

# NOTES

## A NOTE ON THE CHANGING CATCH TREND IN THE TRADITIONAL TRAP-FISHERY OF KEELAKARAI AND RAMESWARAM

R. S. LAL MOHAN

*Regional Centre of CMFR Institute, Mandapam Camp.*

### ABSTRACT

The catch composition, the size composition of the fish and the seasonal variation of the fishery show that the catch trend in the trap fishery has slightly changed, for the better, at both Keelakarai and Rameswaram with the use of prawn peelings (wastes from the recently developed prawn industry) as bait. A brief observation on the biological aspects of *Siganus canaliculatus*, a dominant constituent at present, is also given.

Prabhu (1954), Pai (1968) and Thomas (1968) have given fairly good accounts of the fishery and the fabrication and mode of operation of the traps. But there is no record of the trap-fishery after the introduction of prawn peelings as bait, which has increased the efficiency of the traps and also altered the species composition of the trap catches. As we have no information on the biology of the siganid fish *Siganus canaliculatus*, some aspects of the biology of this fish were also studied.

Weekly observations were made from Keelakarai and Rameswaram, the two important trap fishing centres, from September 1973 to April 1975. The catch per day was estimated by:

|                                     |   |                   |
|-------------------------------------|---|-------------------|
| Catch observed for the day          | X | Total number of   |
| Number of units observed on the day |   | units for the day |

A canoe with a varying number of traps was regarded as a unit. The average number of traps per unit was arrived at by dividing the number of traps by the number of units operated on each day of observation, which was taken as a standard unit for the week. Catch per trap was estimated by dividing the catch per unit by the number of traps set by the unit.

### Catch composition

*At Keelakarai:* There is a change in the pattern of catch composition since the observations of Prabhu (1954). He observed that *Lethrinus nebulosus* (*L. cinereus*), *Callyodon ghobban* and *Teuthis marmorata* formed 56.8%, 25.9% and 1.9%, respectively, of the catch in the Gulf of Mannar during 1951. During the present observation it was seen that although the trap catches consisted of more than 25 species, the fishery depended mainly on the species *L. nebulosus*, *Siganus canaliculatus* and *C. ghobban*, which formed 45.0%, 26.2% and 10.0%, respectively, of the catch in the Gulf of Mannar. Though *L. nebulosus* continued to dominate in the catches at Keelakarai (Gulf of Mannar), *S. canaliculatus* occupied the second place, relegating *C. ghobban* to third place. Other species which formed more than 2% of the catches were *Psammoperca waigiensis*, *Upeneus tragula*; *Acanthurus bata*, *Plotosus canius*, *Lutianus johnii*, *Plectorhynchus pictus*, *Epinephelus tavnina* and the crab *Scylla serrata*.

*At Rameswaram:* Prabhu (1954) had found that *L. nebulosus* (= *L. cinereus*) and *Teuthis marmorata* formed 46.8% and 47.8%, respectively, of the catches in the Palk Bay. But now *Siganus canaliculatus* was the dominant species contributing 47.9% of the total catch, followed by *L. nebulosus* with 26.0% and *C. ghobban* with 0.7%. *Siganus javus* (= *Teuthis marmorata*), which contributed 9.5% of the catch here, was not common at Keelakarai.

The number of species occurring in the traps at Keelakarai was greater than that at Rameswaram. About twenty-five species of fishes constituted the catch at Keelakarai, whereas only fifteen species formed the fishery at Rameswaram (Palk Bay). Fishes like *Siganus vermiculatus*, *Callyodon fasciatus*, *Chaetodontops collaris*, *Pomacanthus sexfasciatus*, *Diagramma punctatus*, *Plectorhynchus pictus*, *Thallosoma lunare*, *Halichoerus bimaculatus*, *Plotosus canius* and *Serranus pachycentrum* were observed in the trap catches at Keelakarai, whereas *Siganus virgatus*, *Upeneus sulphurus*, *U. vittatus*, *Muraena undulata* and *Epinephelus bleekeri* were found only at Rameswaram.

