5th of September. Several species of fishes were washed along the coast, while eels were found floating in the Puthiappa Fishing Harbour at Kozhikode. The water in the region was red coloured, slimy in nature with foul smell. Fishes came to the surface gasping for oxygen. This colouration of sea water was due to the presence of large concentration of Noctiluca spp. The oxygen deficiency which results during the swarming of Noctiluca spp. led to the mortality of marine fauna. Water became slimy by decaying Noctiluca spp. causing mechanical obstruction to the movement of fish. Due to water currents these algal blooms moved towards the shore and away from the coast.

The second algal bloom occurred on 14th and 15th of September along south Kozhikode coast upto Puthiappa Harbour, 8 km along the coast. Mass mortality of small fishes to fish weighing upto 10 kg was noticed along the coast. It was found that water turned green due to the presence of micro algae Hornellia marina. Mortality of fishes like Epinephelus malabaricus, Otolithes argenteus, Kowula coval, Anchovita heterobus, Nemipterus japonicus and Mugil speilleri were observed.

The third bloom occurred on 21st and 22nd of September and subsequently massive death of green mussel (Perna viridis) was found from Kozhikode beach upto Puthiappa Harbour for two days. This bloom was also due to Hornellia marina.

Though algal blooms of low intensity were common in this region, after south-west monsoon, heavy bloom and mass mortality of large quantity of fishes and mussels were not noticed. The successive three blooms reported during Sep. 2002 may be attributed to the delayed south-west monsoon and intermittent showers followed by bright sunshine. Additional factors which assist the bloom are upwelling which continues till November and enrichment of coastal waters by nutrients due to flushing of monsoonal rain. Massive blooming results in sudden depletion of oxygen which caused the death of fishes and mussels.

The dissolved oxygen content of water during the month ranged between 0.96 to 1.67 ml/L which was much below the normal level of 4 to 5ml/L. Water temperature was 22.4 to 26°c which is much below the normal level (28 to 30°c). This low temperature of water was the indication of upwelling water reaching surface during the algal bloom period. pH ranged from 7.21 to 7.57. Salinity did not show any apparent change. Nutrient values of nitrate, nitrite and phosphate also recorded high during this period.

Reported by: Gulshad Mohammed, Calicut Research Centre of CMFRI, Calicut

1023 Recent trends in mechanisation of Malabar fishery sector - An overview

Since 1980 kerosene was the fuel used in outboard engines (OBE) fitted in various types of country crafts. Gradually, the size of the crafts as well as the gear were altered. On par with these changes, the capacity of the outboard engine was also enhanced to 8, 9.9, 15, 25 and 40 HP. Various innovations took place in developing the materials used in the construction of craft also. Introduction of carrier craft for mother boat (Ring netters or Ring seiners), Mini Trawlnet and Mini pair trawlnet (double net or pothen vala) were some of the additional innovations.

In the initial stage, kerosene quota provided to concerned units was almost sufficient to meet their needs. Depending upon the season and availability of the catches, extra fuel required for the purpose was compensated from other sources. Year after year with the introduction of outboard engines of various capacities the supply of kerosene became insufficient. Along the zone K-8B, (Kozhikode district) particularly around Quilandy large number of vanchies (Mother unit of ringnet or ringseine) are installed with 3 numbers of OBE having a capacity of 40 HP each. The plank built mother units with an average length of 16 metres have undergone vast development transforming into marine plywood coated with fibre glass and finally to fibre glass body.

The operational cost of the mother unit increased following the hike in the kerosene price supplied
through government agencies such as Matsyafed. From the initial price of Rs. 3/- per litre it reached to Rs. 9/.

Private agencies are selling white kerosene at the rate of Rs. 15/- per litre and the price varies depending on demand.

During the year 1999 to 2001, the capital investment in the modification of ringnet (ringseine) units became so high and daily operational cost also became high owing to shortage of kerosene. In order to cut short the exorbitant expenses, fishermen started replacing kerosene by LPG in few selected units. But the attempt was discarded as it was not economical. By this time, nearly 35 mother units (RN) body were fully converted to fibreglass. Instead of 3 OBE each with 40 HP capacity. They were replaced by Leyland (inboard engine) having a capacity of 95 HP. This single engine is capable of movement of the craft, rotation of winch and illumination. In addition to this an outboard engine (OBE) with a capacity of 40 HP is always kept in the mother unit to meet emergency in case of engine failure.

Cost of the modified unit and its capacity

<table>
<thead>
<tr>
<th>No.</th>
<th>Items</th>
<th>Size/Capacity</th>
<th>Approximate Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fibre glass mother boat (vanchi)</td>
<td>Average 16-17 m length</td>
<td>7,50,000</td>
</tr>
<tr>
<td>2</td>
<td>Leyland inboard engine including winch</td>
<td>95 HP</td>
<td>3,25,000</td>
</tr>
<tr>
<td>3</td>
<td>Propeller shaft &amp; gear</td>
<td>-</td>
<td>1,50,000</td>
</tr>
<tr>
<td>4</td>
<td>Diesel tank</td>
<td>200-250 litre capacity</td>
<td>5,000</td>
</tr>
</tbody>
</table>

5. Outboard engine 40 HP 72,000
6. Ringnet (Ringseine) 375-400 MAR (675 m-720 m) 5,00,000
7. Illumination components 6,000
8. 2 carrier crafts 8 m length 1,40,000 (Marine plywood coated with fibre glass)
9. 2 OBE (fitted in carrier crafts) 25 HP each 74,000
10. Mobile communication device 2 Nos. 12,000
11. Other Equipment including cooking stove etc. 1,500

Total 20,35,500

The average cost of operation per day for a ringnet unit using OBE run by kerosene was between Rs. 5,000/- and Rs. 6,000/-. After the introduction of the diselised Leyland unit, the average operating cost came down to Rs. 2,000/-. In view of this, more and more active fishermen were attracted towards the introduction of inboard engines. At fish landing centres like Payyoli, Badagara, Kuriadi, Chombala and Mahe few crafts have already been converted to the new system and it is likely to be covered in other places also.

Reported by: C. K. Krishnan, Calicut Research Centre of CMFRI, Calicut

1024 Occurrence of small-sized oil sardine, Sardinella longiceps (Valenciennes) at Vizhinjam

During the course of field observations, an unusual catch of 37 numbers of small sized oil sardines, Sardinella longiceps were reported in the shore-seine catches at Vizhinjam on 30-8-2002.

Their size varied between 4.5-8.4cm, and weight between 1.5 to 4.5g. The dominant size group was 5.0-5.4cm (mode at 5.2 cm) followed by 4.5 to 4.9 cm (mode at 4.6cm) and 5.5 to 5.7 cm (mode at 5.6 cm) constituting 37.9, 24.3 and 16.2% respectively. The different size groups and their percentage distribution are given in Table 1 which indicates that first three size groups formed 78.4% and the rest contributed only 21.6%.

The occurrence of juveniles of oil sardines was recorded earlier by several authors along the coasts of