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# INCREASED EXPLOITATION OF JUVENILE FISH POPULATION BY BULL TRAWLERS DURING THE EARLY POST-MONSOON FISHING SEASON OF 1992 ALONG THE DAKSHINA KANNADA COAST, KARNATAKA

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The operation of bull trawlers is a common feature observed in the coastal waters of Dakshina Kannada during the commencement of the fishing season in September, after the lean monsoon fishing activities. The peak period of their operation is generally seen from September to November, when about 10 units are employed at each of the centres at Mangalore and Malpe. As the night fishing by trawlers increases, bull trawling activity gradually decreases and stops by about the end of November. During the fishing season of September-November 1992, more number of bull trawler units, numbering 20-25 at each of the centres, was engaged in the fishery, exploiting the juvenile fish population to a great extent. As such exploitation would have deleterious impact on the fish resources of the region, the salient features of the fishery during September-November 1992, as observed from Mangalore and Malpe centres are reported here.

**Fishing operation**

About forty metres long trawl nets, with head and foot-rope length of forty metres each and lead-rope of sixty metres and cod-end mesh size of 25 mm operated by two mechanised trawl boats of identical size (9 to 11.2 m) and horse power (37 to 88 HP) with a crew of 5 to 6 in each of the boats, were employed in the fishery.

The bull trawlers set out for fishing at 2000 hours and return to the base in the early morning hours of next day. Generally, 3 to 4 hauls, each of 2 to 2.5 hours duration, were taken in the inshore muddy grounds of less than 10m deep, although in the earlier years, the fishing was carried out in relatively deeper grounds of 10 to 18m depth.

**Catch and catch composition**

In 1992, bull trawl fishing season was observed from September to November at Mangalore, wheras, at Malpe it was confined to September and October, as the operation of night stern trawling started early at this centre. The estimated total catch of bull trawlers at Mangalore and Malpe centres together was 800.7t with a catch rate of 499 kg/boat. At Mangalore, with an estimated catch of 529.07t, October was the most productive month when catch per unit of effort was 986 kg. At Malpe (total catch 271.63t), the highest landing was recorded in September (233.93t, with a catch rate of 312 kg/unit effort) (Table 1).

The bull trawlers are mainly operated for fish. the monthwise composition of the catch landed by the bull trawlers is given in Table 1. Fishes contributed to about 96.6% of the total catch and were represented by a large number of groups. Carangids formed the dominant group in all the months. The important groups of fishes supporting the fishery in order of abundance were carangids (51.4%), leiognathids (9.5%), ribbon fish (4.9%), other clupeids (6.4%), sciaenids (5.7%), sardines (4.9%), pomfrets (3.2%), soles (2.1%), cat fish (1.2%), *Lactarius* (1.0%) and other fishes (5.7%). Cephalopods formed only 3.3% of the total catch. The prawns and crabs constituted the least component, accounting to 0.03 and 0.05% of the total landings respectively.

**Juvenile fish catch**

One of the striking features of the bull trawl fishery of the season was the incidence of appreciable quantities of juveniles of several commercially important fishes (Fig 1). Out of the total catch of 800.7t, juvenile fishes formed 184.5t, constituting 23% of the total catch. Although they were caught from September through November, highest quantity of juvenile fishes was landed in september (Fig. 2). The estimated catch in quantity and numbers, catch composition, length range, modal size group and percentage contribution in respective groups are given in Table 2 and the overall composition of

TABLE 1. *Estimated fish landings (in tonnes), effort (in units) and catch/effort (in kg) landed by bull trawlers operated during September to November 1992 at Mangalore and Malpe*

