



COLLABORATIVE RESEARCH SURVEY ON MARINE FISHERIES RESOURCES AND ENVIRONMENT IN THE GULF OF THAILAND 2018

Fish Larvae Distribution and Abundance of Families Scombridae and Engraulidae in the Gulf of Thailand

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Presented by

Rakkiet Punsri SEAFDEC/TD

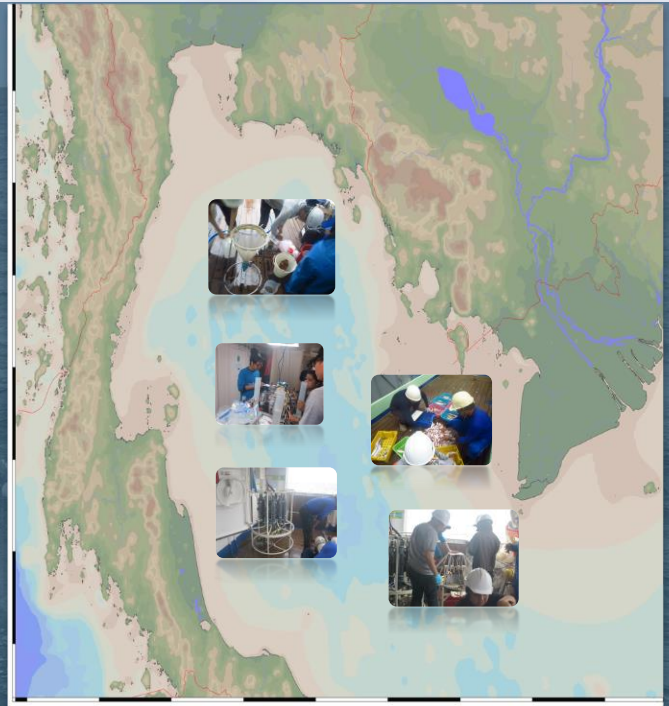


Outline

- Introduction
- Objective
- Materials and Methods
- Results
- Discussions
- Conclusion

Introduction (1)

- This research was a collaborative survey among Cambodia and Thailand between 17 August – 18 October 2018.
- There are 31 research activities.
- The GoT is located in western region of the South China Sea, and is bordered by Cambodia, Thailand Viet Nam and Malaysia. It occupies a seabed area of 304,000 m²



Introduction (2)

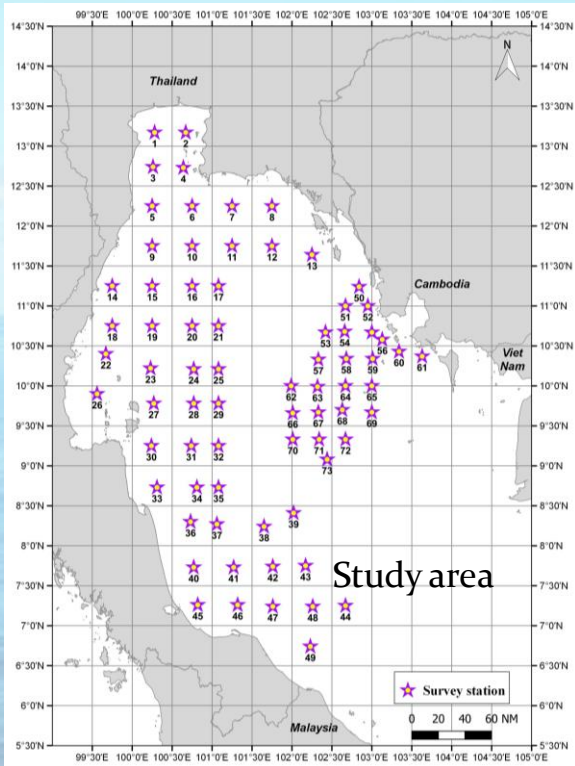
Years	Tuna		Mackerel		Anchovy	
	% of quantity of marine capture production	Value (US\$1000)	% of quantity of marine capture production	Value (US\$1000)	% of quantity of marine capture production	Value (US\$1000)
2016	10.65	2,2537,820	5,14	1,487,079	2.54	394,482
2017	10.06	1,055,884	5.85	376,942	2.86	178,962

Source: Fishery Statistical Bulletin of Southeast Asia 2016, 2017

Objective

- To study distribution and abundance of families Scombridae and Engraulidae larvae in the Gulf of Thailand

Materials and Methods (1)

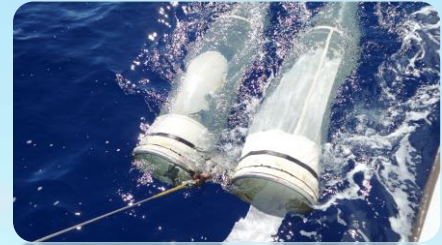


- The samples were collected from 73 stations
 - 49 stations in Thai Waters
 - 24 stations in Cambodia Waters
- The sea depth ranged from 23 m. to 76.3 m.
- The average depth is 50.8 m.

