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# MONSOON PRAWN FISHERY BY 'MATABALA' ALONG THE MANGALORE COAST—A CRITICAL STUDY*

The mechanisation of fishing by the introduction of trawlers for prawns and ground fishes in the early 1960s and purse seines for pelagic resources in the late 1970s has revolutionised the fishing industry in Karnataka. However, when all these mechanised fishing operations remain suspended along this coast during the southwest monsoon period (June – August), traditional gears are operated mainly to catch large sized prawns. The introduction of 'matabala' in the 1984 season along the Mangalore coast and the subsequent additions in the following seasons, boosted the prawn landings during the monsoon season. These 'matabala' units, despite the weather conditions, could operate their nets without any difficulty since they are powered by outboard engines. It has created unprecedented rivalry between fishermen of the 'matabala' and the mechanised fishing boats which led to clashes resulting in law and order problem in this area. With this background information, a critical study of the 'matabala' prawn fishery during 1986 season was made and the results are given in the present account.

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**'Matabala'—A miniature purse seine**

'Matabala' also known as 'Disco net' is a small version of purse seine net made of nylon, measuring about 240 m in length and 10 - 12 m in width with a mesh size of 10 – 18 mm. These nets are coloured orange, blue, pink, dark brown or green to ward off puffer fish which otherwise cause considerable damage to these nets.

A 'matabala' fishing unit may be owned by a group of 30 – 35 fishermen. A unit consisting of one net, three plank built canoes and three outboard engines may altogether cost Rs. 1.85 to 2.0 lakhs. Out of the total cost, 50–75% of the amount is loaned by private

agencies and the rest contributed by members of the 'matabala' unit. A good number of units are also financed by South Kanara Co-operative Fish Marketing Federation, Mangalore.

**Mode of operation**

This net is operated from two plank-built canoes, each measuring 6–7 m in length, fitted with outboard engines. Most of them use either 'Yamaha' or 'Suzuki' engines. A few are found to use 'Johnson' eventhough it is run by petrol. Generally, 8 or 15 HP engines are used.

Each canoe carries a part of 'matabala' net (120 m in length, each part consisting of 11 net pieces of 10–11 m length). At the time of operation, 2 such parts are joined together so as to make a net of 240 m length. After citing a shoal, the net is released. One end of the net will be kept with one canoe which will remain stationary, while the other end of the net is taken round by another canoe encircling the shoal.

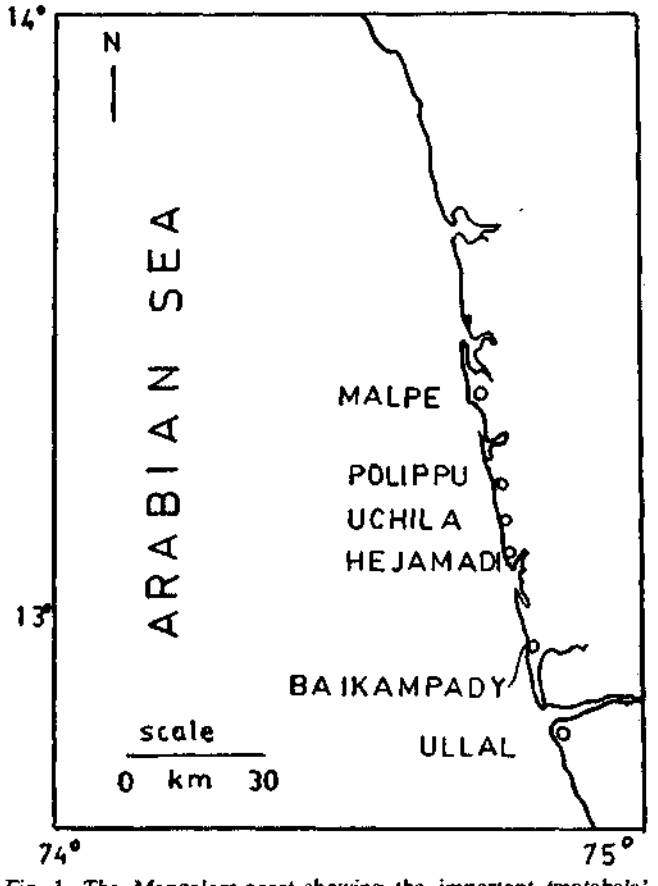


Fig. 1. The Mangalore coast showing the important 'matabala' fish landing centres.