| Species | Manglore | | | | Malpe | | | |
|---|---|---|---|---|---|---|---|---|
| | Catch | | | | Catch | | | |
| | Sep. | Oct. | Nov. | Total | Sep. | Oct | Nov. | Total |
| *Decapterus* spp. | 3.6 | 210.3 | — | 213.9 | 1.7 | — | — | 1.7 |
| *Caranx kalla* | 41.9 | 15.0 | 2.0 | 58.9 | 69.9 | — | — | 69.9 |
| *Chorinemus* sp. | 35.3 | 23.5 | 1.3 | 60.1 | 1.1 | — | — | 1.1 |
| *Megalaspis cordyla* | 3.3 | 2.7 | — | 6.0 | — | — | — | — |
| Oil sardine | — | — | — | — | 11.6 | — | — | 11.6 |
| Lesser sardine | 0.4 | — | 0.1 | 0.5 | 2.9 | 24.5 | — | 27.4 |
| Other clupeoids | 38.9 | 4.0 | 0.4 | 43.3 | 7.4 | 0.7 | — | 8.1 |
| Leiognathids | 21.8 | 0.4 | 0.2 | 22.4 | 51.1 | 2.5 | — | 53.6 |
| Ribbon fish | 5.6 | 44.5 | — | 50.1 | 1.1 | — | — | 1.1 |
| Soles | 0.6 | 1.6 | 1.3 | 3.5 | 9.1 | 4.4 | — | 13.5 |
| Sciaenids | 12.6 | 1.3 | 0.1 | 14.0 | 30.3 | 1.0 | — | 31.3 |
| Cat fish | — | 2.9 | — | 2.9 | 6.2 | 0.3 | — | 6.5 |
| Mackerel | 1.1 | 0.03 | — | 1.13 | 3.3 | 3.2 | — | 6.5 |
| Seer fish | 0.6 | 0.9 | 0.1 | 1.6 | 2.1 | — | — | 2.1 |
| Pomfrets | 20.0 | 2.9 | 0.4 | 23.3 | 2.0 | — | — | 2.0 |
| *Lactarius* spp. | 0.9 | 1.6 | 0.2 | 2.7 | 5.6 | — | — | 5.6 |
| *Stolephorus* spp. | 0.2 | 1.1 | — | 1.3 | 0.7 | — | — | 0.7 |
| Other fishes | 0.04 | 0.1 | 0.1 | 0.24 | 0.03 | — | — | 0.03 |
| Crabs | - | — | — | — | 0.4 | — | — | 0.4 |
| Cephalopods | 7.2 | 1.7 | 0.1 | 9.0 | 17.4 | — | — | 17.4 |
| Total | 202.24 | 319.33 | 7.5 | 529.07 | 233.93 | 37.7 | — | 271.63 |
| Effort | 377 | 324 | 13 | 714 | 750 | 140 | — | 890 |
| Catch/effort | 536.45 | 985.59 | 576.92 | 740.99 | 311.91 | 269.29 | — | 305.20 |

juvenile fish catch is shown in Fig. 3. Among the diffirent groups of juvenile fishes landed, those belonging to *Chorinemus*, spp. *Decapterus*, spp. *Caranx kalla*, *Sardinella* spp. and *Leiognathus* spp., formed the bulk. In fact, cent per cent of the catch of *Chorinemus* spp., *S. logiceps*, *Tachysurus thalassinus* and *T. tenuispinus* was constituted by juveniles. It is also noteworthy that the size groups of juveniles of these fishes exploited by the bull trawlers were respectively smaller as compared to the normal size groups encountered in the commercial fishery of these groups. Besides these groups, about 10% of other clupeoids, especially *Thryssa* spp. were also caught. Similarly, all the seer fishes encountered in this gear were young ones (Fig. 4). In the case

Fig. 1. Juveniles of *Chorinemus* spp. landed by bull trawlers operating off Mangalore.

Fig. 2. Immature seer fishes landed by bull trawlers at Mangalore.

TABLE 2. *Estimated catch in quantity and number, length range, model size groups, percentage contribution of juvenile/young fishes and their normal length distribution in the commercial fishery landed by the bull trawlers operating during September to November 1992 at Mangalore and Malpe*

| Species | Catch (kg) | Estimated Nos. | Length range (mm) | Model size (mm) | Percentage of Juvenile in respective group | Normal length distribution in commercial fishery (mm) |
|---|---|---|---|---|---|---|
| *Chorinemus* spp. | 61247 | 9469886 | 115-200 | 145, 155 | 100 | 300-400 |
| *Sardinella longiceps* | 11636 | 7563400 | 45-75 | 55 | 100 | 130-160 |
| *Tachysurus thalasinus* | 4679 | 233948 | 105-190 | 120 | 100 | 300-500 |
| *T. tenuispinus* | 4679 | 98978 | 155-195 | — | 100 | 220-250 |
| Seer fish | 3654 | — | 200-300 | — | 100 | 750-1000 |
| *Decapterus* spp. | 43113 | 3575224 | 95-120 | 105 | 20 | 170-200 |
| *Caranx kalla* | 25774 | — | 40-65 | — | 20 | 125-145 |
| *Leiognathids* | 15189 | — | 40-60 | — | 20 | 70-100 |
| *Megalaspis cordyla* | 597 | — | 150-180 | — | 10 | 200-300 |
| Sciaenids | 4533 | — | 55-75 | — | 10 | 150-200 |
| Soles | 1698 | — | 40-50 | — | 10 | 130-150 |
| Pomfrets | 2538 | — | 80-120 | — | 10 | 170-200 |
| *Thryssa* spp. | 5143 | — | 80-100 | — | 10 | 150-180 |

