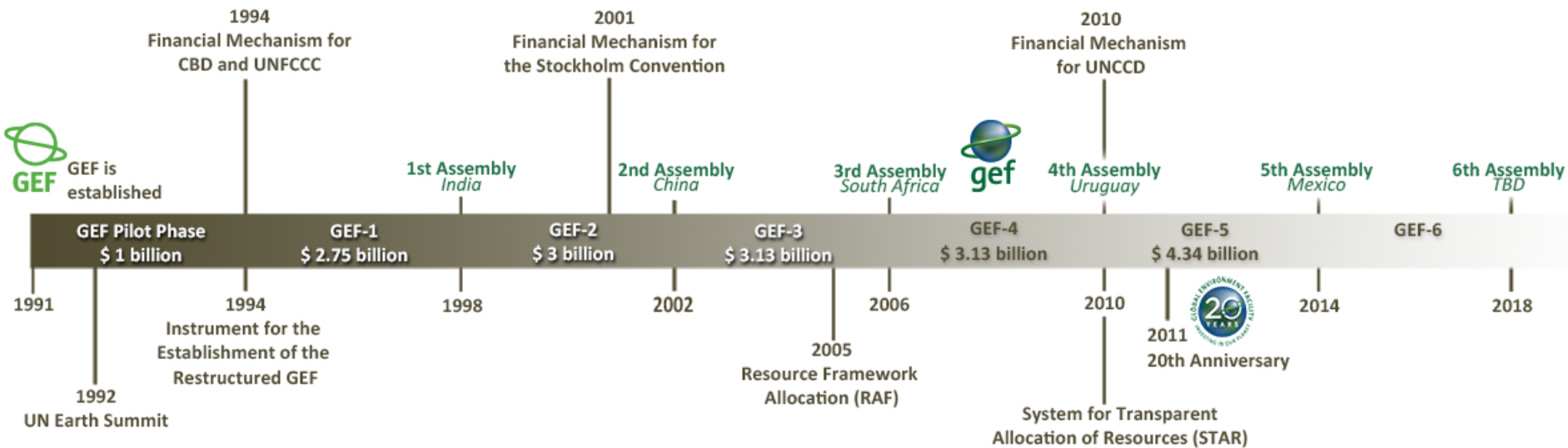


# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES REFUGIA PROJECT





# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES REFUGIA PROJECT

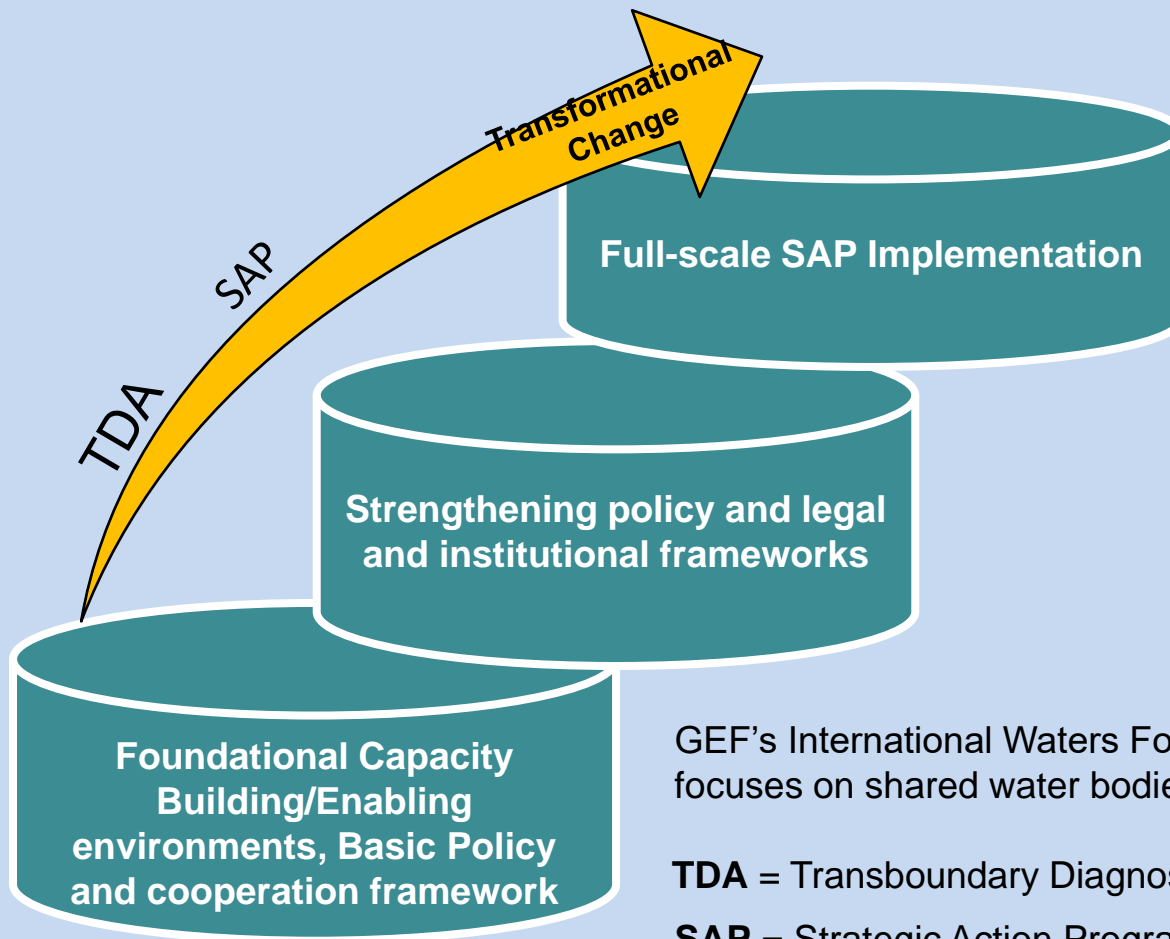


- ❖ The Global Environment Facility (GEF) was established on the eve of the 1992 Rio Earth Summit, to help tackle our planet's most pressing environmental problems
- ❖ GEF has provided US\$14.5 billion in grants and mobilized US\$75.4 billion in additional financing for almost 4,000 projects



# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

## Delivering GEF International Waters Global Environment Benefits



GEF's International Waters Focal Area focuses on shared water bodies

**TDA** = Transboundary Diagnostic Analysis

**SAP** = Strategic Action Programme



## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

# GEF 5 International Waters Strategic Objectives

Objective 1: Catalyze multi-state cooperation to balance conflicting water uses in transboundary surface/groundwater basins while considering climatic variability and change

Objective 2: Catalyze multi-state cooperation to rebuild marine fisheries and reduce pollution of coasts and Large Marine Ecosystems (LMEs) while considering climatic variability and change

Objective 3: Support foundational capacity building, portfolio learning, and targeted research needs for ecosystem-based, joint management of transboundary water systems

Objective 4: Promote effective management of Marine Areas Beyond National Jurisdiction (ABNJ) directed at preventing fisheries depletion

# \$440 Million

# GEF-6 IW Strategy

Goal: To promote collective management of transboundary water systems and implementation of the full range of policy, legal and institutional reforms and investments contributing to sustainable use and maintenance of ecosystem services