Materials and Methods (2)

• Sampling methods

- Bongo Net (55 cm. in diameters)
 - Mesh size 500 μm
- Flow meter was attached to the mouth part of net
- Oblique tow from surface to depth 10 m. above the bottom.
- The speed of wire-out 0.6 m/s and wire-in 0.3 m/s
- Ship speed during collecting period is 1.5-2 knots
- Collected specimens were fixed immediately in 10 % buffered formalin



↑
**Net's depth
observing**

Materials and Methods (3)

● Laboratory Method

○ Sorting and identification was done at the laboratory

✦ After sorting, the fish larvae were transferred and preserved in 70 % ethyl alcohol

○ Specimens were identified to the genera or species level following characters described by Leis and Carson-Ewart (2000) and Okiyama (2014)

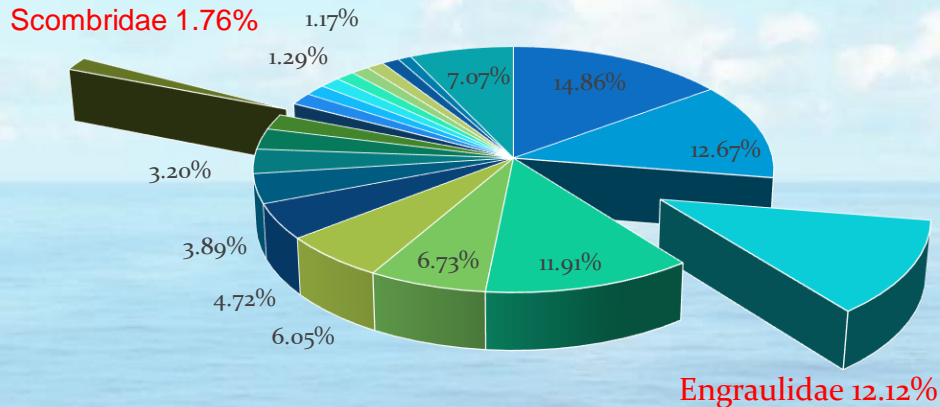
● Data Analysis

○ Their distribution and abundance were estimated in term of number of individuals per 1000 m³



Result (1)

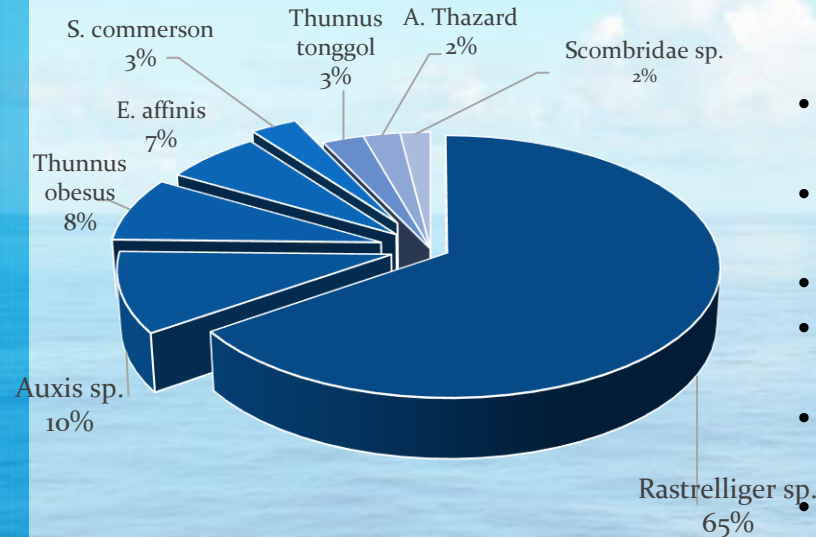
Species composition of fish larvae in the Gulf of Thailand



- This research 3,663 larval fish specimens from 54 families were caught in the whole research area.
- The species composition of Scombridae larvae was 1.76 %
- Engraulidae larvae was 12.12 %