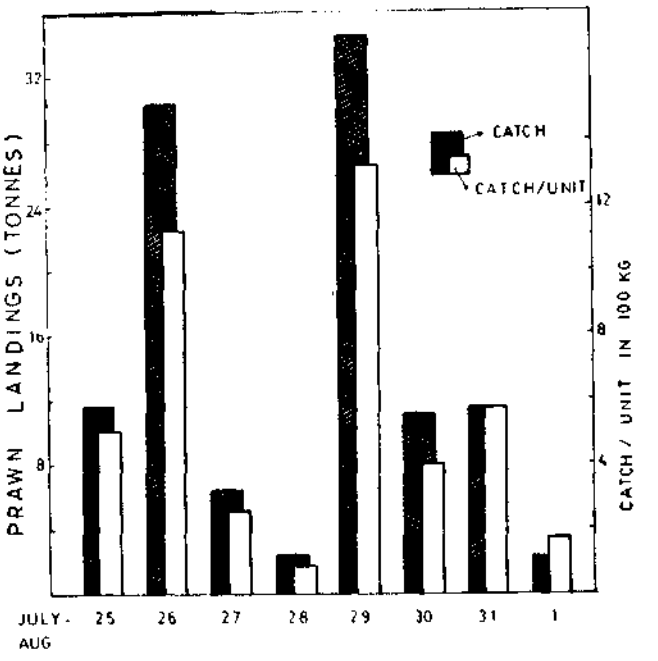


Fig. 2. Prawn landings by 'matabala' at Ullal during July-Aug. 1986.

After bringing both ends of the net together the bottom rope is pulled and the net is hauled slowly. To prevent the fishprawns jumping out of the net, the upper edge of the net is slightly lifted above the water level by one of the canoes while hauling it. Depending on the size of the shoal, the time taken for a haul varies from half-an-hour to one hour. The number of hauls vary from 1–4 per day. When the catches are high, each unit may employ one or two canoes (with or without outboard engines) as carrier boats for transporting a part of their catch as it is done by purse seines.

**Area and period of operation**

The 'matabala' units are operated all along the Mangalore coast when there is lull in monsoon and sea conditions permitted these fishermen to venture into the sea. However, most of these units are centred around Ullal, Baikampady (Panambur Harbour), Uchila, Hejamadi, Polippu and Malpe (Fig. 1). Fishing operations are generally confined to nearshore waters within 15 m depth.

It is seen that monsoon fishery along this coast largely depends on the weather conditions as well as the availability of shoals. Due to this, there has not been any consistency in the fishing operations. Regular catch statistics and other biological data were collected

only from Ullal and Baikampady. Information regarding the prawn landings at other centres were collected by enquiry.

**'Matabala' fishery at Ullal and Baikampady**

*Ullal:* It is estimated that 110.6 t of prawns landed during 1986 with a catch rate per boat-day of 384 kg as against 61.6 t and 517 kg obtained in the 1985 season. The catch per boat-day ranged widely from a minimum of 167 kg on 1st August 1986 to a maximum of 1,332 kg on 29th July '86 (Fig. 2). All the prawn catch was obtained between 25th July and 1st August '86. Of this, 97.9% was landed in July and the rest in August.