**Objective 1: Catalyze Sustainable Management of Transboundary Waters**

**Objective 2: Balance Competing Water-uses in the Management of Transboundary Surface and Groundwater**

**Objective 3: Rebuild Marine Fisheries, Restore and Protect Coastal Habitats, and Reduce Pollution of Coasts and LMEs**

**1.1 Foster Cooperation for Sustainable use of Transboundary Water Systems & Economic Growth**

**2.1 Advance Conjunctive Management of Surface & Groundwater systems**

**3.1 Reduce Ocean Hypoxia**

**1.2 Increase Resilience & Flow of Ecosystems Services in Context of Melting High Altitude Glaciers**

**2.2 Water/Food/Energy/ Ecosystem Security Nexus**

**3.2 Prevent the Loss and Degradation of Coastal Habitat**

**3.3 Foster Sustainable Fisheries**



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## ESTABLISHMENT AND OPERATION OF A REGIONAL SYSTEM OF FISHERIES *REFUGIA* IN THE SOUTH CHINA SEA AND GULF OF THAILAND



**Mr. Chris Paterson**  
Skype: [scs\\_chris](#)



## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Fisheries of the South China Sea

**Fish stocks critically important for food security,  
income, and foreign exchange**



**Fish production from SCS  $\approx$  10% of global production**



**Most fish stocks fully-fished or over-fished**



**Future landings will decline unless total effort reduced**



**Difficult to reduce effort – high community dependence**



## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

# Role of Fisheries Habitats in Sustaining Fisheries

**SCS habitats play a critical role in sustaining fish stocks, food supply, and incomes**



Mangroves



Coral Reefs



Seagrass



Wetlands



Habitats are refuges for fish during critical stages of their life-cycles - e.g., as larvae, when spawning, and feeding





# INTERNAL INFORMATION SESSION ON THE SEAFDEC/UNEP/GEF FISHERIES REFUGIA PROJECT

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## Status and trends in coastal habitats of the South China Sea