Result (2)

Species composition of family Scombridae



- Sixty-two (62) Scombridae larvae specimens identified consist of at least 6 species in 5 genera :
- Genus Rastrelliger – Rastrelliger sp/spp. (65%)
- Genus Thunnus - *Thunnus tonggol* , *T. obesus*,
- Genus Enthyynnus - *E.affinis*
- Genus Auxis - *Auxis* sp/spp. A. Thazard (2%).
- Genus Scomberomorus- *Scomberomorus commerson*
Family Scombridae - *Scombridae* sp.1 (unidentified to species level)

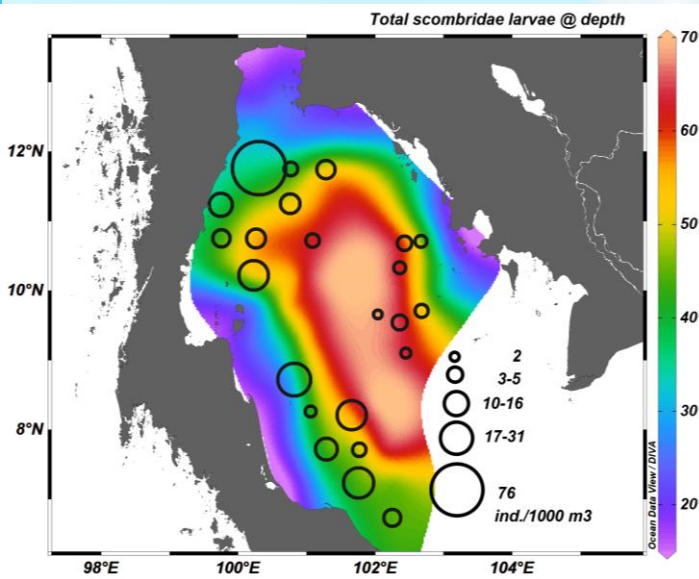
Result (3)

Comparing Scombridae larvae were found in Thai Waters and Cambodia Waters

Waters	Number of Species	The most abundant of Scombridae larvae	Scombridae check list
Thai Waters	5 genera at least 5 species	<i>Rastrelliger</i> sp./spp.	<i>Rastrelliger</i> spp. <i>T. obesus</i> , <i>Auxis</i> sp/spp., <i>A. Thazard</i> , <i>Scombridae</i> sp., <u><i>E.affinis</i></u> , <u><i>Thunnus tonggol</i></u> , <u><i>Scomberomorus commerson</i></u>
Cambodia Waters	3 genera at least 3 species	<i>Auxis</i> sp/spp.	<i>Rastrelliger</i> spp., <i>T.obesus</i> , <i>A. thazard</i> , <i>Auxis</i> sp./spp.

Result (4)

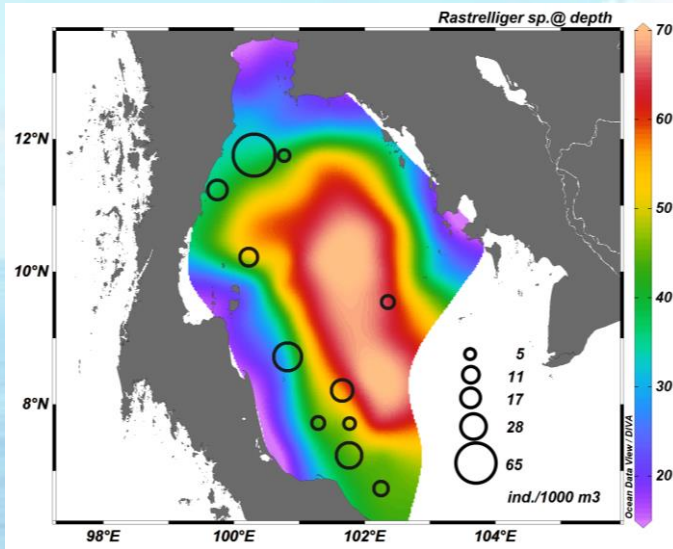
Scombridae larvae distribution and abundance



- The abundance varied from 0 to 76 ind./1000 m³.
- They were mostly found distributed the sea depth less than 50 meters.
- The most abundance in western part more than eastern part in GoT.
- The highest abundance occurred in station 9 (76 ind./1000m³).
 - *Rastrelliger* sp./spp. (65.5%)
 - *E. affinis* and *T. obesus* (5.04%).