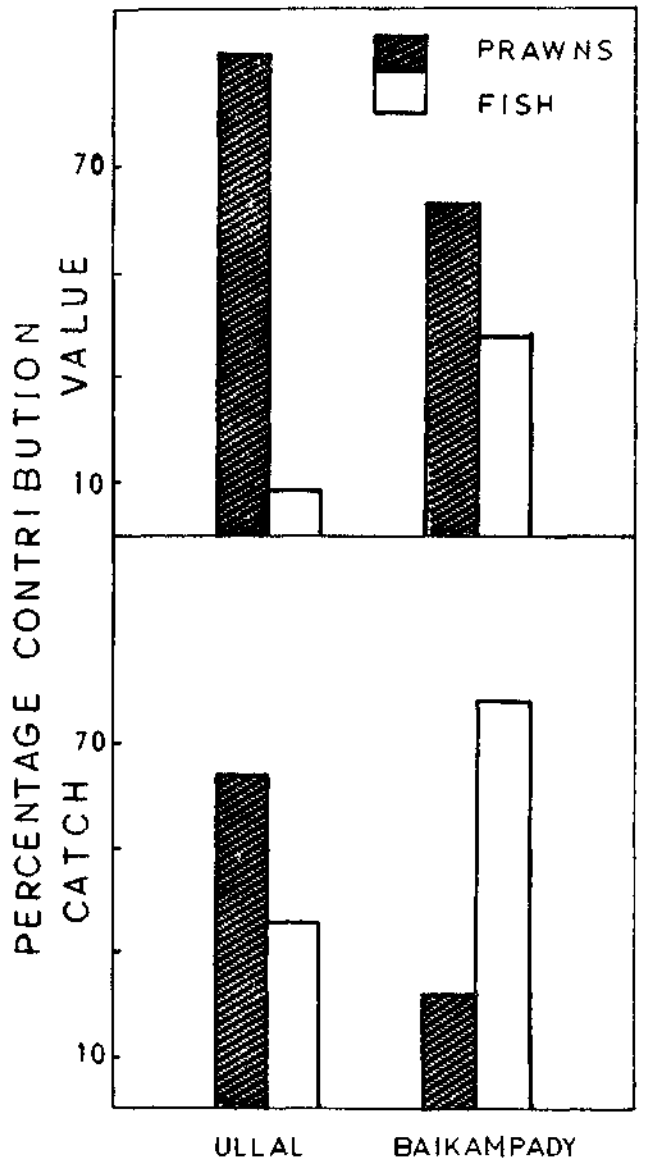


Fig. 3. Percentage contribution of prawns and fishes in 'matabala' catch at Ullal and Baikampady in respect of catch and value during July - August, 1986.

The prawns alone formed 63.5% of the 'matabala' catch at this centre (Fig. 3). Among the species, *Metapenaeus dobsoni* contributed 96.8% of the prawn landings, while *Penaeus indicus* and *Parapenaeopsis stylifera* together formed the rest (Table 1).

In the 'matabala' catch, fishes formed 36.5% at this centre. Bulk of the catch was obtained in July '86. The important species were *Thrissa* sp., silver bellies, *Kowala koval,* mackerel, *Caranx* sp., *Ambassis* sp., *Lactarius lactarius* and anchovies. It is interesting to note that oil sardine which used to be a major component in the traditional gears in the monsoon season, was completely absent during the 1986 season*.

*Baikampady (Panambur Harbour):* The prawn catch amounted to 6.0 t with a catch rate per boat-day of 27.3 kg during this period. All the catch was obtained in July 1986 itself. Prawns formed only 22.1% of the 'matabala' catch at this centre (Fig. 2). *M. dobsoni* was the principal species contributing to 95.0% of the prawn landings, and *P. indicus* formed the rest (Table 1).

Fishes contributed 77.9% of the catch. Silver bellies, *Lactarius lactarius, Ambassis* spp., *Kowala koval,* carangids, anchovies, soles and mackerel were the major components in the fish catch. Like Ullal,

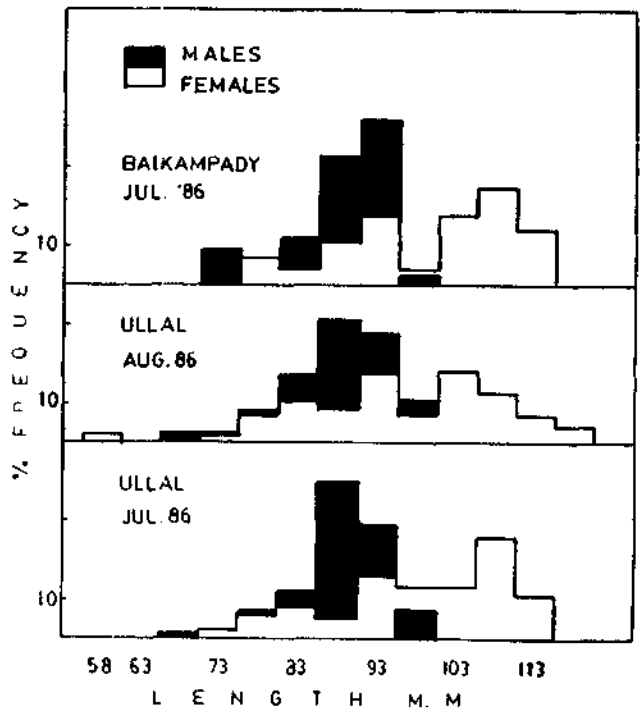


Fig. 4. Size distribution of *M. dobsoni* in the 'matabala' catch at Ullal and Baikampady during July - August 1986.