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### ARTICLE INFO

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### ABSTRACT

The South China Sea is an area of globally significant biological diversity. The Transboundary Diagnostic Analysis prepared for this marine basin identified the issue of coastal habitat degradation and loss as a key priority issue for action. The UNEP/GEF project entitled "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand" (SCS project) focused on these concerns through implementing a series of activities under the component on habitat degradation and loss. Important outputs of this project component were national reports on coastal habitats. This paper reviews and analyses available information from these reports and recent studies to present a review of the status and trends in coastal habitats of the South China Sea. This includes a technical summary of the best available information relating to the distribution and extent of the dominant coastal habitats of mangroves, coral reefs, and seagrass; richness of habitat building species and hotspots of biodiversity; ranking of threats and the related rates of coastal habitat degradation and loss; and the state of coastal habitat management regimes. The use of this information in developing National Action Plans for habitats and the Strategic Action Programme for the South China Sea is reviewed. It is concluded that the science-based planning fostered by the SCS project was essential in reaching multi-lateral agreement on the regional targets and priority actions for coastal habitat management in this transboundary water body.

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### 1. Introduction

The South China Sea, including the Gulf of Thailand, is a global centre of shallow water marine biological diversity providing environmental goods and services critical to Southeast Asian economies. The coastal sub-regions of the nations bordering the South China Sea are home to 270,000,000 people, or 5% of the world's population, many of whom depend on the South China Sea for food and income. The high biological diversity and productivity of this globally significant marine basin is threatened by continuation of the current unsustainable patterns of use. It has also been seriously degraded in the recent past as a result of poorly planned coastal development.

The Transboundary Diagnostic Analysis (TDA) prepared for this marine basin identified the issue of coastal habitat degradation and loss as the key priority issue for action (Talaue-McManus,

2000). The UNEP/GEF project entitled "Reversing Environmental Degradation Trends in the South China Sea and Gulf of Thailand"<sup>3</sup> focused on these concerns through implementing a series of activities as part of the project component entitled "Habitat Degradation and Loss". This component comprised four sub-components, addressing the four priority habitats in the region, namely mangroves, coral reefs, seagrass, and coastal wetlands. It is important to note that the scope of the SCS project was limited to the South China Sea and Gulf of Thailand. Hence project activities, data and information collection focussed only on the South China Sea coastlines of the riparian countries. Coastal areas of participating countries that lay outside the South China Sea were excluded from consideration.

National-level project activities of each habitat sub-component included the establishment or re-vitalisation of National Committees or technical working groups to compile and review national information and data on the science and management of coastal habitats. Information and data from past and on-going research and publications were used to develop overall descriptions of the distribution and diversity of coastal habitats, define the threats to the quality and expanse of habitats, quantify rates of coastal habitat loss

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<sup>3</sup> Hereafter referred to as the SCS project.

- ❖ Located at centre of the Indo-west Pacific biogeographic province (global & local significance)

- ❖ 11% of the world's total mangrove is found along the margins of the South China Sea (SCS)

- ❖ ~930,000 ha of coral reef in coastal waters of the SCS

- ❖ ~78,000 hectares seagrass (~1/3 of the 60 known seagrass species)

- ❖ Significant basin-wide and intra-country variation in the richness and extent of habitat building species

- ❖ Degradation and loss of habitats is a result of a multitude of persistent and emerging threats



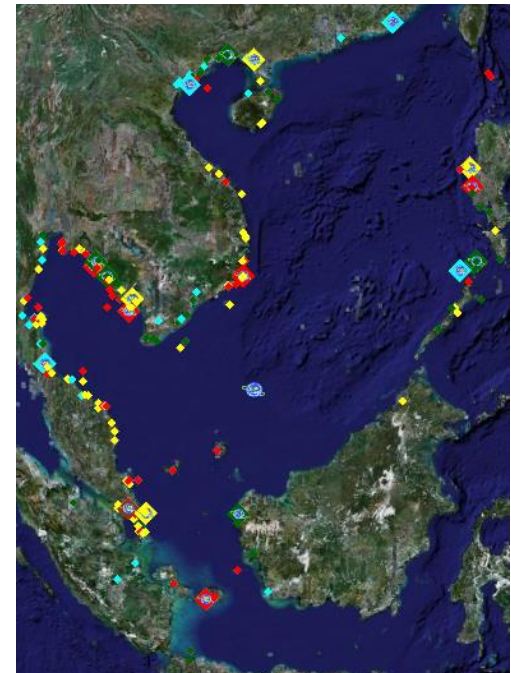
## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Loss of Fisheries Habitats of the South China Sea