Result (5)

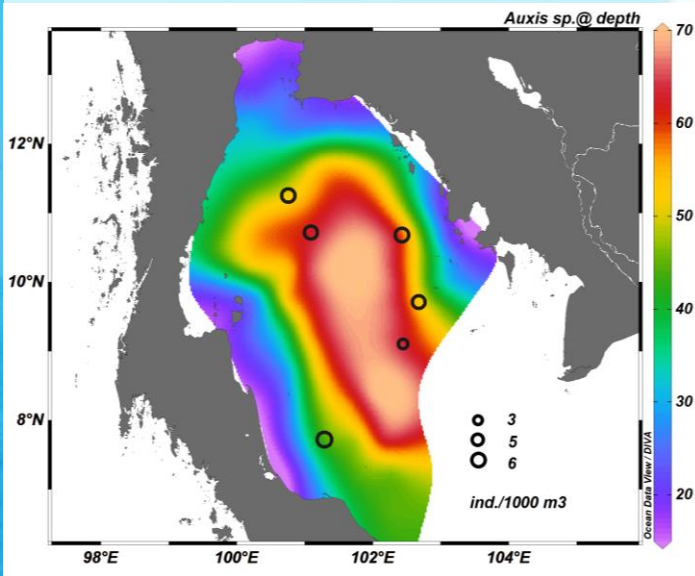
Rastrelliger sp./spp. larvae distribution and abundance



- The *Rastrelliger* sp./spp. larvae was accounting 65% of Scombridae larvae
- The abundance varied from 0 – 65 ind./1000 m³
- The lowest abundance occurred at station 42 (5 ind./1000 m³)
- The highest abundance occurred at station 9 (65 ind./1000m³)
- The distribution were found in the western part of the GoT in range of water depth from 35-70 m.

Result (6)

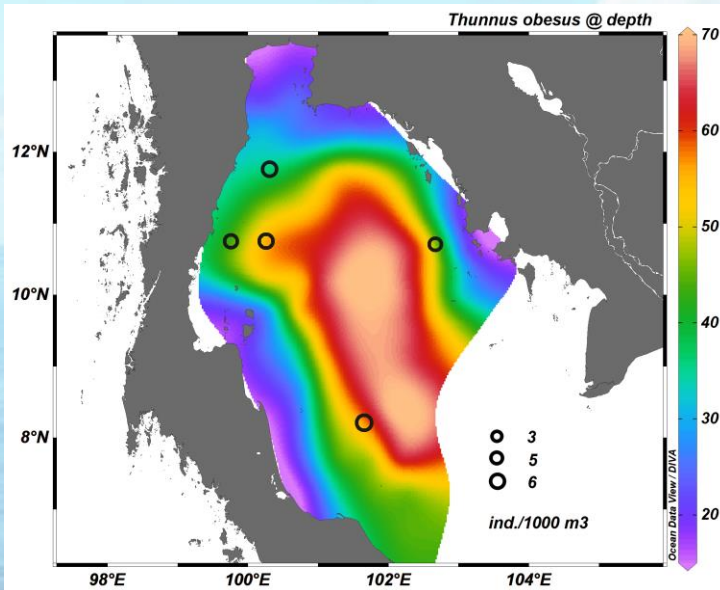
Auxis sp./spp. larvae distribution and abundance



- *Auxis* sp./spp. was the second most abundance species (10% of Scombridae larvae)
- The abundance varied from 0 to 6 ind./1000 m³
- The highest abundance occurred at station 41 (6 ind./1000 m³) Almost they were distributed at water depth from 49.5-69 m.

Result (7)

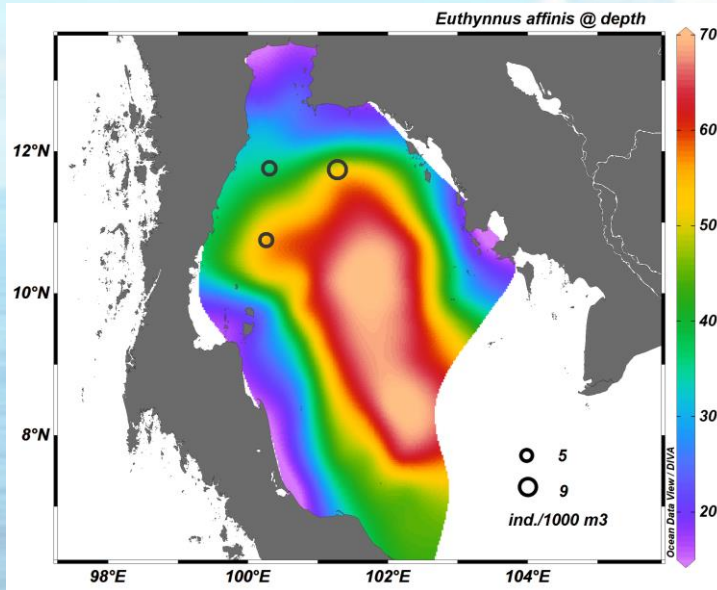
Thunnus obesus larvae distribution and abundance



