days and they were discarded in the landing centre itself. The gastropods showed a similar trend as in Mangrol. The size of *Tibia* sp. varied between 76 and 142 mm with the dominant size group 85-89 mm forming 18%.

These gastropods are kept in heaps at the landing centres, sundried and after cleaning and painting they are used for aesthetic purposes. The shells are very neatly and beautifully embedded in cement on the compound walls of temples and houses in and around Mangrol (Fig. 5).

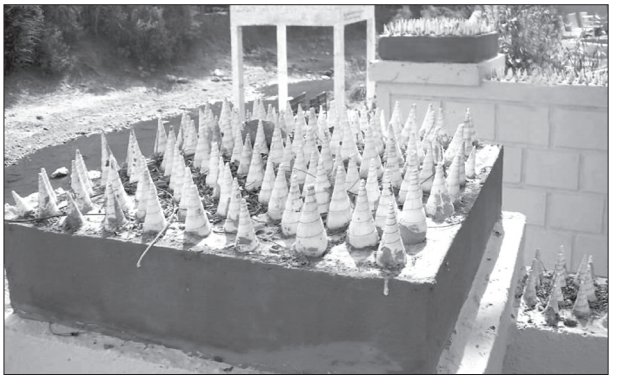

Fig. 5. Cleaned and painted shells of gastropods embedded on the compound walls of temples

Improved mechanisation in dolnetting along the Saurashtra coast

Gulshad Mohammed, Shubhadeep Ghosh, J. P. Polara and Y. D. Savaria
Veraval Regional Centre of CMFRI, Veraval

The dolnetters of Jaffrabad, Rajapara and Nawabunder until 2000 were using engine drive for transport and other fishing operations (shooting, piling and hauling). This was done manually and required 6-9 persons per trip with increased effort and reduced catches which necessitated multiday operations and multinet/multihaul operations. Hence, from 2001 onwards, the dolnetters gradually switched over from stone pillars to portable iron pillars. Further, they used winches driven by boat engines to haul the dolnets. The winches varied in size and were applied mostly by new large vessels having OAL of 12-14 m and driven by 87-105 HP engines. They are driven by an axle rod with bearing and teeth attached to boat engine with an alternate gear regulator. The net drums are 3-4 ft in length, 2 ft in height and the axle rod diameter is 2 inches.

The advantages of this improved method are as follows:

- Saving the expense on two crew numbers
- Additional dolnet could be used with the same effort and manpower

Table 1. Percentage variation for improved mechanisation in dolnets

Centres	2001	2002	2003	2004	2005	2006	2007	2008
Nawabunder	5	8	15	20	25	40	50	60
Rajapara	10	12	18	25	40	50	60	65
Jaffrabad	25	30	40	50	60	70	75	75

Fig. 1. Improved mechanisation in dolnetting along the Saurashtra coast

- Pillar (mast) fixed at the bottom could be removed at the end of each fishing season
- Efficient handling and the provision to tow an additional net
- Heavy catch could easily be towed up
- Low maintenance charges
- Longlines and gillnet operations are also facilitated

Parasites of shrimps and crabs from the Chennai coast

S. Lakshmi Pillai* and P. Thirumilu
Madras Research Centre of CMFRI, Chennai
**Central Marine Fisheries Research Institute, Kochi*

Bopyrids and *Sacculina* are typical parasites of crustaceans especially in shrimps and crabs. Bopyrids form the largest family of isopods and attach themselves to the gills of shrimps. *Sacculina* belongs to the order, Rhizocephala, an order of specialised barnacles. They are found as a mass of tissue, extending from the abdomen of crabs, this portion being termed as 'externa'.

The parasites were detected during the regular weekly sampling of shrimps and crabs landed by trawl nets at Kasimedu (Madras) Fishing Harbour. Sixty five females (total length range: 63-103 mm) and 50 males (total length range: 56-95 mm) of *Metapenaeopsis stridulans*, two males of *Metapenaeopsis mogiensis* (71 and 99 mm in TL), five specimens (three females, 55-85 mm TL and two males, 70 and 72 mm TL) of *Parpenaeopsis stylifera* and one specimen of *Parpenaeopsis maxillipedo* (120 mm in TL) infected with bopyrids were obtained in trawl catches from September 2006 to March 2008. The bopyrid parasite was identified as *Epipenaeon ingens*. The female is oval in shape (Fig.1). They ranged in size from 6-14 mm in total length and 7-10 mm in breadth. Males have a longer body with minute head. They ranged in size from 2.1 to 4.25 mm. All the four species were found with 63.87% infection (38.69% females and 25.18% males), immature shrimps, contributed 45.19%, maturing, 39.08% and mature, 15.8%.

Sacculina spp. were observed in 85 specimens of *Portunus sanguinolentus* (ranging in carapace width 38-115 mm), 20 numbers of *Charybdis lucifera* (carapace width range: 52-91 mm), seven numbers of *Charybdis natator* (carapace width, 55-139 mm), 13 *Portunus argentatus* (carapace width range, 52-95 mm), 3 *Podophthalmus vigil* (carapace width range, 58-94 mm) and a single specimen of *Charybdis feriata* (carapace width 146 mm). *Sacculina* with *Lepas* attached to it was found infesting *P. vigil* (Fig. 2). One percentage of the crabs were also observed to possess two "externa". *Sacculina* were first observed in crabs in the month of June, 2005 and later it was found to be prevalent in almost all the months in different species of crabs.

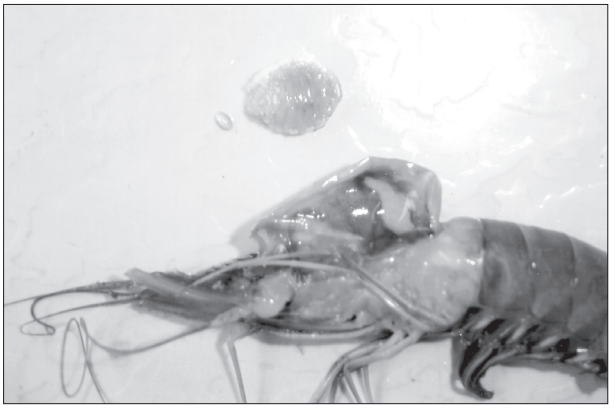

Fig. 1. Bopyrid parasites (female and male)

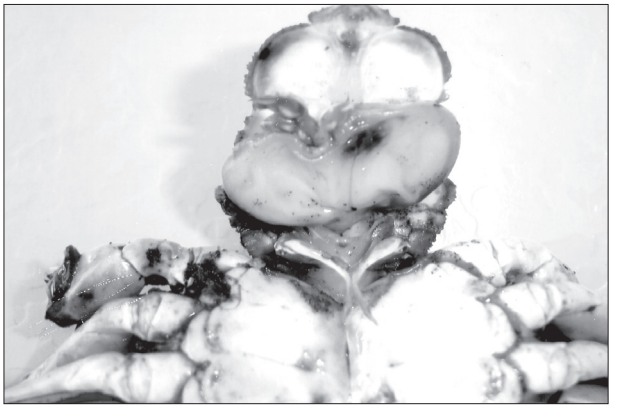

Fig. 2. *Sacculina* on crab along with attached *Lepas*