**Continued decline in the total area of habitats has raised serious concerns for sustainability of fisheries**

#### Estimated Decadal Rates of Habitat Loss:

- ❖ Seagrass – 30%
- ❖ Mangroves – 16%
- ❖ Coral Reefs – 16%
- ❖ **Fishing is a key factor in the continued loss of marine habitats and biodiversity in the South China Sea**





# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

**Fish production is intrinsically linked to the quality and  
expanse of coastal habitats**



**Dilemma for fisheries & environment sectors is that  
conservation of habitat does not necessarily result in  
increased fish stocks while lowering fishing effort does  
not necessarily result in the improvement of habitat**

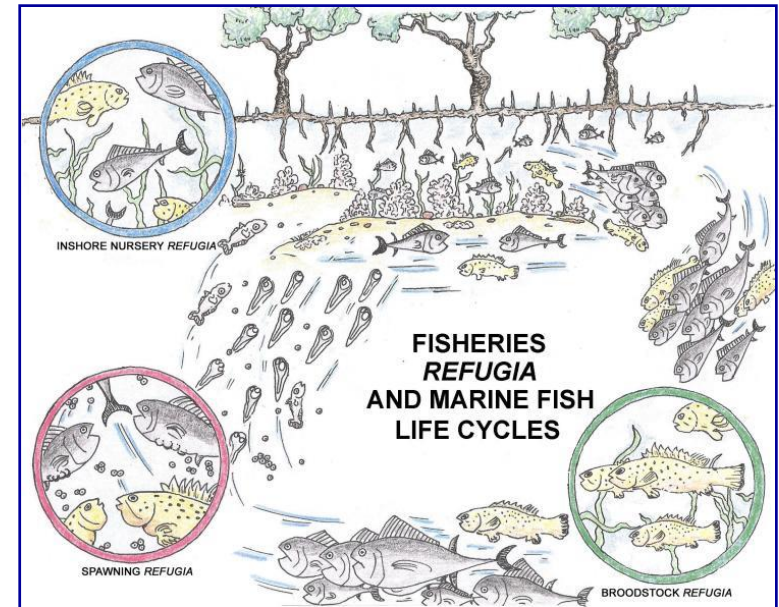


## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Development of the Fisheries *Refugia* Concept

#### **Fisheries *Refugia*:**

- ❖ Specific areas of significance to the life-cycle of fish species
- ❖ Should be defined in space and time
- ❖ Should NOT be no-take zones
- ❖ Serve to safeguard spawning aggregations, nursery grounds, and migration routes



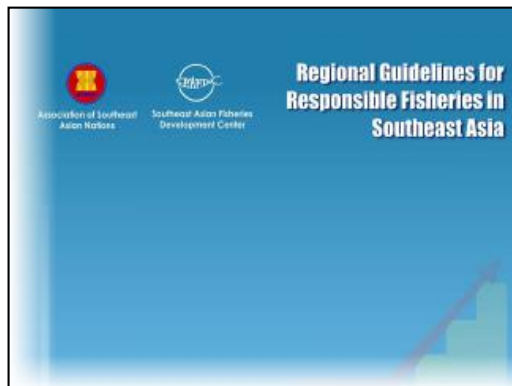
**Fisheries *Refugia* are “Spatially and geographically defined, marine or coastal areas in which specific management measures are applied to sustain important species [fisheries resources] during critical phases of their life-cycle, for their sustainable use.”**



# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT



Stakeholder Consultations on *Refugia* Concept



Intergovernmental Guidelines on *Refugia*



Technical Workshops on Mapping Known *Refugia*



Review of Fish Egg and Larvae Data for *Refugia* Identification



Development of a Fisheries *Refugia* Information Portal



Conduct of Regional Training Events on *Refugia* Science and Management



## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Conduct of Country Consultations on the Identification and Establishment of Fisheries *Refugia* Sites





## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Review of Information Collated by the South China Sea Project on Links Between Fish Life-Cycle and Critical Habitats

