

Regional Scientific and Technical Committee Meeting for the SEAFDEC/UNEP/GEF Project

**On Establishment and Operation of a Regional
System of Fisheries *Refugia* in the South China Sea
and Gulf of Thailand**

11-13 September 2018

**Trat Province (Fisheries *Refugia* Site)
Thailand**

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Regional Expert on Fisheries Biology**

Scope of Talk

**The Lesson Learnt from Indo-Pacific mackerel
Fisheries Management in Thailand**

Closed Seasons and Areas for Indo-Pacific mackerel Fisheries Management in the Gulf of Thailand

Pre-1953

- Identification of the importance area of Indo-Pacific mackerel (*Rastrelliger brachysoma/neglectus*)



1953

- Establishment of a spawning season closure for Indo-Pacific mackerel (1st April - 31st May) :- prohibition of purse seine fishing



Mackerel Investigation Tagging Programme

1959

- Tagging experiments had been first conducted in June**
- Live-fish had been collected from bamboo stake traps**
- Special designed vessel for handling and transporting of live-fish was used in the field**
- Dart tag was used**
- Tagged fish had been kept in the rearing pen for observing fish behaviour, tagging mortality, tag shedding and growth study**

1960

- Started releasing of tagged fish into the sea**
- 3,667 fish (including Indo-Pacific and Indian mackerels) had been tagged**
- Only strong Indo-Pacific mackerel of 2,921 fish were released**
- Dart tag had been used**

Mackerel Investigation Tagging Programme

- **Revised in 1962**

Objectives

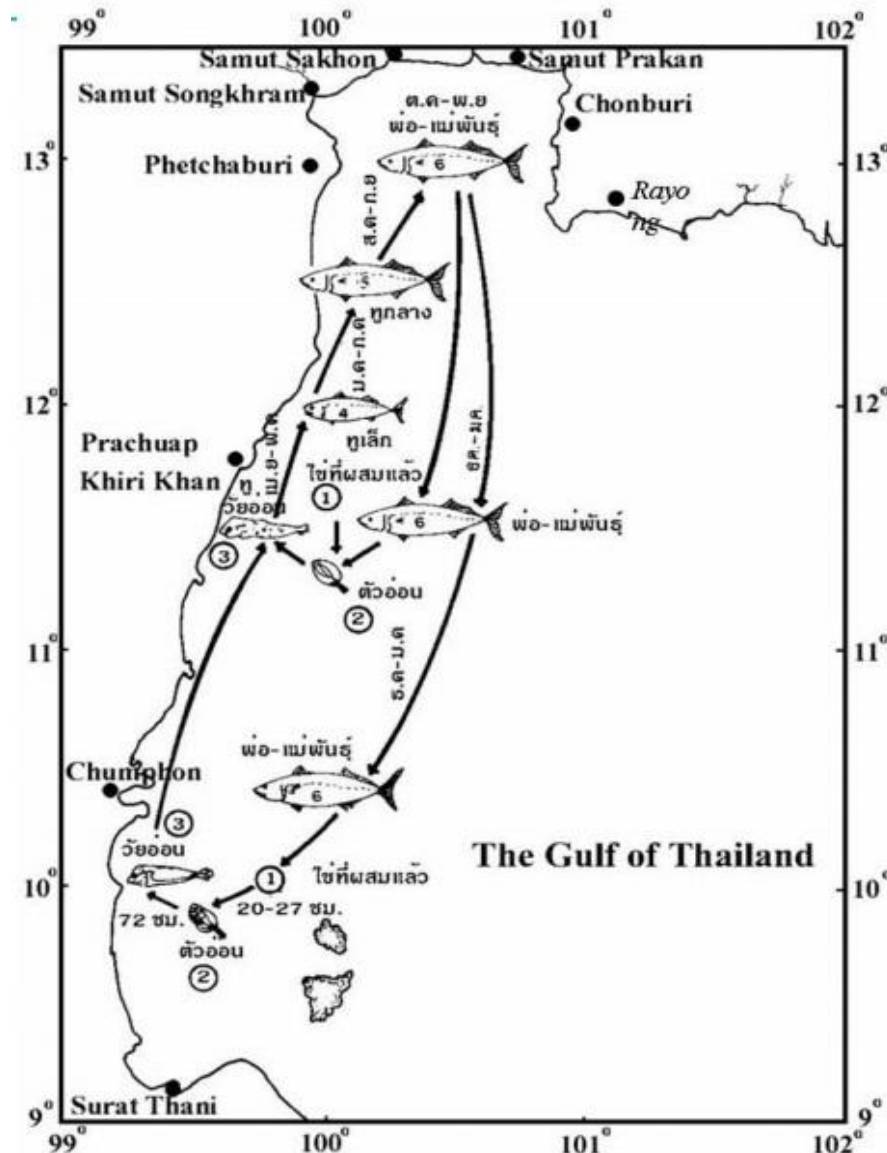
- **To stabilise the maximum sustainable yield of mackerel resources exploited in the Gulf of Thailand**

