Density and Distribution of Fish Larvae in Gulf of Thailand.

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1.Introduction

Fish larvae research is a important for understanding of the ecology and evolution of fish species and their populations. Research on density and distribution of fish larvae along with its relationships to physical parameters would let us estimate the size of a spawning stock from habitat and forecasting on future fish stocks. Gulf of Thailand is one of the most abundance in fisheries resources, however declining in fish stocks are now main problem. In order to know about future fish population, In this present work, the study of fish larvae is a part of the biological oceanographic survey aimed to know density and distribution of fish larvae. The understanding of abundance and distribution of fish larvae in conjunction with ecological conditions could fill up the gap in the study of fish life history.

2.Material and Methods

2.1 Study site

Samples of fish larvae were collected in Gulf of Thailand from 49 station during August 17 and September20, 2018 using the marine vessel SEAFDEC2.
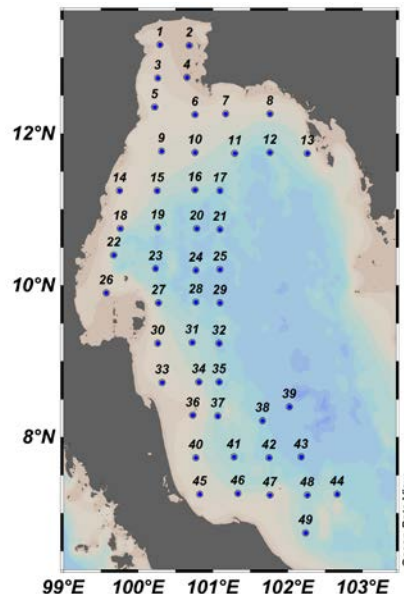
Figure1. Position of Neuston net operation

2.2 Sampling Procedures

Samples were collected using a Neuston net 100 cm x 70 cm at mesh size 1000 µm. and trawling with surface horizontal haul. A flow meter was attached to the mouth of net to determine the volume of sea water filtered during each tow. Collected specimens were preserved in 10 % formalin sea water buffered. Specimens were brought to the SEAFDEC laboratory for sorting and identified at family lavel. Idenified specimens were changed to 70 % ethyl alcohol solution for reference specimens.

2.3 Laboratory Method

Fish larvae were identified at family level basing on description given in references textbook of larval fishes (Leis and Carson-Ewart, 2000 ; Chayakul, 2007).

Identified fish would be counted for density study.

2.4 Data Analysis

Density of fish larvae was calculated with following formula ;

$$T = 1{,}000t/V$$

Where T   is the number of fish larvae in the sample per 1,000 m^3 of sea water volume
     t   is number of fish larvae in the sample (collected number)
     V   is sea water volume flow through plankton net (m^3)

$$V = nMa$$

Where n   is the number of revolution of the flow meter during the tow
     M   is the calibration factor in number of revolutions of the flow meter per 1 meter
     a   is the area of the mouth of the net in square meter

Results

Total 666 of fish larvae were found, which comprised of 21 families. Density is ranging from 0 to 1,057 larvae/1,000 m^3 of sea water. Top five families is Terapontidae (70%), Mullidae (13%), Carangidae (5%), Engraulidae (3%) and Clupeidae 1% (Figure 2.) The highest density was observed from station 15 while no fish larvae was found from station 4, 19, 29, 33, 35, 36, 38 and 39.
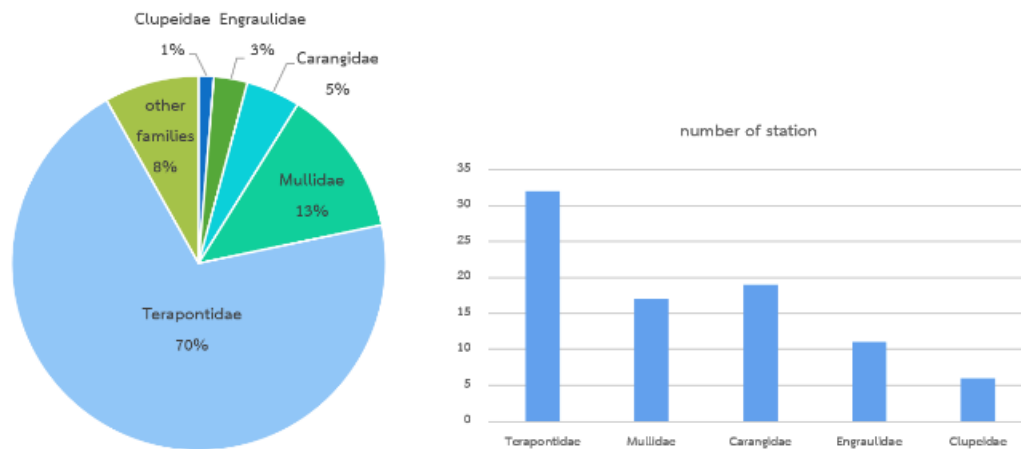

Figure 2. The top five families in number among sampling station.

