STATUS OF FISH LARVAE STUDY IN MALAYSIA

ZULKIFLI BIN TALIB
ABD HARIS HILMI BIN AHMAD ARSHAD
AHMAD HUSIN BIN ALIAS
Department of Fisheries Malaysia
Presentation Flow

• Introduction - Zul
• Fish larvae study in SCS - Zul
• Fish larvae study in the Straits of Malacca - Haris
• Present study – Husin
  – Refuggia at Larut Matang Mangrove area
  – Melaka land Recalaimation activity
  – Straits of Johore land reclamiation activity
  – Penang 2nd link
• Future plan - Husin
  – HRD
  – Selected families for lower taxon id
  – To establish centre for fish larvae at AEReC
Introduction

• Visit by Dr. Konishi in MFRDMD in 1997
• Researcher sent for a 2 months course in Japan under Dr. Konishi
• Fish larvae course in MFRDMD by Prof. Kinoshita in 1998
• 1\textsuperscript{st} fish larvae survey in Malaysia EEZ in 1999
• Started fish larvae program in MFRDRD under SEAFDEC fund in 2000
• Mr. Haris went to PMBC fo a larvae course in 2000
Fish larvae course conducted
By Prof. Kinoshita in 1998
Fish larvae study in SCS

1. SEAFDEC project 200-2002 to produce a laboratory guide on fish larvae

- Main task was to collect specimens
Collection of fish larvae sample by boat
Collection of fish larvae sample by research vessel
Oceanography Laboratory
Illustrating fish larvae using Camera Lucida
Assistance from Expert
Malaysian EEZ Survey 1999
Map of Malaysia
Kind, Abundance and Distribution of Fish Larvae in the Malaysian Exclusive Economic Zone

Rosdi Mohd.Nor , Zulkifli Talib and Raja Mohammad Noordin Raja Omar

Abstract

Fish larvae study was conducted in the Malaysian Exclusive Economic Zone between March and August 1998 covering the West and East Coast of Peninsular Malaysia and Sabah and Sarawak. Fish larvae was studied for kind, abundance and distribution. There were 18 stations in the West Coast, 34 stations in the East Coast and 69 stations in Sabah and Sarawak. The standard larvae net with 500 micron mesh size was used for vertical sampling. Altogether there were 6,321 specimens collected; 2,456 from the West Coast, 1,643 from the East Coast and 2,222 from Sabah and Sarawak. The specimens identified comprised 87 families. There were 31 families from the West Coast, 43 families from the East Coast and 79 families from Sabah and Sarawak. The most dominant families in the West Coast were Gobiidae, Bregmacerotidae Leiognathidae, Engraulidae and Bothidae, while in the East Coast the most dominant families were Gobiidae, Leiognathidae, Carangidae, Engraulidae and Bregmacerotidae. Bregmacerotidae, Gobiidae, Myctophidae, Carangidae and Nemipteridae were the most dominant groups in Sabah and Sarawak.

Keywords: Fish larvae, kind, abundance, distribution, Exclusive Economic Zone, dominant
Sampling Stations
West Malaysia
Sampling stations in Sarawak & Sabah
Abundance and distribution of total fish larvae (No/100m³) in Peninsular Malaysia
Abundance and distribution of total fish larvae (No/100m³) in Sarawak & Sabah
East Coast of P. Malaysia Coastal Survey 2001
Distribution of Fish Larvae in the Coastal Area of the East Coast of Peninsular Malaysia

Zulkifli Talib, Abd. Haris Hilmi Ahmad Arshad and Rosdi Mohd. Nor

Abstract
Fish larvae study was conducted in the coastal area of the East Coast of Peninsular Malaysia between 30th April and 25th June 2001 covering 52 stations. The study area was divided into four areas, Kelantan and Northern Terengganu (Sub-Area I), Terengganu (Sub-Area II), Pahang (Sub-Area III) and Johor (Sub-Area IV). Fish larvae was studied for kind, abundance and distribution. The standard larvae net with 500 micron mesh size was used for vertical sampling. There were 957 specimens collected which comprised 45 families. The most dominant families were Gobiidae, Bregmacerotidae, Carangidae, Callionymidae and Bothidae. Carangidae was the most abundant commercial family in Sub-Areas I, II and IV while Nemipteridae in Sub-Area III. Fish larvae was abundant in water depth between 20-40 m and around the islands, especially Pulau Tioman and the smaller islands near it.