Surveys and studies in the Programme

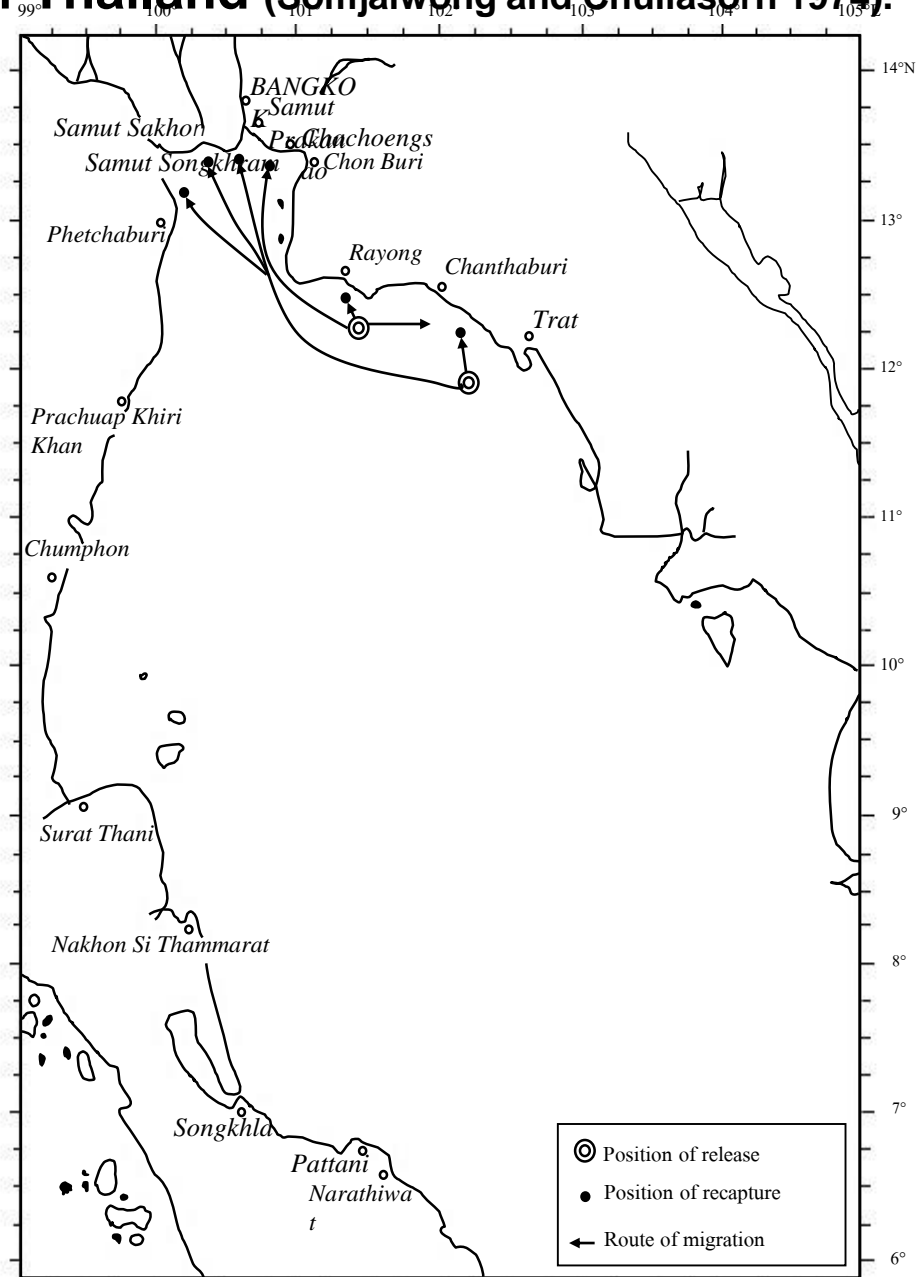
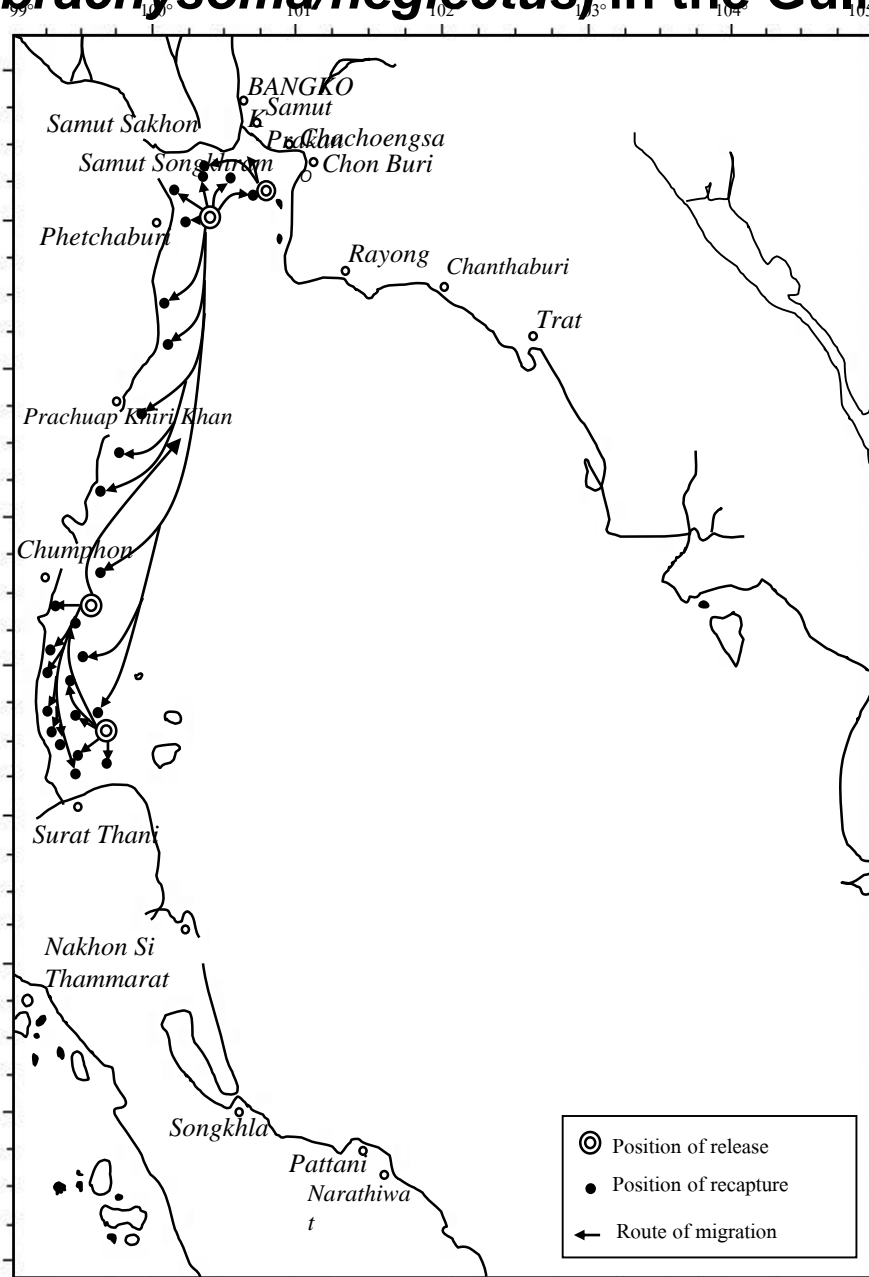
- **Catch statistics and size composition**
- **Study of early life history**
- **Food and feeding and plankton studies**
- **Racial studies**
- **Tagging experiments**

Conclusion of tagging project

- ▶ Distribution: along the coastal areas, less than 50 m in depth
- ▶ Spawning season: all year round (high peak during **Jan.-Mar.** and **June-Aug.**)
- ▶ Spawning grounds: the middle of the Gulf of Thailand (**off Prachuap Kiri Khan, Chumphon and Surat Thani Provinces**)
- ▶ Life cycle:
 - Gravid fish move from the inner Gulf to spawn in the middle Gulf
 - Fertilized eggs float in the areas of 20-30 m in depth
 - Juveniles move to the inner Gulf