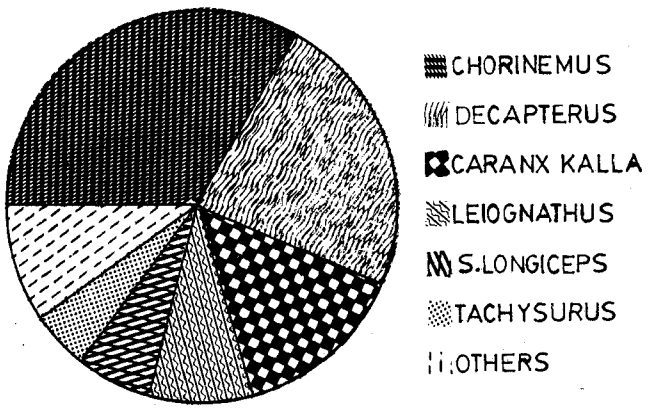


Fig. 3. Species composition of juveniles and young fishes landed by bull trawlers during September to November 1992 at Mangalore and Malpe (pooled).

of pomfrets, about 10% of the catch was formed by the young ones.

**Remarks**

A comparison of the characteristics of the bull trawl fishery of the post-monsoon season of the earlier years with that of the present season (September-November, 1992) along the Mangalore-Malpe coast envinced the following deviations:

1. During the season under report, more number of units were observed in operation both at Mangalore and Malpe indicating their increasing popularity.
2. The area of operation of bull trawlers during the season was in relatively shallower grounds (less than 10m depth) than in the earlier years

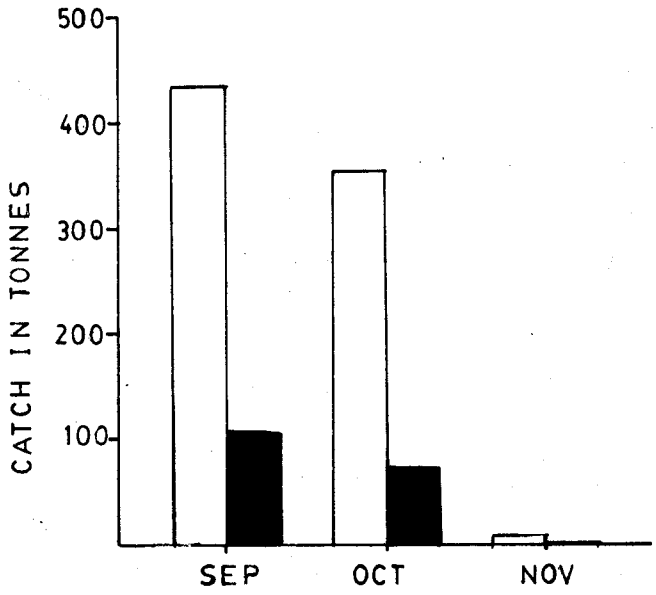


Fig. 4. Total fish catch (□) and juvenile fish catch (■) landed by bull trawlers during September to November 1992 at Mangalore and Malpe (pooled).

(10-18m depth region), and

3. Increased exploitation of juveniles of commercially important fishes was observed during the present season.

It is well known that the bull trawlers fish more effectively than the stern trawlers, and hence, during the beginning of the season after the south-west monsoon, when there is scarcity

of fishes in the inshore waters and the operation of stern trawlers is not conducive due to the unsettled sea condition, the bull trawlers are generally operated in the area. As the season advances, the stern trawling for demersal fishes gradually replaces the bull trawling and becomes one of the main fishing units employed in the fishery of the coast. As long as the bull trawlers are exploiting the normal fish resources of the area during a short period, it has not been causing any concern on the resources exploited. However, the large scale exploitation of juveniles as observed in the present season, would definitely affect the resources, particularly when the inshore fishery of this region is already under fishing pressure.

In the context of incrasing exploitation of juvenile population of the commercially important fishes by substantial number of bull trawlers, there is an urgent need to control their operation in the shallow near shore fishing grounds of this coast, to avoid overfishing as well for the conservation of the fish stocks.

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