**Table 1.** *Catch (kg) and effort (nos.) at Ullal and Baikampady during July - August 1986 (catch values in Rupees in respect of prawns are given in parentheses)*

| | ULLAL | | | BAIKAMPADY |
|---|---|---|---|---|
| | July | August | Total | July |
| 'Matabala' units | 214 | 74 | 288 | 220 |
| *M. dobsoni* | 1,04,840 | 2,273 | 1,07,113 | 5,714 |
| | (17,29,860) | (37,505) | (17,67,365) | (94,281) |
| *P. indicus* | 3,447 | 48 | 3,495 | 300 |
| | (1,75,797) | (2,448) | (1,78,245) | (15,300) |
| *P. stylifera* | 30 | 19 | 49 | — |
| | (480) | (304) | (784) | |
| Total prawns | 1,08,317 | 2,340 | 1,10,657 | 6,014 |
| | (19,06,137) | (40,257) | (19,46,394) | 1,09,581 |

**Table 2.** *Prawn landings by 'matabala' (in kg) along with the catch value in Rupees at other centres during Jul. - Aug.* 1986

| Month | POLIPPU | | UCHILA | | HEJAMADI | | MALPE | |
|---|---|---|---|---|---|---|---|---|
| | Catch | Value | Catch | Value | Catch | Value | Catch | Value |
| July | 11,040 | 1,91,826 | 29,120 | 4,98,450 | 29,961 | 6,29,188 | 32,626 | 6,64,324 |
| August | 6,896 | 1,62,824 | 15,584 | 26,694 | — | — | — | — |
| Total | 17,936 | 3,54,650 | 44,704 | 7,65,392 | 29,961 | 6,29,188 | 32,626 | 6,64,324 |

there was no oil sardine in the catches at Baikampady during this period*.

**'Matabala' prawn landings at other centres**

*Uchila:* The prawn catch amounted to 44.7 t with a catch rate per boat-day of 827.8 kg. Of this, 65.1 kg was caught in July and the rest in August '86 (Table 2). *M. dobsoni* contributed 100% of the prawn catch.

*Polippu:* It is estimated that 17.9 t of the prawns with a catch per boat-day of 498.1 kg was landed at this centre (Table 2). Out of this, 61.5% was landed in July and the rest in August '86. *M. dobsoni* formed 92.1% and the rest by *P. indicus.*

*Hejamadi:* The prawn catch amounted to 30.0 t (Table 2). *M. dobsoni* formed 100% of the prawn landings.

*Malpe:* About 33.0 t of prawns with a catch per boat-day of 1,359.4 kg were landed at this centre (Table 2). All the catches were obtained in July '86. *M. dobsoni* formed 100% of the prawn catch.

**Catch value**

Altogether around 242.0 t of prawns were landed between Ullal in the south and Malpe in the north by 'matabala' during this season, worth Rs. 4.4 millions (Tables 1 and 2).

At Ullal, the catch value was estimated at Rs. 2.14 million of which prawns alone contributed 91.0% and the rest by fishes (Fig. 3).

At Baikampady, Rs. 0.17 million was realised, of which 63.3% was obtained through the sale of prawns (Fig. 3).

**Size composition of** *M. dobsoni*

It is interesting to note that the fishery was mainly supported by large sized prawns. In the 'matabala' fishery at Ullal, this species was represented by sizes ranging from 68 to 98 mm (mode at 88 mm) in males, and from 58 to 118 mm (mode at 93 and 108 mm in July '86 and 98 and 108 mm in August '86) in females (Fig. 4).

*However, during the 1987 season, oil sardine was caught in small quantities in this gear at both the centres. Other indigenous gears did not operate.

**Table 3.** *Age structure (%) in respect of* M. dobsoni *at Ullal and Baikampady during July - August,* 1986

| Age | ULLAL | | | | BAIKAMPADY | |
|---|---|---|---|---|---|---|
| | July | | August | | July | |
| | Males | Females | Males | Females | Males | Females |
| 0-year | 3.1 | 21.7 | 3.7 | 32.7 | 2.7 | 21.6 |
| 1-year | 96.9 | 78.3 | 96.3 | 66.3 | 97.7 | 78.4 |

**Table 4.** *Sex ratio (%) in* M. dobsoni *at Ullal and Baikampady during July - August,* 1986

| Month | ULLAL | | BAIKAMPADY | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| July | 61.5 | 38.5 | 54.1 | 45.9 |
| August | 49.5 | 50.5 | — | — |