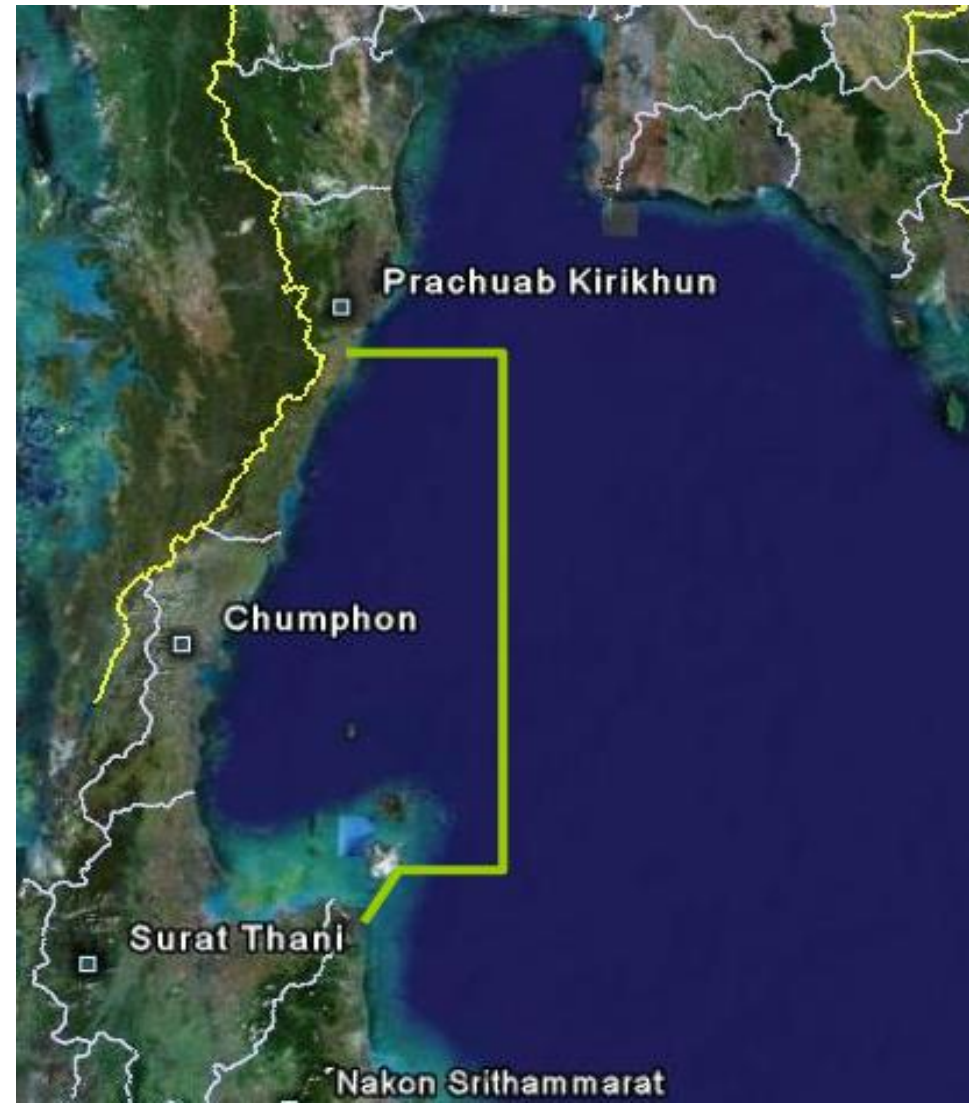


The migratory route of tagged Indo-Pacific mackerel (*Rastrelliger brachysoma/neglectus*) in the Gulf of Thailand (Somjaiwong and Chullasorn 1974).



The Changing of the Closed Seasons and Areas for Indo-Pacific mackerel in the Gulf of Thailand

Led to changing in 1959 of spawning closure area and duration **from 1st April to 31st May to 1st January – 30th April**



Tagging Programme (cont'd)

1961

- Tagging experiment had been continued
- Bottom tag (Petersen tag) was used in the experiment, but the result was not as good as dart tag

1962-1975

- Tagging experiment in the Gulf of Thailand continued
- Other types of tags (bottom tag, spaghetti tag, collar tag body cavity tag) were used in the experiment but they showed no good result comparing with dart tag
- Colours of tag had been studied (red, yellow, blue and green), it found that red colour is the best in term of tag recovery

1971-1984

- Tagging experiment were conducted in the Andaman Sea
- Joint tagging programme with Malaysia in the Andaman Sea

The Changing of the Closed Seasons and Areas for Indo-Pacific mackerel in the Gulf of Thailand (Cont.)

1976 - 1984

- Identification of importance of the site to other species.
- Notification extended closures to **multiple species** – led to large protests by fishers in 1983.
- Negotiations between Department of Fisheries and fishermen led to the area of the site being reduced (50,000 sq. km) and duration of spawning and nursery closures were reduced – areas managed for multiple species.



The Changing of the Closed Seasons and Areas for Indo-Pacific mackerel in the Gulf of Thailand (Cont.)

1985-1994

- Anchovy purse seine fishing permitted in area for 6 years.
- Conflicts between fishers using anchovy purse seines and other gears.

1995-1999

- Rapid increase in the use of new fishing gears and practices – 1999 Notification of permitted fishing gears and practices (Mackerel encircling gill net).



The Changing of the Closed Seasons and Areas for Indo-Pacific mackerel in the Gulf of Thailand (Cont.)

2000+

- Pressure from fishers to reduce the area of the site by 3,000 sq.km in the Chumphon area.
- Inappropriate use of mackerel gill net by both large and small scale sectors.