Keywords: Fish larvae, kind, abundance, distribution, coastal, dominant, islands
Sampling stations
Abundance and distribution of total fish larvae (No/100m$^3$)
FISH LARVAE DISTRIBUTION OFF PULAU LAYANG-LAYANG
Pulau Layang-Layang
Distribution of Fish Larvae off Pulau Layang-Layang

Zulkifli Talib, Haris Hilmi Ahmad Arshad, Mahyam Mohd. Isa and Rosdi Mohd. Nor

Abstract

Fish larvae study was conducted inside and outside the lagoon of Pulau Layang-Layang between 20th and 25th July, 2002. There were 5 sampling stations inside the lagoon and also 17 sampling stations within the area 070 00’N to 080 00’N and 1130 20’E to 114020’E outside the lagoon respectively. Larvae net towed by a small boat was used for horizontal sampling at 3 meter deep inside the lagoon while KK Paus was used for oblique sampling at maximum depth of 150 meters outside the lagoon. Water depth inside the lagoon was less than 15 meters while outside the lagoon the depth was more than 1,500 meters. Few larvae were collected inside the lagoon. 734 larvae representing 46 families were collected outside the lagoon. Myctophidae was most dominant (22.3%) followed by Acanthuridae (12.5%), Gonostomatidae (5.85%), Gobiidae (5.26%) and Labridae (5.15%). The economically important Family, Scombridae accounted for 1.35% from the total abundance of fish larvae. Acanthuridae, a Family associated with coral reef was present in all of the stations. Larval densities in the sampling stations was rather low ranging from 5 larvae/100 m3 to 30 larvae/100 m3.
Fish larvae sampling
By bongo net
MATERIAL & METHODS

• The study conducted during an expedition to Pulau Layang-Layang between 20\textsuperscript{th} and 25\textsuperscript{th} July, 2002 using KL Paus
• 5 sampling stations inside the lagoon
• 19 sampling stations within the area 07\textdegree 00’N to 08\textdegree 00’N and 113\textdegree 20’E to 114\textdegree 20’E
Inside the lagoon

- Using larvae net
  1 m diameter
  0.5 mm mesh size
- Horizontal sampling
  (subsurface)
- Using small boat
Outside the lagoon

- Bongo net
- Oblique sampling-150 m depth limit
- Using KL Paus
RESULT & DISCUSSION

• Inside the lagoon
  - Very few fish larvae
  - 7 families
    Apogonidae
    Bleniidae
    Carangidae
    Gobiidae
    Lutjanidae
    Sparidae
- Outer area of Pulau Layang-Layang
  - 734 larvae collected
  - 46 families
  - Top 5 families
    - Myctophidae (22.3%)
    - Acanthuridae (12.5%)
    - Gonostomatidae (5.85%)
    - Gobiidae (5.26%)
    - Labridae (5.15%)
  - Scombridae (1.35%)
  - Top 5 – 51.2% of total fish larvae
Abundance and distribution of total fish larvae (No./100 m³)
Study on Density, Distribution and Species Composition of Fish Larvae in the Waters off the Northwest Coast of Peninsular Malaysia

by

Abd. Haris Hilmi Ahmad Arshad
and Muhammad Faisal Md. Salleh

Fisheries Research Institute, Batu Maung Penang
Samplings were conducted from 23rd February-15th March 2006 starting at Pulau Langkawi to Port Klang in the Straits of Malacca by using the Research Vessel MV SEAFDEC 2. A total of 23 stations were sampled during the survey.
Material & Methods

Bongo net: 330 µm & 500 µm

Two types of towing

Oblique at 45 °

Horizontal, 10 minute towing
## Result & Discussion

Table 1: Density of fish larvae and Fish egg (No. /100 m³) by different types of towing

<table>
<thead>
<tr>
<th></th>
<th>Types of Towing</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oblique</td>
<td>Horizontal</td>
<td></td>
</tr>
<tr>
<td><strong>Fish Larvae</strong></td>
<td>Range</td>
<td>15.45 - 629.24</td>
<td>0.81 - 338.13</td>
</tr>
<tr>
<td></td>
<td>Average ± S.E</td>
<td>124.88 ± 28.97</td>
<td>37.41 ± 14.66</td>
</tr>
<tr>
<td><strong>Fish Egg</strong></td>
<td>Range</td>
<td>3.00 - 1474.07</td>
<td>2.83 - 2139</td>
</tr>
<tr>
<td></td>
<td>Average ± S.E</td>
<td>131.78 ± 67.46</td>
<td>190.58 ± 104.66</td>
</tr>
</tbody>
</table>
Total density (No./100 m³) by oblique towing

**Fish larvae**

- ST 1
- ST 4
- ST 7
- ST 14
- ST 17
- ST 20
- ST 27
- ST 30
- ST 39
- ST 42
- ST 48
- ST 51
- ST 60
- ST 63
- ST 66
- ST 69
- ST 74
- ST 83
- ST 84
- ST 90
- ST 92
- ST 100