Distribution of the top five fish larvae

Five families that found the most density were comprising of Terapontidae, Mullidae, Carangidae, Engraulidae and Clupeidae.

The most abundant family was Terapontidae which observed from 32 out of 49 sampling stations, the most of fish larvae number occurred at station 15. Range of density was 1 – 227 larvae/1000 m^3 of seawater and also found distributed over the Gulf of Thailand and found most dense at Prachuap Khiri Khan Province.

The second abundant family was Mullidae which observed from 17 out of 49 sampling stations, the most of fish larvae number occurred at station 6. Range of density was 1 – 158 larvae/1000 m^3 of seawater and found the most dense near shore at Chon Buri Province.

The third abundant family was Carangidae which observed from 19 out of 49 sampling stations, the most of fish larvae number occurred at station 41. Range of density was 1 – 11 larvae/1000 m^3 of seawater and found the most dense at Songkhla Province.

The forth abundant family was Engraulidae which observed from 11 out of 49 sampling stations, the most of fish larvae number occurred at station 14. Range of density was 2 – 13 larvae/1000 m^3 of seawater and found the most dense near shore at Prachuap Khiri Khan Province.

The last abundant family was Clupeidae which observed from 6 out of 49 sampling stations, the most of fish larvae number occurred at station 9. Range of density was 2 – 14 larvae/1000 m^3 of seawater and found the most dense at Prachuap Khiri Khan Province.