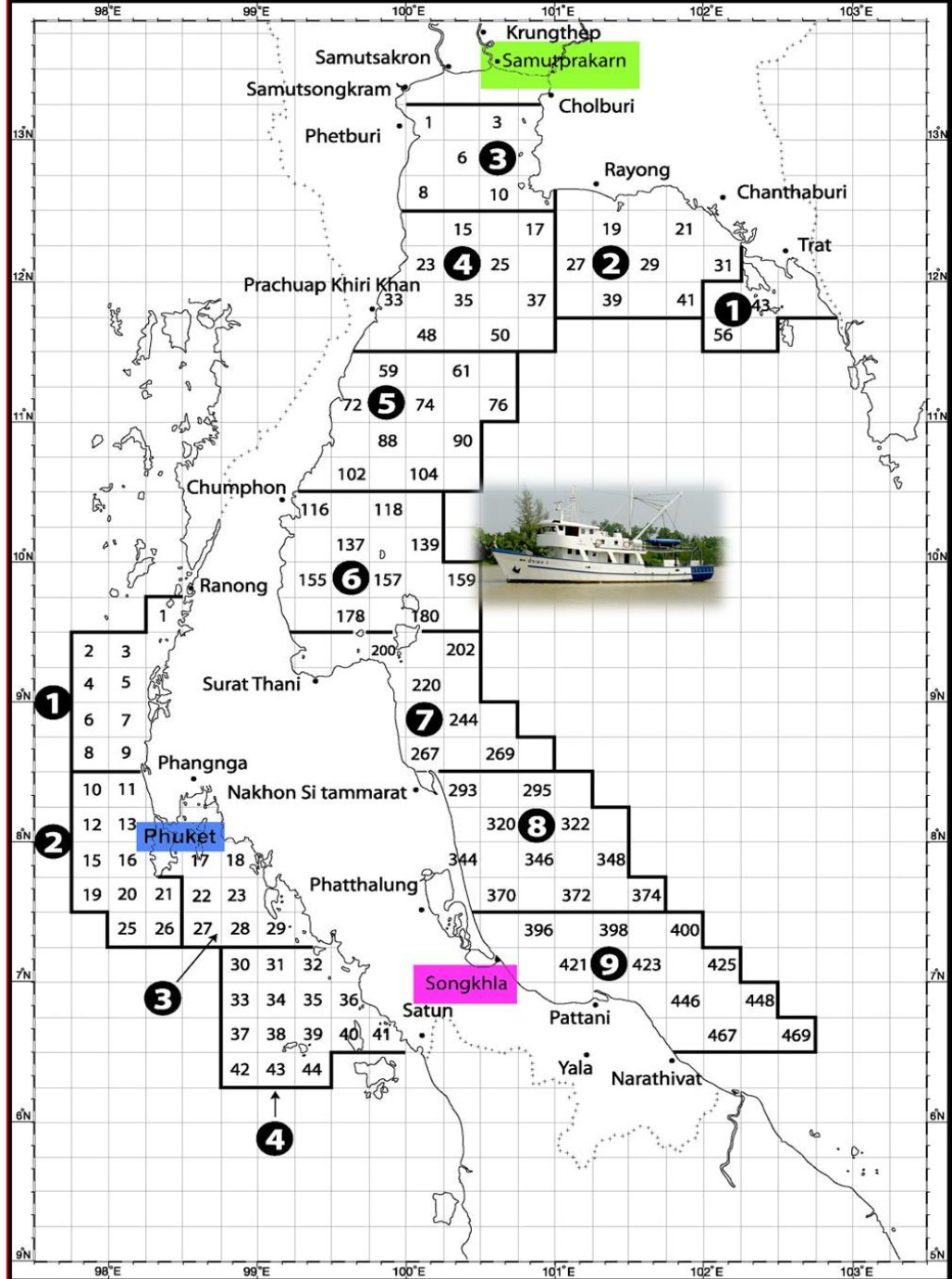
Mackerel gill net: Mesh size = 4.7cm

Net Length =>14 km

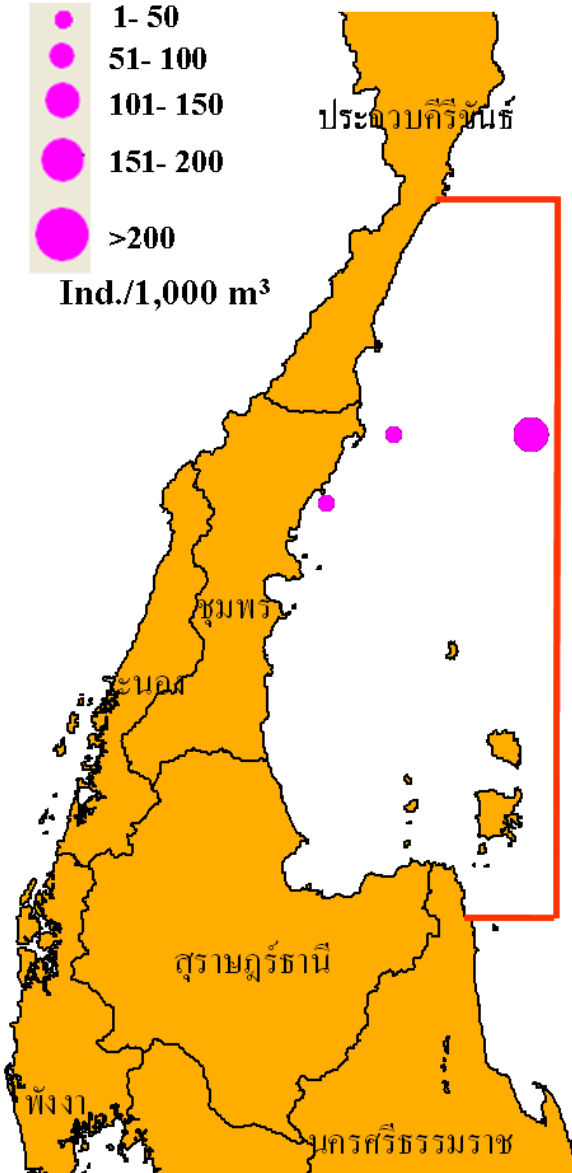
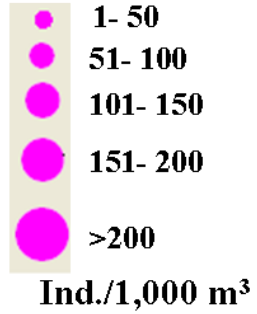
- Schools detected using echo-sounders
- Net set in zig-zag manner
- Hauled by power-block
- Fishers target Indo-Pacific mackerel
- Practice highly species/size selective
- Species targeted during spawning aggregations
- ≈100% of mackerel landed at maturity stage (stage 4 & 5)