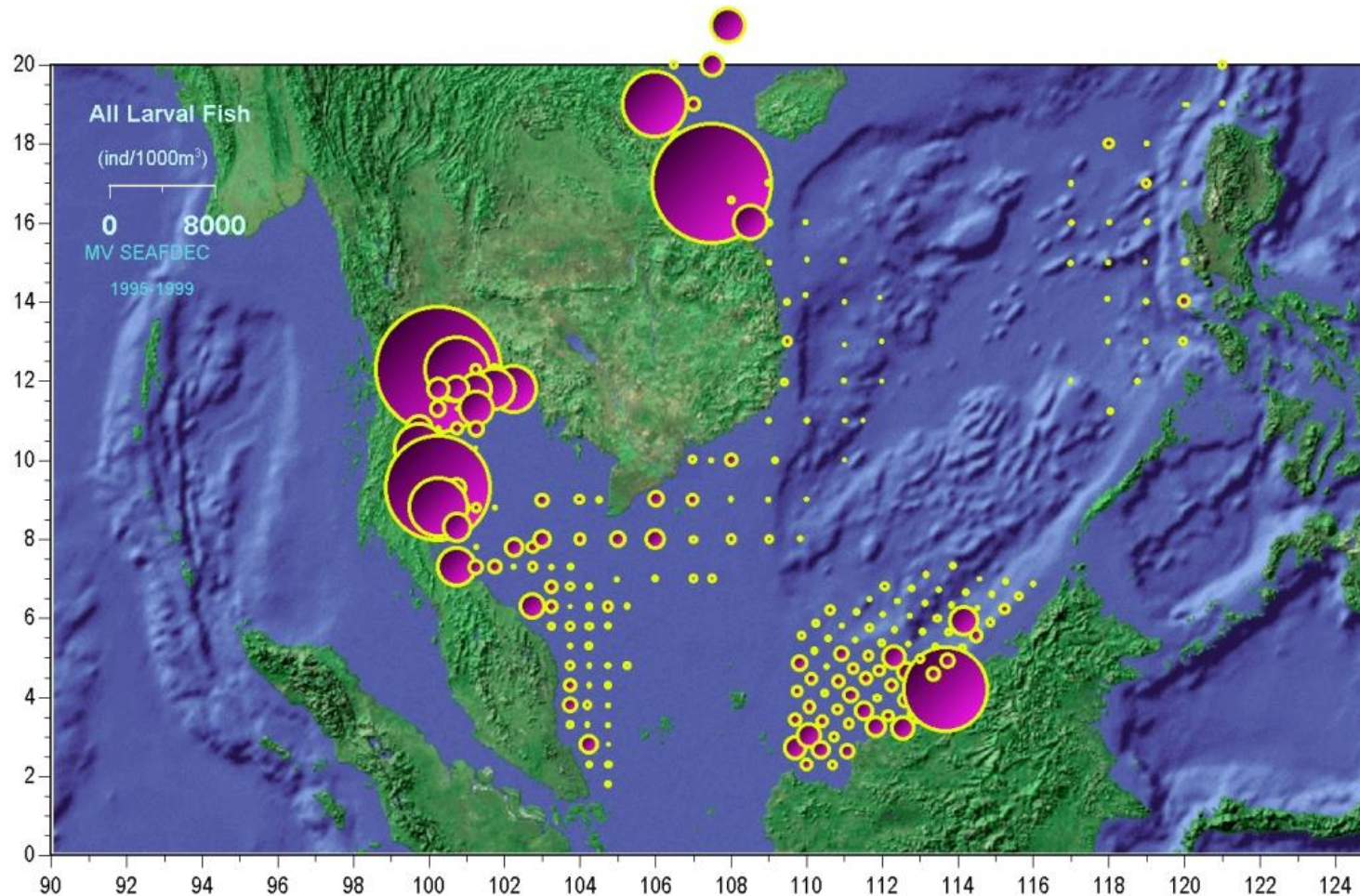
- ❖ National Reports on Fisheries
- ❖ National Reports on Coral Reefs, Seagrass, Wetlands, Mangroves
- ❖ 142 Habitat Site Characterisations
- ❖ Habitat Demonstration Site Documents
- ❖ The South China Sea Meta-Database





# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES REFUGIA PROJECT

## Review of Information Collected by SEAFDEC on Larval Fish Distribution and Abundance

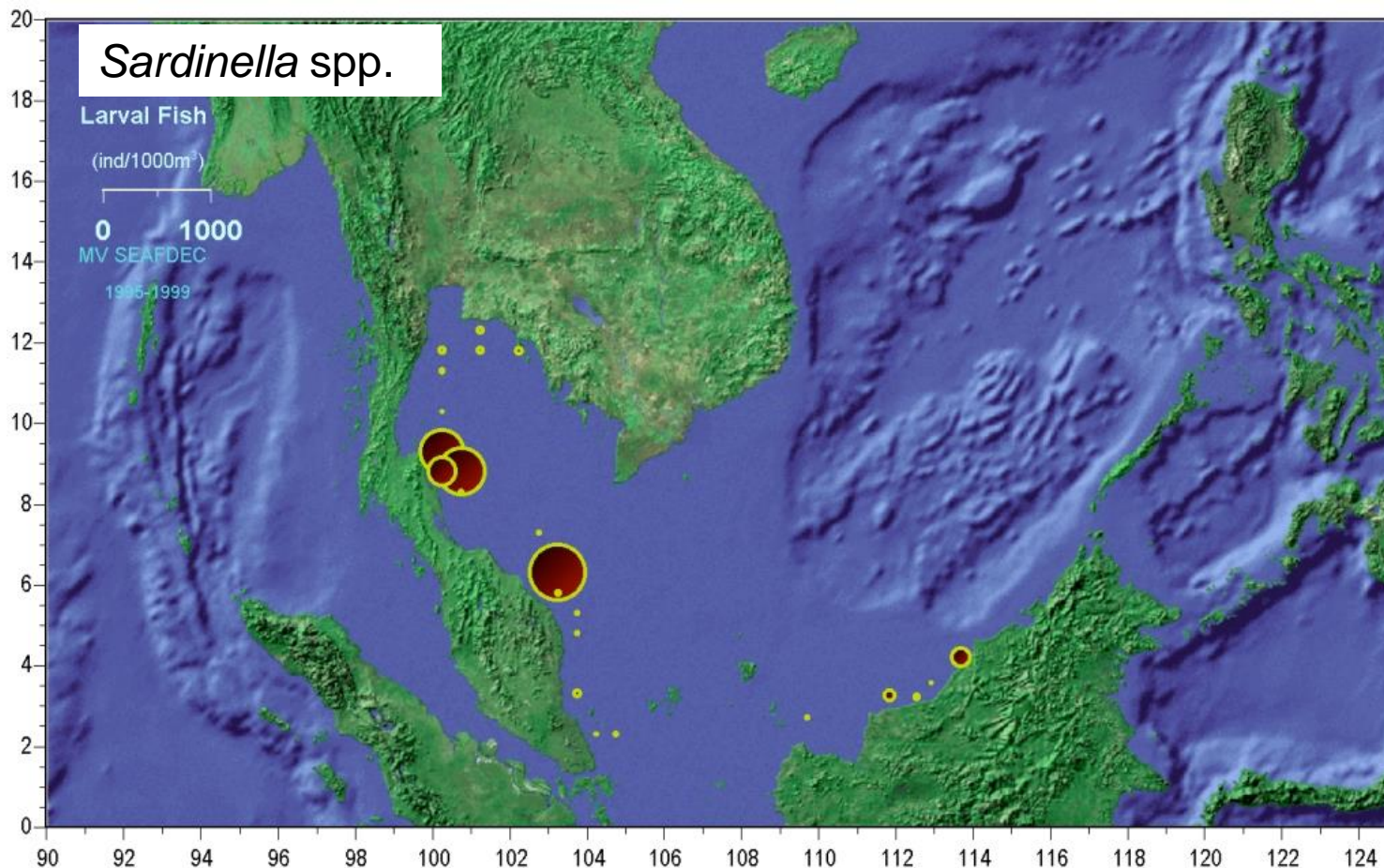






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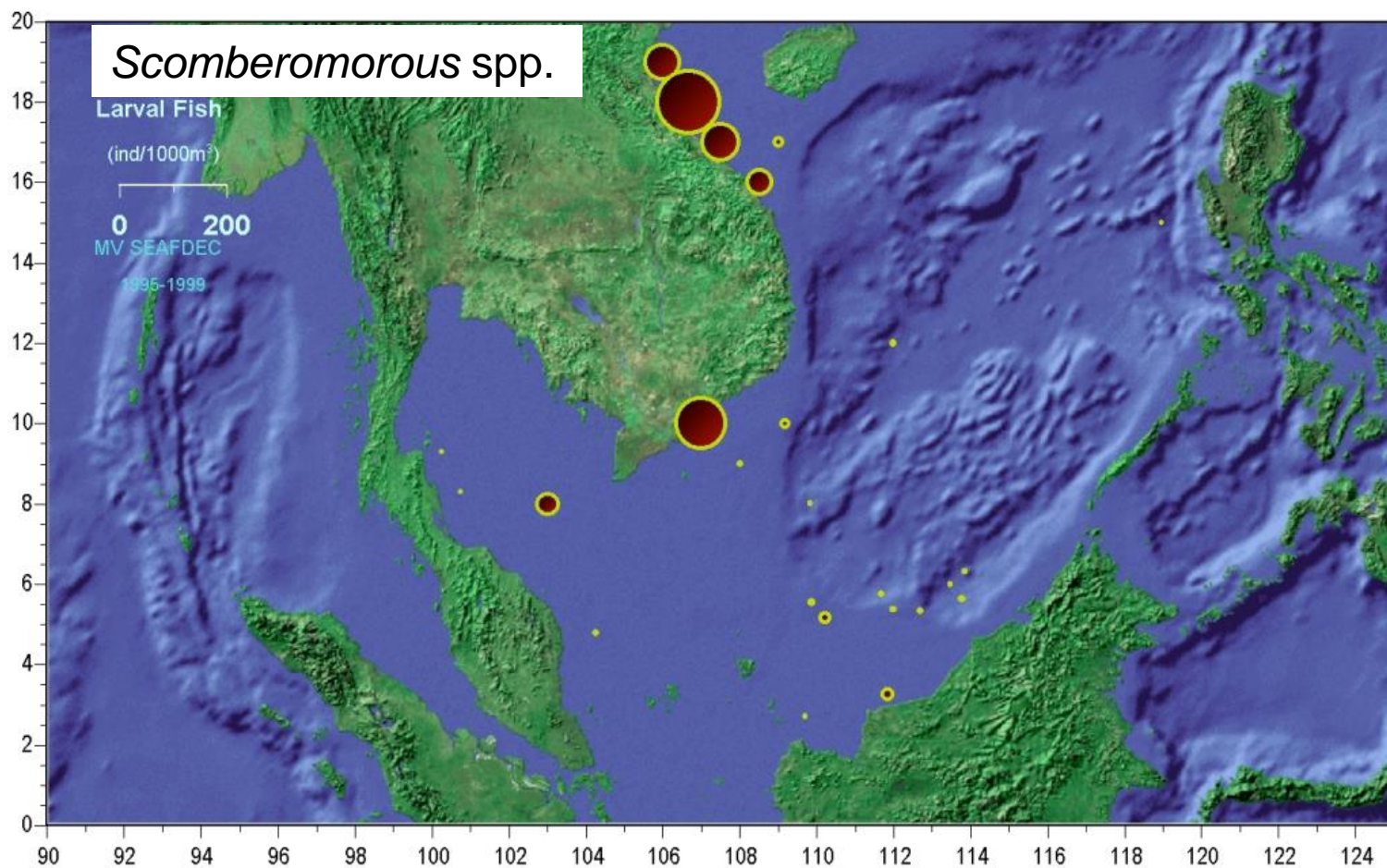