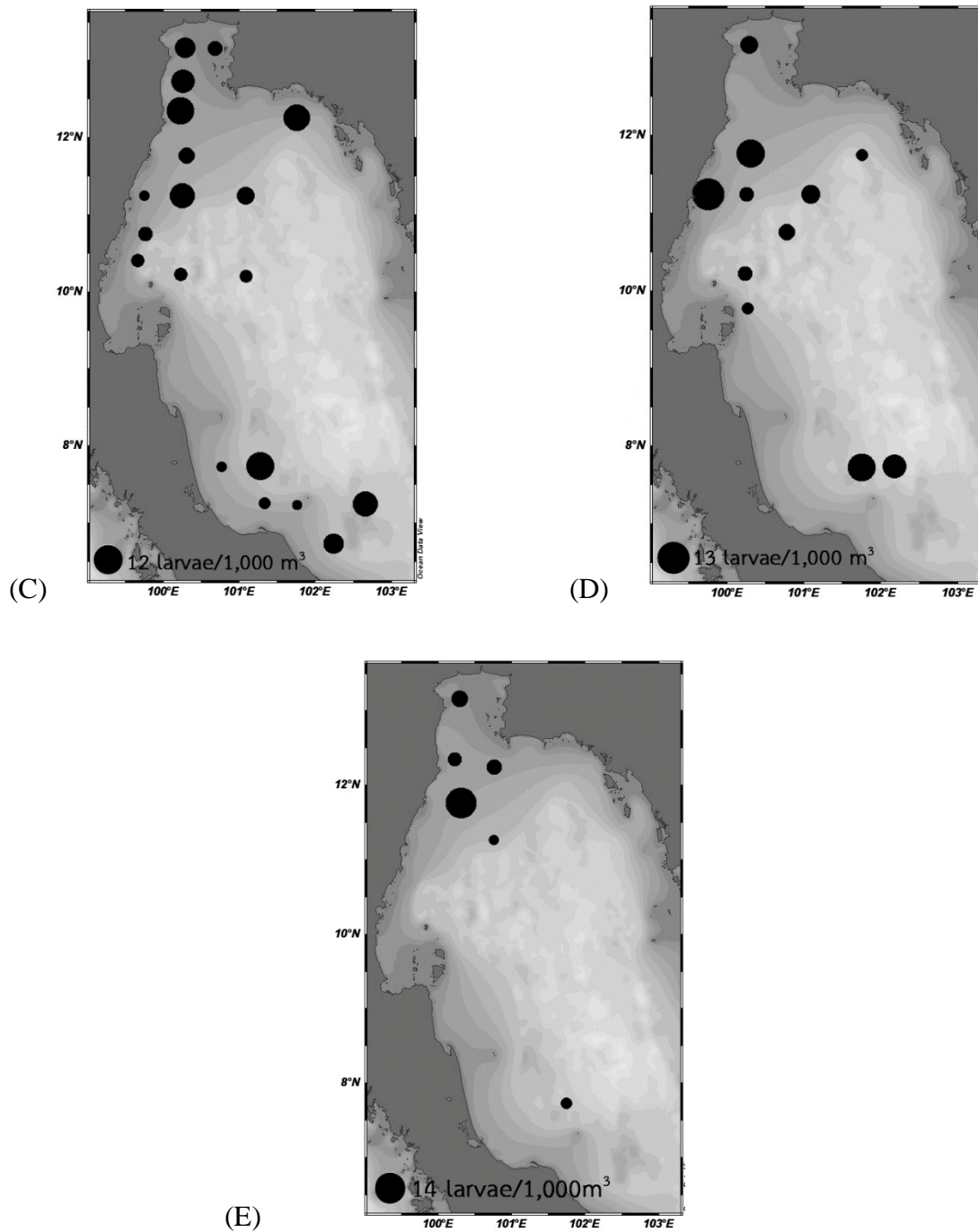(A)   (B)
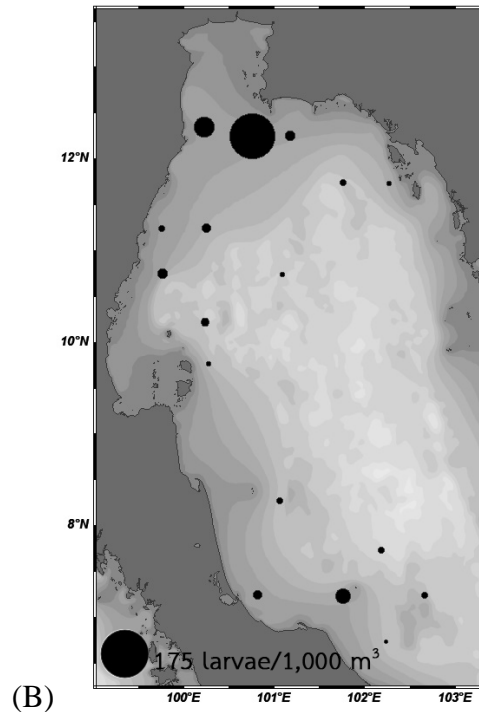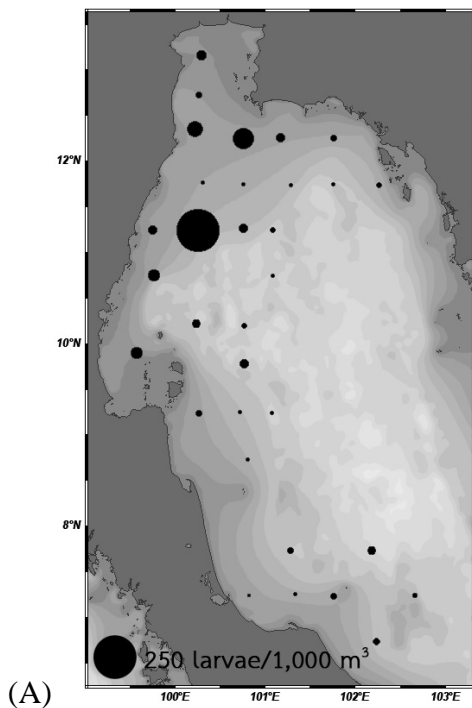
Figure 3. Top five distributed fish larvae A)Terapontidae B) Mullidae C) Carangidae D) Engraulidae and E) Clupeidae.

Discussion

From the study, the fish larvae from Terapontidae and Mullidae was the most density and widely distribution in The Gulf of Thailand which same result Niracha et.al.(2013). Because Terapontidae was common family that found the most abundance in coastal area of Thailand and this family can spawning all year. However some of different can be found such as in this study can not find family Gobiidae and Exocoetidae while in previous study find a number of Gobiidae and Exocoetidae. It might be said that this study not sampling at spawning season of

this to families and might be from different of samplimg time because this study sampling at both day and night while the previous study sampling only day time.

Fish that high economic important species found in this study was Terapontidae, Mullidae, Carangidae, Engraulidae and Clupeidae.

References

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