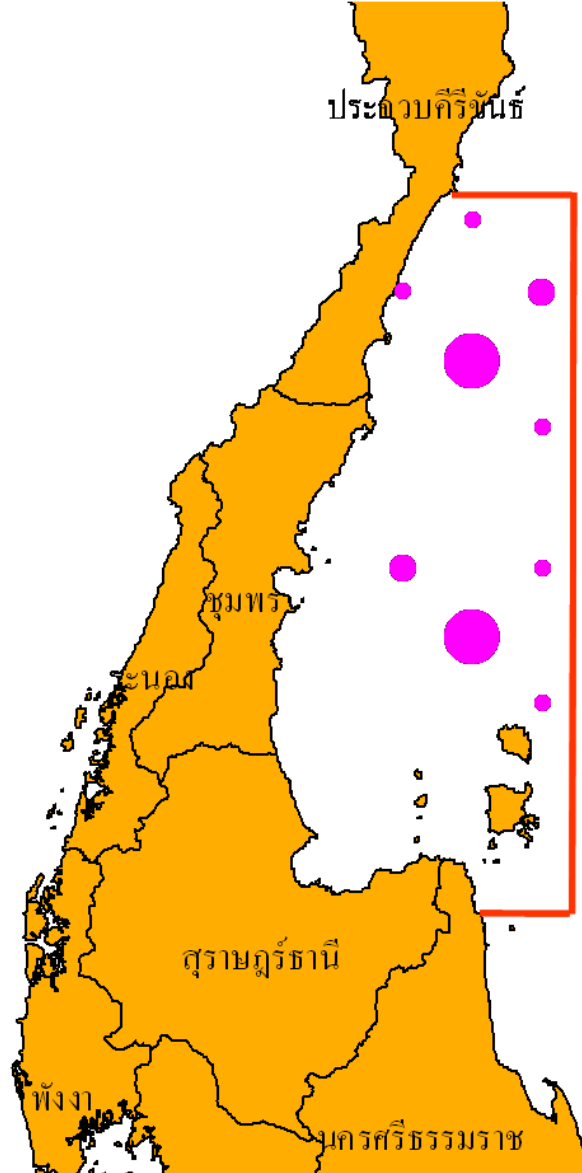
Marine Resource Survey Station in Thai Waters by DoF Research Vessel



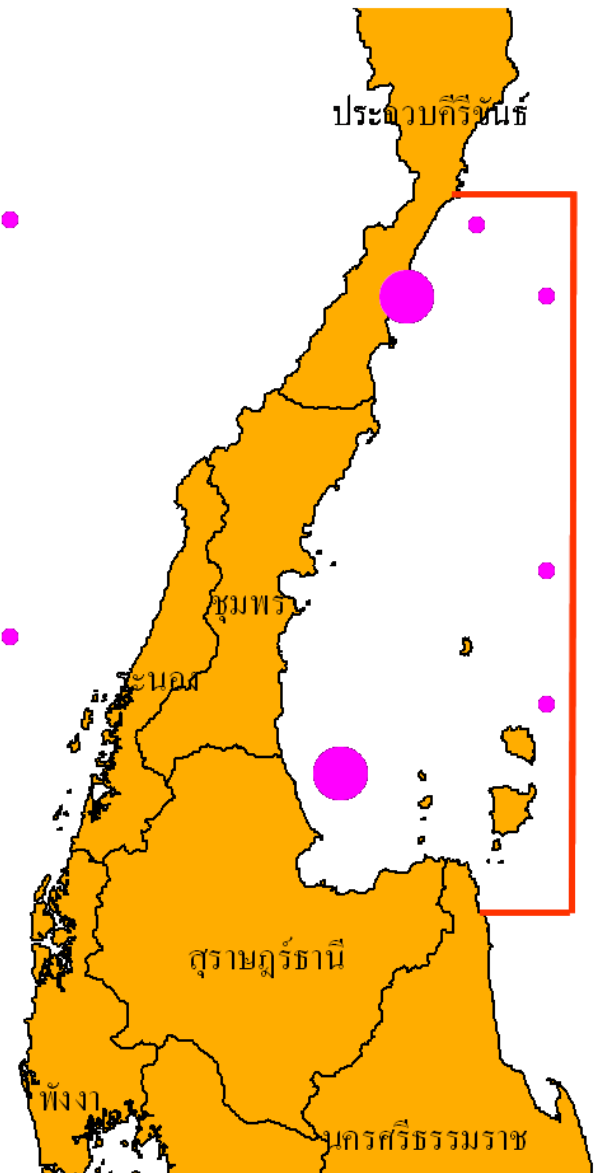
ครอบครัวปลาทุ-ลั้งวัยอ่อน (Scombridae)