- The third most abundance
- The abundance varied from 0 to 6 ind./1000 m³
- The highest abundance in station 38 (6 ind./1000 m³)
- They were distributed in water depth 41-60 m.

Result (8)

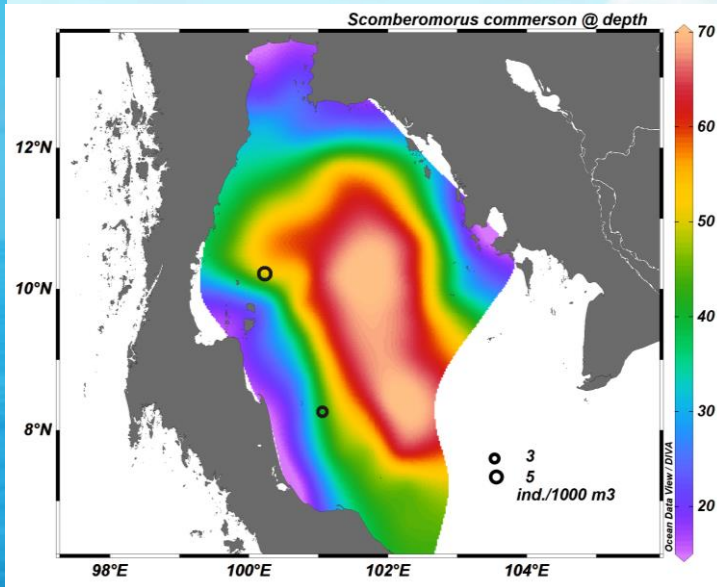
E. affinis larvae distribution and abundance



- The fourth abundance of Scombridae larvae
- The abundance varied from 0-9 ind./1000 m³
- The highest in station 11 (9 ind./1000m³)
- They were distributed in water depth range from 40 – 50 m.

Result (9)

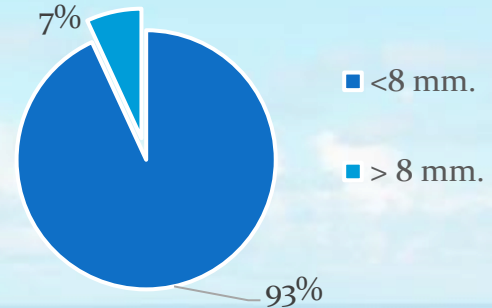
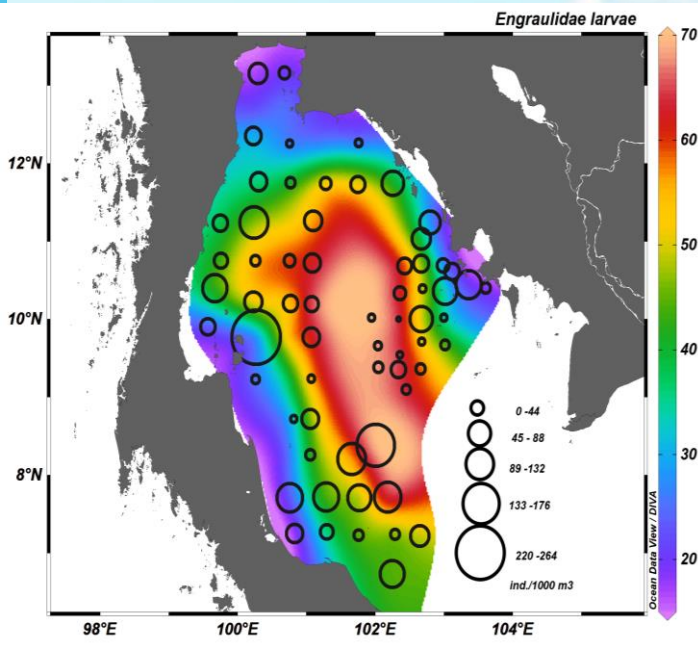
Scomberomorus commerson larvae distribution and abundance



- *S. commerson* was the fifth abundance.
- The abundance varied from 0 – 5 ind./1000 m³
- The highest in the station 23 (5ind/1000m³).
- They were found only in the Thai waters
- *S. commerson* were distributed in water depth from 46-54 m.