**Table 5.** *Maturity stages of* M. dobsoni *at Ullal and Baikampady during July - August,* 1986

| Place | Month | Immature | Maturing | Mature | Spent/spent recovering | Impregnated |
|---|---|---|---|---|---|---|
| Ullal | July | 45.2 | 16.1 | 32.2 | 6.5 | 17.7 |
| | August | 61.8 | 9.1 | 10.8 | 16.4 | 18.2 |
| Baikampady | July | 32.1 | 35.8 | 32.1 | — | 14.3 |

At Baikampady, prawns ranging in size from 73 to 98 mm (mode at 93 mm) in males and from 78 to 113 mm (mode at 93 and 108 mm) in females supported the fishery (Fig. 4).

**Age structure**

Among males, 0-year class formed only 3–4 % at Ullal and about 2% at Baikampady, whereas, 1-year group (above 80 mm size) contributed the bulk of the catch (96-97% at Ullal and 98% at Baikampady). Among females, 22–33% was in O-year class at Ullal and 22% at Baikampady, while 1-year class (above 95 mm size) formed 66–78% at the former centre and 78% at the latter.

**Sex ratio and maturity**

The overall sex ratio in *M. dobsoni* indicated that males outnumbered females at both centres. In July '86, males formed 61.5% and 54.1% at Ullal and Baikampady respectively (Table 4). However, in August '86, it was seen that males and females were distributed more or less equally.

During 1986 season, 32.2% and 32.1% of females were in mature condition at Ullal and Baikampady respectively (Table 5). Impregnated females formed 17.7% and 14.3% respectively at these centres. In August '86, 18.2% of females was in impregnated condition at Ullal. The occurrence of spent/spent recovering females at Ullal (6.5% in July and 16.4% in August '86) suggested peak spawning particularly in the latter month.

**General remarks**

Exceptionally heavy catches of *M. dobsoni* were obtained in 'matabala' on certain days in July and August '86 (Fig. 2). This species alone contributed upto 98% or even 100% of the prawn landings. It is estimated that around 242 t of prawns landed between Ullal and Malpe, within a range of 70 km, in a short period. Questions have been raised at various forums

whether catching of these prawns at a time when peak spawning recorded, has any adverse effect on the resource. It is seen that monsoon fishery is exclusively supported by large sized prawns with modal lengths at 88 mm in males and 103/108 mm in females. Since most of these prawns have already spawned 2–3 times and also reached their maximum size, it is desirable to catch them during that period, instead of leaving them to breed again (Sukumaran, 1985; *Mar. Fish. Infor. Serv., T & E Ser.*, **65**: 1-6). Moreover, these prawns with such a short life span (with maximum of 2 years) are available to the fishery for not more than a year or so. Hence it is possible that they may die of natural mortality if not caught at that size, which may be a heavy loss to the fishery. Although the catches are heavy on certain days in July '86, the total

Fig. 5. 'Matabala' unit is being landed after fishing at Ullal.

landings of *M. dobsoni* was only 106 t at Ullal and less than 250 t along the entire Mangalore coast and hence may not pose any conservatory problem in the near future.

Eventhough the introduction of 'matabala' along the Mangalore coast has revolutionised the monsoon fishery, it has also created unprecedented rivalry between fishermen of 'matabala' and the mechanised fishing boats. In the last two seasons since mechanised boats, particularly purse seiners, could not get any prawn catch when fishing started in September, they decided to start fishing in August itself as 'matabala' was getting plenty of prawns during July–August '86.

Fig. 6. Prawns are being filled in bamboo baskets for weighing before loading in to the trucks at Ullal.

It was reported in the news paper that fishing was banned along this coast till 22nd August following a clash on 17th August '86 between the traditional fishermen and those using mechanised fishing boats. In these clashes four boats were set on fire and 28 fishermen were injured at the sea off Hejamadi, about 30 km north of Mangalore. The loss was estimated to be Rs. 35 lakhs. Trouble started when the fishermen took the mechanised fishing boats to the sea despite the understanding that no fishing would be undertaken till 22nd August '86. Emotional traditional fishermen joined together in their country boats and chased the fishing boats and set them on fire. All efforts to bring the two fighting factions to a negotiating table met with little success. Due to this, ban on fishing was further extended till the end of August 1986.

So, unless a permanent solution is found, the rivalry between 'matabala' fishermen and other mechanised boat owners may lead to further clashes resulting in loss of life and property.