Before

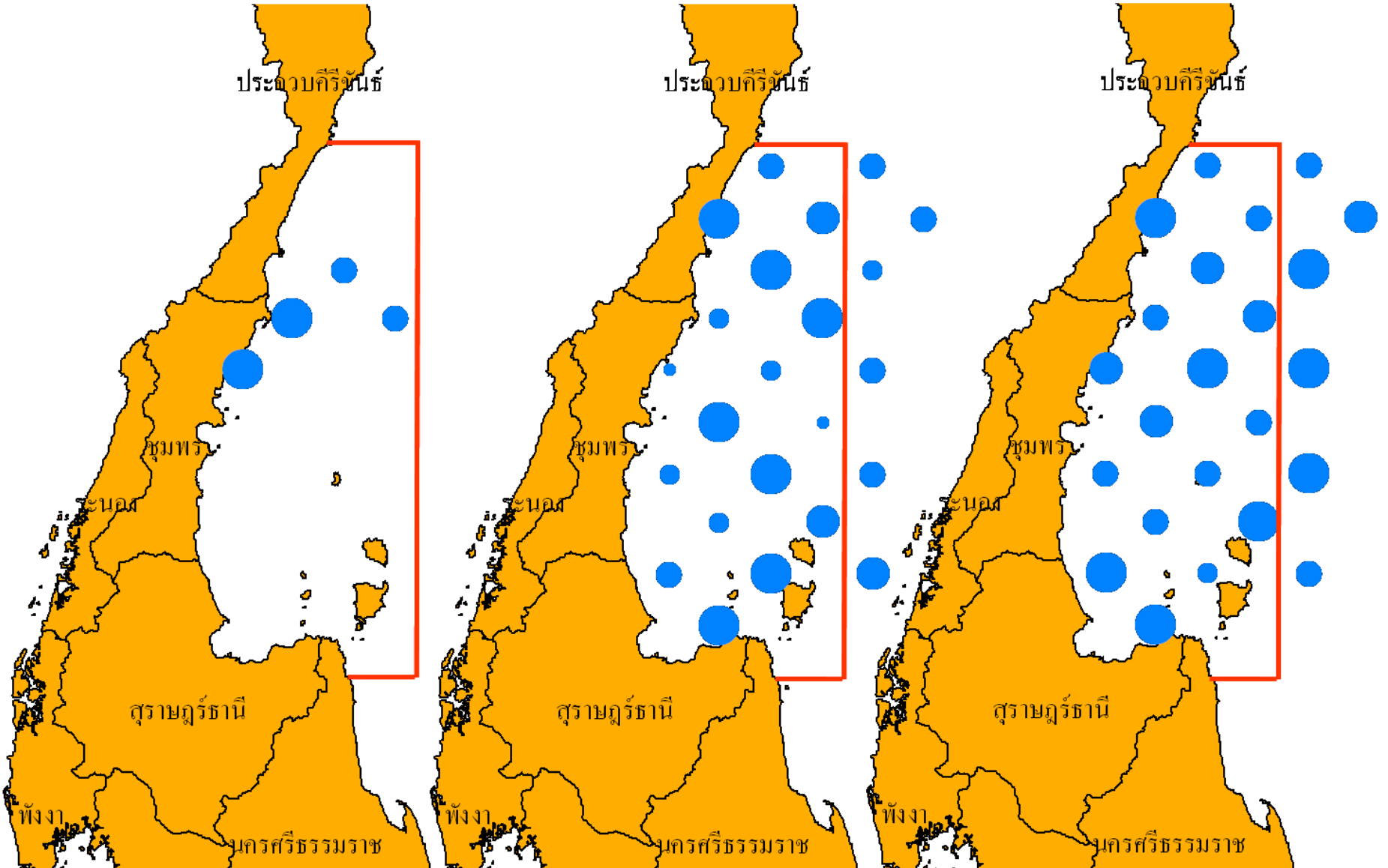


During



After

ครอบครัวปลาไว้อ่อนอื่นๆ

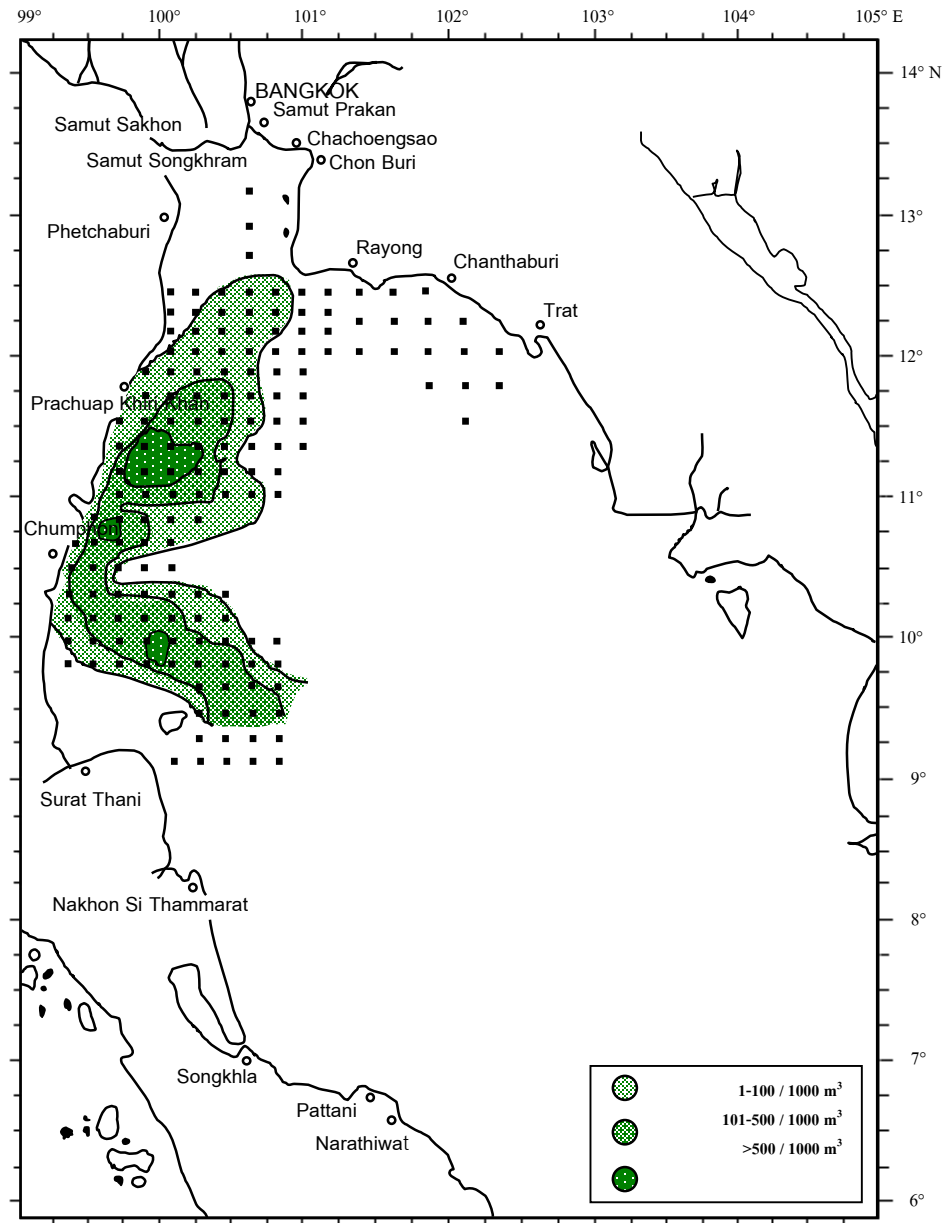


Before

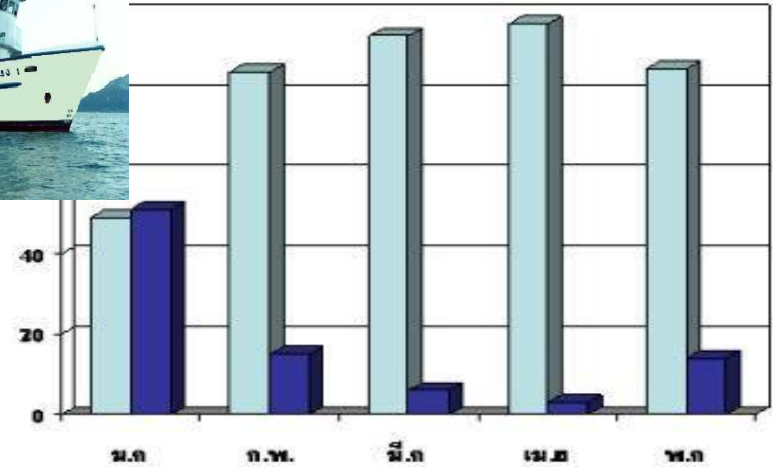
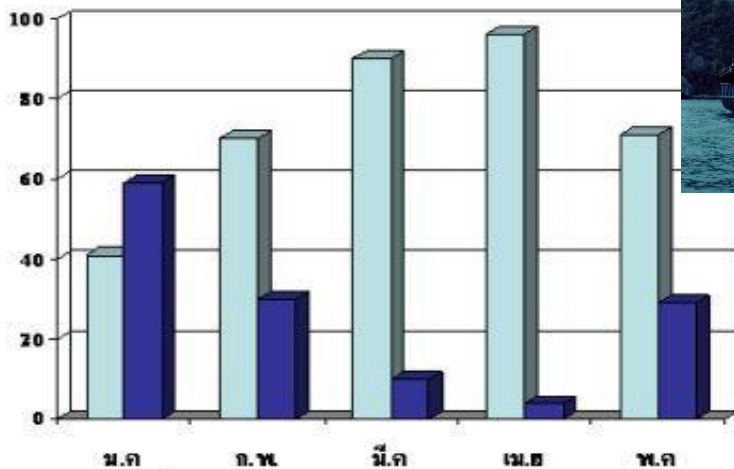
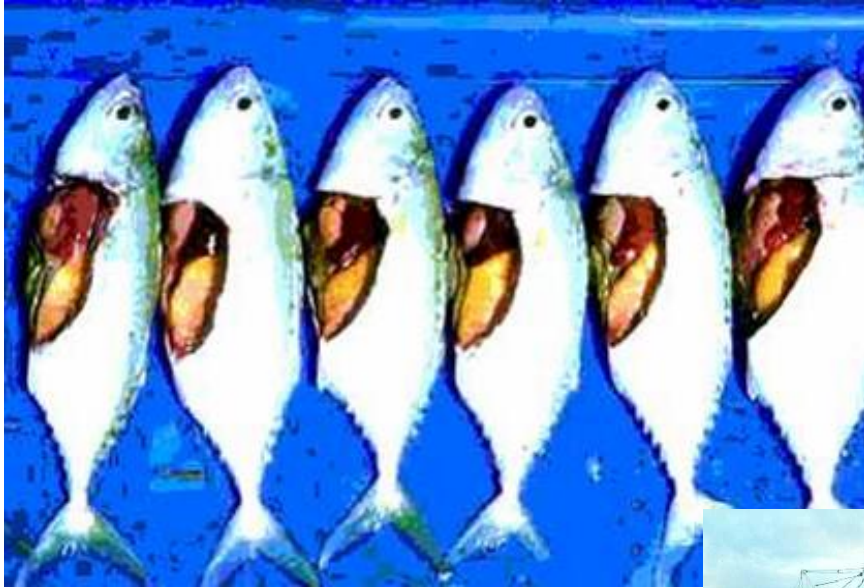
During

After