Result (10)

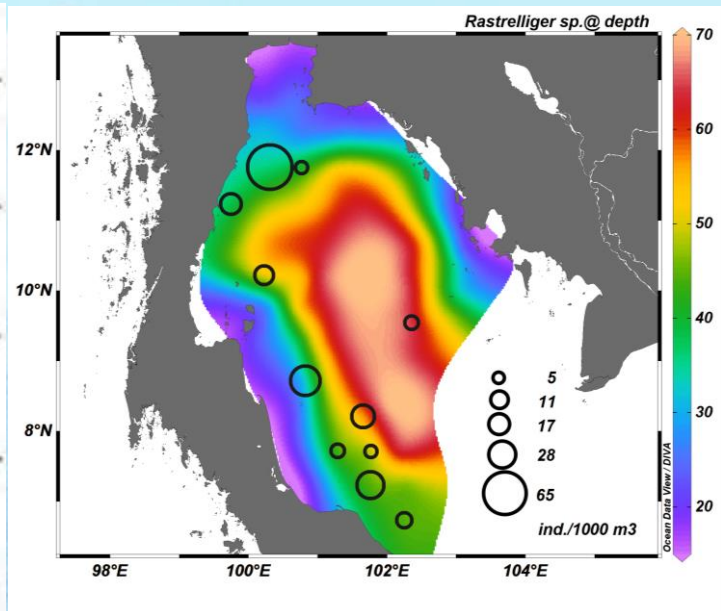
The distribution and abundance of Engraulidae larvae



- A total of 419 Engraulidae larvae
- Abundance varied from 0-258 ind./1000 m³
- Wide distribution
- The highest abundance was found at station 22
- Almost small size less than 8 mm.
- Engraulidae larvae (size bigger than 8 mm.) were mostly identified as *Encrasicholina heteloro*

Discussion (1)

Scombridae larvae



Discussion (2)

Scombridae larvae

This research (2018)	Niracha et. al. (2014)	Temvichakorn (1999)	Do Van Nguyen (2001)
<p>At least 6 species (Gulf of Thailand)</p> <ul style="list-style-type: none"> • Scombridae larvae 1.76 % • <i>Rastrelliger</i> spp. larvae 65% 	<p>Focus especially <i>Rastrelliger</i> sp. (Southern the Gulf of Thailand) 52 %</p>	<p>3 species (Thai Waters, Malaysia Waters)</p> <ul style="list-style-type: none"> • <i>Rastrelliger</i> sp. • <i>Scomberomorus</i> sp. • <i>Euthynnus</i> sp. 	<p>12 species (Vietnamese Waters : SCS)</p> <ul style="list-style-type: none"> • Scombridae larvae 1.39% of total obtained fish larvae

Discussion (3)

Engraulidae larvae

This research (2018)	Pirochana (n.d.)	Niracha (2013)	Do Van Nguyen (2001)
<p>Gulf of Thailand</p> <ul style="list-style-type: none">• Engraulidae larvae 11.5 % of total fish larvae• <i>E. heteroloba</i>	<ul style="list-style-type: none">• Gulf of Thailand• <u><i>Stolephorus heterolobus</i></u> synonym <u><i>E. heteroloba</i></u> (Whitehead et al., 1988)	<p>Gulf of Thailand</p> <ul style="list-style-type: none">• Engeaulidae larvae 15% of the total fish larvae	<p>Vietnamese Waters</p> <ul style="list-style-type: none">• 5 species• 23.82 % of total fish larvae

Conclusion (1)

- Scombridae larvae was 1.76% of the total fish larvae
- Engraulidae larvae was 12.12 % of the total fish larvae
- Scombridae larvae specimens identified consist of at least 6 species in 5 genera .
- The distribution of Scombridae larvae found in the western part more abundant than the eastern part.
- The top 5 of Scombridae larvae was *Rastrelliger* sp./spp., *Auxis* sp./spp., *T. obesus*, *E. affinis* and *S. commerson* .
- *Rastrelliger* sp. was the most abundance of Scombridae larvae in the Gulf of Thailand. (65% of total the fish larvae).

Conclusion (2)

- Engraulidae larvae was identified as *Encrasicholina heteroloba*.
- Engraulidae larvae has wide distribution that could be found in all area