**Fish Egg**

- ST 1
- ST 4
- ST 7
- ST 14
- ST 17
- ST 20
- ST 27
- ST 30
- ST 39
- ST 42
- ST 48
- ST 51
- ST 60
- ST 63
- ST 66
- ST 72
- ST 74
- ST 76
- ST 79
- ST 83
- ST 84
- ST 90
- ST 92
- ST 100
Total density (No./100 m³) by horizontal towing

Fish larvae

P. Langkawi
P. Pinang
Taiping
Lumut
Port Klang

ST 1
ST 4
ST 7
ST 14
ST 20
ST 27
ST 30
ST 39
ST 42
ST 48
ST 51
ST 60
ST 63
ST 66
ST 72
ST 74
ST 76
ST 83
ST 84
ST 90
ST 92
ST 100

0.8 to 4.8
4.8 to 17.3
17.3 to 40.6
40.6 to 338.2

Fish Egg

0.8 to 4.8
4.8 to 11.2
11.2 to 17.9
17.9 to 31.0
31.0 to 42.0
42.0 to 72.2
72.2 to 195.5
195.5 to 2140.0
<table>
<thead>
<tr>
<th>Family</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engraulidae (Anchovy, Thryssa)</td>
<td>403</td>
<td>20.2</td>
</tr>
<tr>
<td>Bregmacerotidae (Codlets)</td>
<td>320</td>
<td>16.1</td>
</tr>
<tr>
<td>Gobiidae (Gobies)</td>
<td>248</td>
<td>12.4</td>
</tr>
<tr>
<td>Scombridae (Tuna, Mackerel, Bonito)</td>
<td>128</td>
<td>6.4</td>
</tr>
<tr>
<td>Carangidae (Scad &amp; Trevally)</td>
<td>97</td>
<td>4.9</td>
</tr>
<tr>
<td>Bothidae (Flounder/ Sebelah)</td>
<td>75</td>
<td>3.8</td>
</tr>
<tr>
<td>Nemipteridae (Threadfin bream/Kerisi)</td>
<td>69</td>
<td>3.5</td>
</tr>
<tr>
<td>Clupeidae (Sardinella/Tamban, Terubok)</td>
<td>53</td>
<td>2.7</td>
</tr>
<tr>
<td>Leiognathidae (Ponnyfish/Kekek)</td>
<td>49</td>
<td>2.5</td>
</tr>
<tr>
<td>Cynoglossidae (Tongue Sole/Lidah/Sebelah)</td>
<td>43</td>
<td>2.2</td>
</tr>
<tr>
<td><strong>Number of family</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Grand Total No of Larvae</strong></td>
<td></td>
<td><strong>1992</strong></td>
</tr>
</tbody>
</table>
Density of Engraulidae (Anchovies, Thryssa/Bilis, Kasai) larvae (No. larvae/100 m³) by stations

P. Langkawi
P. Pinang
Taiping
Lumut
Port Klang

6.8 mm

Density range:
- Open circle: 0.6 to 1.4
- Plus symbol: 1.4 to 5.2
- Asterisk: 5.2 to 11.3
- Moon: 11.3 to 32.0
- Black circle: 32.0 to 102.1
Density of Bregmacerotidae (Codlets/Lepu) larvae (No. larvae/100 m³) by stations
Density of Gobiidae (Gobies/ Belukor, Belacak) larvae (No. larvae/100 m³) by stations

- ST 1
- ST 4
- ST 7
- ST 17
- ST 27
- ST 39
- ST 42
- ST 48
- ST 51
- ST 60
- ST 63
- ST 66
- ST 68
- ST 72
- ST 74
- ST 76
- ST 83
- ST 84
- ST 90
- ST 92
- ST 100

Areas shaded in red indicate higher densities:
- 0.7 to 3.6
- 3.6 to 6.5
- 6.5 to 9.7
- 9.7 to 21.1
- 21.1 to 131.3
Density of Carangidae (Scad, Trevally/Selayang, Cermin) larvae (No. larvae/100 m$^3$) by stations

P. Langkawi
P. Pinang
Taiping
Lumut
Port Klang

5.4 mm

0.6 to 3.5
3.5 to 17.0
Density of Scombridae (Mackerel, Spanish Mackerel, Bonitos, Tunas/Kembong, Tenggiri, Tongkol) larvae (No. larvae/100 m³) by stations:

- P. Langkawi
- P. Pinang
- Taiping
- Lumut
- Port Klang

13.7 mm
Conclusion

• The top five family of fish larvae in the study area are Engraulidae, Bregmacerotidae, Gobiidae, Carangidae and Scombridae.
• The density of fish larvae is higher near the shore compared to offshore.
• Mangrove areas and islands play important role in spawning and nursery ground for fish species.
Acknowledgement

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Current Projects
Fisheries Reffugia

Fish larvae sampling
Sampling by pushnet
Push net haul
Push net haul
Future Plan
Fish larvae training Course in MFRDMD
In 2007
Training course
New building – Will be a Center for Fish larvae study