Abundance of Indo-Pacific mackerel's eggs and larvae in the Gulf of Thailand



Result of Implementation during closed season and areas (Prachuap Khiri Khan–Surat Thani Fisheries *Refugia* Site)



Female

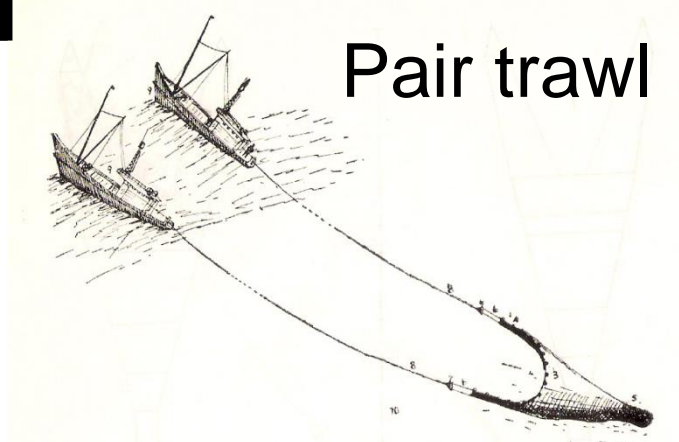
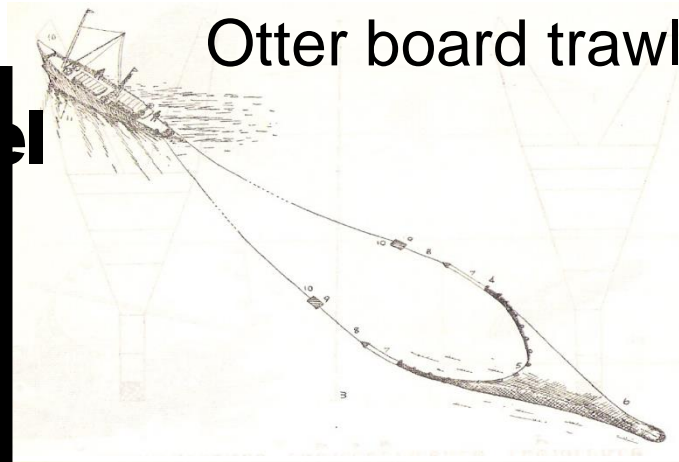