## Review of Information Collected by SEAFDEC on Larval Fish Distribution and Abundance





# INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES REFUGIA PROJECT

## Review of Information Collected by SEAFDEC on Larval Fish Distribution and Abundance





## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

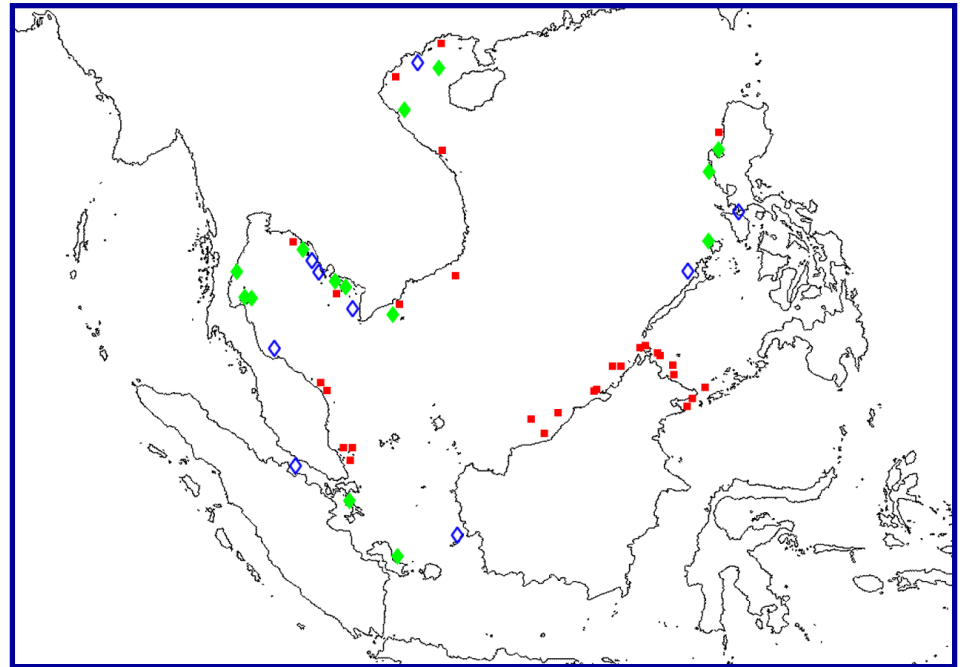
### Identification of Fisheries *Refugia* Sites

**52 known spawning and nursery areas identified**

#### Site Information Collated:

- ❖ Site name
- ❖ Geographic location
- ❖ Species utilising the site (spawning/nursery)
- ❖ Time of year used

**General need for more detailed information about species usage of sites to develop management measures**



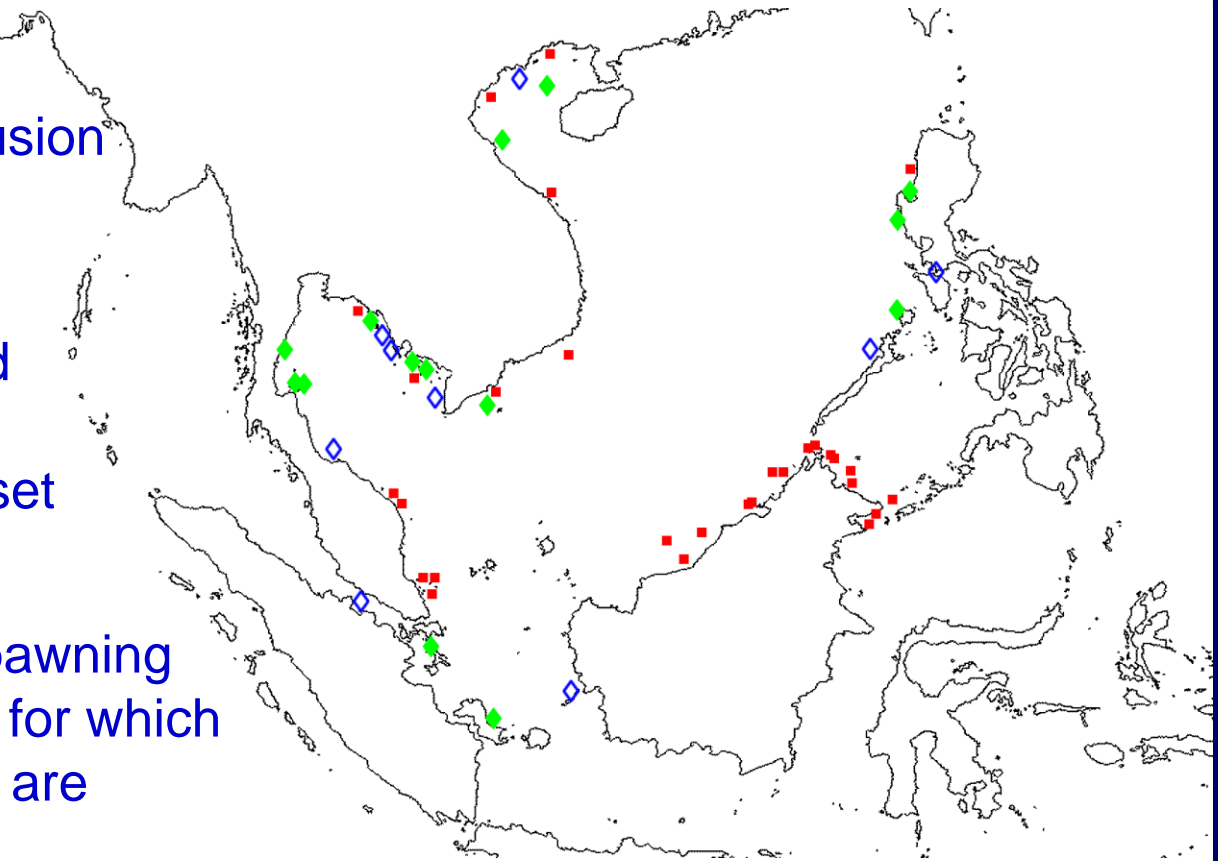


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## Identification of Fisheries *Refugia* Sites

### Sites Identified

- ❖ 14 sites for inclusion in initial system of *refugia* (green)
- ❖ 9 sites accorded high priority for action once initial set established (blue)
- ❖ Additional 29 spawning and nursery areas for which further information are required (red)





## INCEPTION WORKSHOP FOR THE SEAFDEC/UNEP/GEF FISHERIES *REFUGIA* PROJECT

### Development of a Regional System of Fisheries *Refugia*

#### Regional Actions

- Regional information and data management for *refugia* system
- Targeted demonstration activities
- Capacity development
- Supporting regional fisheries management
- Monitoring and evaluation

#### National Actions

- Enhancing national coordination
- Strengthening the enabling environment
- Building the national and site-level science and information base
- Planning operational management of *refugia*

#### Local Actions

- Establish local management boards
- Delineate *refugia* boundaries/formal designation of sites
- Identify fisheries management problems/solutions for *refugia* sites
- Establish regulations and monitoring