Male



Gears prohibited:-

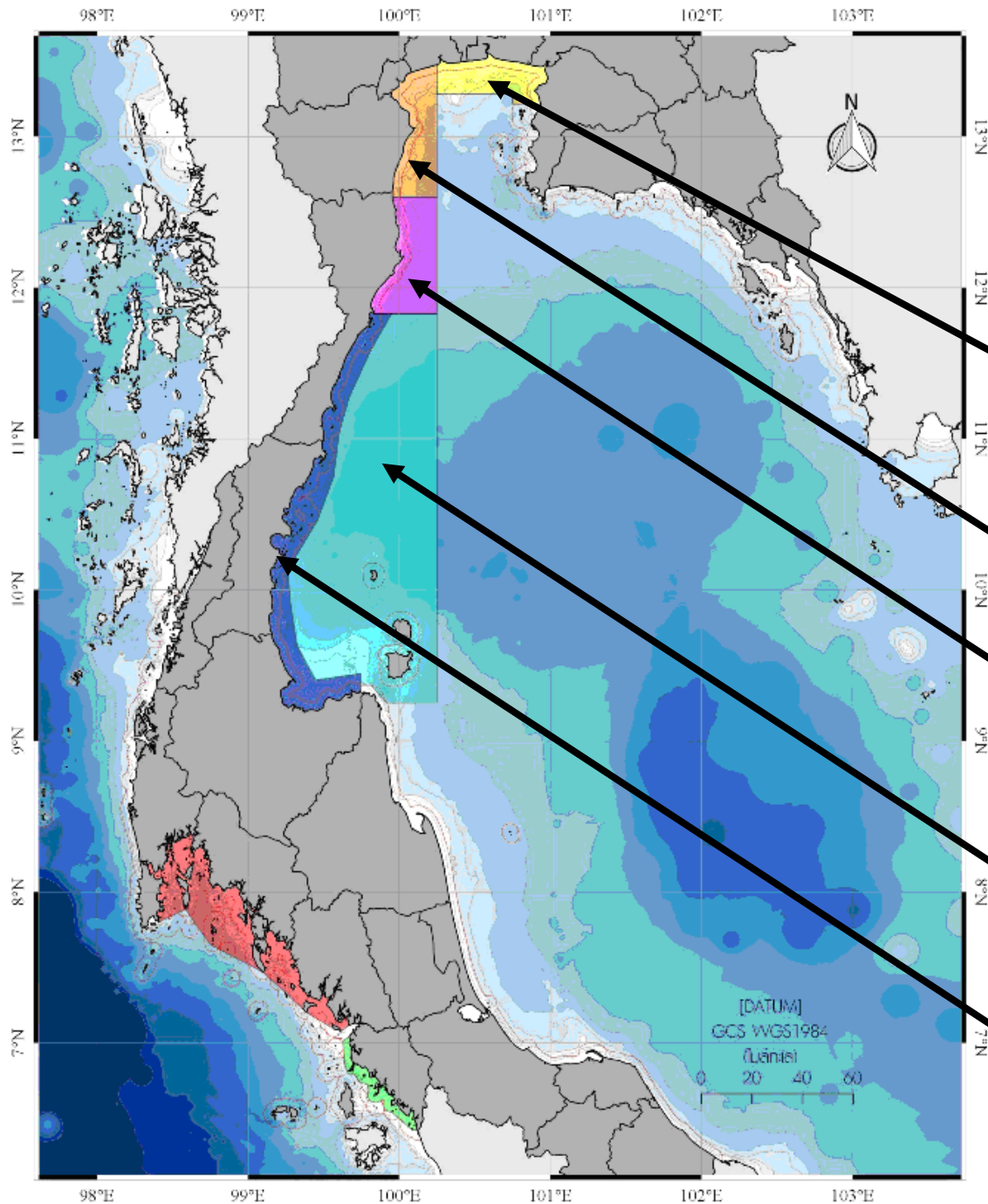
- All type of trawler
- Thai purse seine
- Mackerel encircling gill net



Stakeholder Consultation for Fisheries Management Measure



Stakeholder Consultations



The Existing Areas Closure for Fisheries management of Thailand

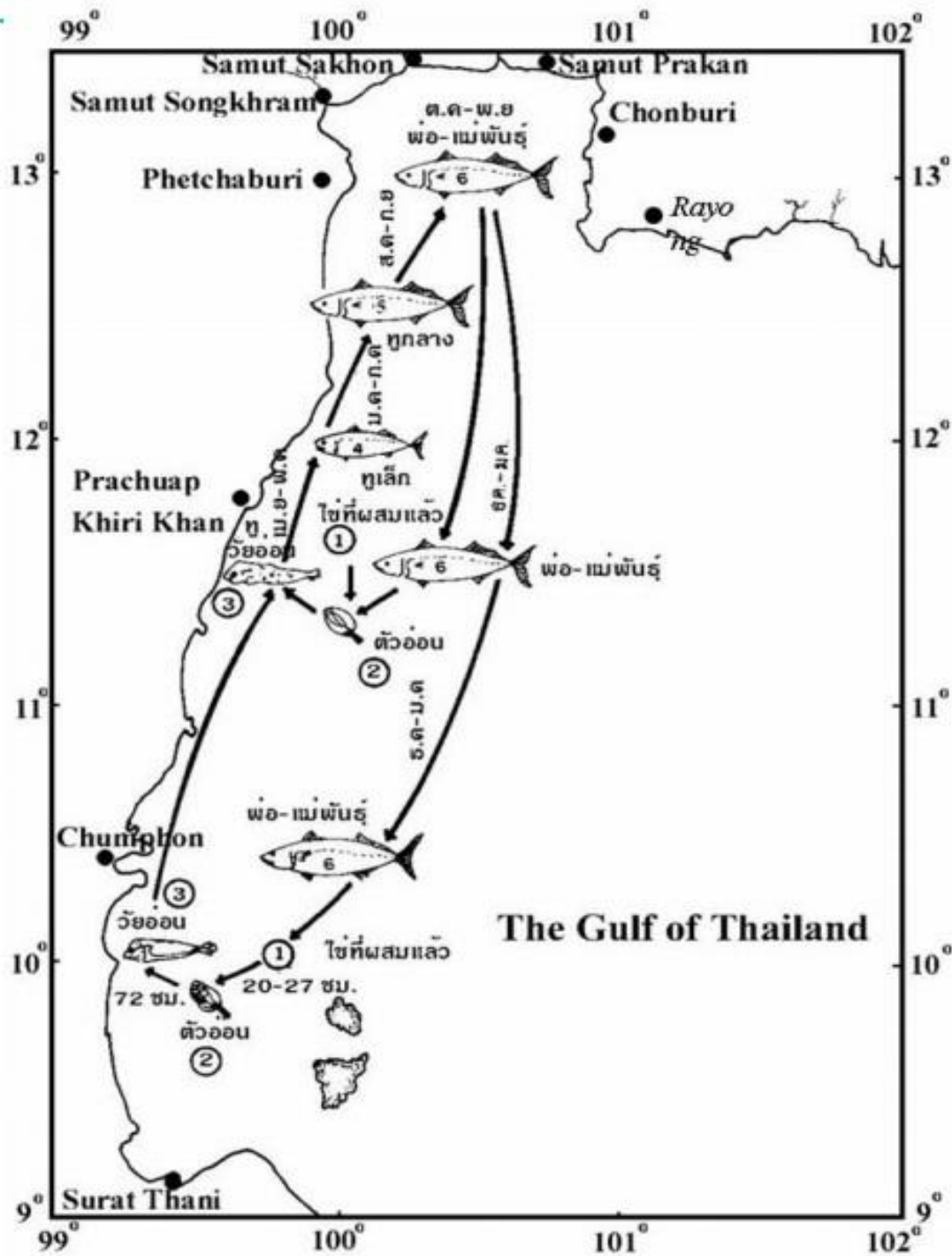
1 Aug.-30 Sept.

15 June.-15 Aug.

16 May-14 June

15 Feb.-15 May

16 May-14 June



Thank you very much for your attention