### Seasonal variation of the species

A distinct seasonal variation was noticed in the occurrence of two important constituents, *S. canaliculatus* and *L. nebulosus*. *S. canaliculatus* occurred as a dominant constituent of the fishery during April to October, whereas *L. nebulosus* formed a fishery from September to March in the Gulf of Mannar. In the Palk Bay, *S. canaliculatus* formed a dominant fishery throughout the fishing season except August. *L. nebulosus* was caught in Rameswaram from June to December. *Psammoperca waigiensis* was also found to be one of the important constituents of the catches in June, August and October at Rameswaram. In the earlier observations, Prabhu (1954) had found that *Psammoperca waigiensis* formed 1.8 and 2.3% of the catch in the Gulf of Mannar and the Palk Bay respectively. Now it was 2.6% of the catches in the Gulf of Mannar and 5.9% of the catches in the Palk Bay.

### *Size composition*

The size composition of the catches varied with the mesh size of the traps. Smaller size groups of the fishes, measuring below 70 mm, were absent in the catches when the meshes were 40 mm. Juveniles of *S. canaliculatus* measuring 85-105 mm occurred during February to May, whereas larger size-groups formed a fishery from June to December. The fishery of *L. nebulosus* was supported by the juveniles measuring 100-128 mm. However, the larger size groups of 150-170 mm and 155-195 mm, respectively of *L. omatus* and *L. russelli*, occurred throughout the year. *Callyodon ghobban* were in the length range 113-223 mm. Along with the commercially important fishes, small coral fishes like *Chaetodon vagabundus*, *Chaetodontops collaris*, *Platy-glossus dussumieri*, *Haliichoerus himaculatus* of length 100-140 mm also occurred in the traps throughout the year.

### *Fishery*

According to Prabhu (1954), the estimated catch per trap was 0.3 kg when holothurians, crabs, fishes and jelly fishes were used as baits in the traps. However, during the present observation, the catch per trap was slightly larger, 0.48 kg at Keelakarai, probably due to the use of prawn peelings as bait in the traps. From the Palk Bay the catch/trap was found to be 0.34 kg/day. It was also observed that the average total catch/day was 56.7 kg at Rameswaram and 92.4 kg at Keelakarai. The landings by traps at Keelakarai was 2844 kg per month (12 months average) during the period of observation.

The intensity of the fishing operation as indicated by the number of traps set per day was greater at Keelakarai, with 207 traps set per day, whereas at Rameswaram 115 traps only were set. However, the number of units operated at Rameswaram were more than that at Keelakarai. The average number of units operated at Keelakarai was 7.7 per day as against 9.2 units at Rameswaram.

The fishing seasons also differed at Keelakarai and Rameswaram: whereas the season continued throughout the year at Keelakarai the fishing was only during certain months at Rameswaram. At Rameswaram the fishing was greatly influenced by the N.E. monsoon. The fishing was suspended from January to May because the water during this period became turbid, making the operation of traps difficult. The peak fishing season at Keelakarai was from December to April, but at Rameswaram it was from June to December.

The siganid fish *S. canaliculatus* and the lethrinids, namely, *L. nebulosus* and *L. omatus*, were found to feed voraciously on the bait, the prawn peelings, as indicated by the gorged condition of the stomach with the bait.

### *Biology of the Siganid fish Siganus canaliculatus*

Unlike in India, the biology of *S. canaliculatus* has received much attention in the countries like Phillipines, Singapore and Israel as it is one of the

fast growing culturable fishes. In Phillipines it was found to grow to 80 mm in 3 months, 100 mm in 4 months and 140 mm in 8 months (Lavina and Alcola 1973). In Singapore it is reported to grow to about 120 g in 9-11 months (Lam 1974). Bwathondi (1982) observed that it attained 20 cm in 6 months with artificial food in the cages in Zanzibar.

During the present study the fish is observed to grow from 95 mm to 165 mm in 6 months (10.7 mm/month). Fishes of length below 70 mm could not be collected owing to the large meshes of the traps. It may be mentioned that '0' year group supported the fishery of *S. canaliculatus*.

*Spawning:* The trap catches consisted mostly of immature fishes probably because, as Prabhu (1954) had observed, the narrow entrance of the traps might not allow larger fishes to enter. However, based on the occurrence of the Juveniles in the catch it was possible to trace the spawning seasons of the species.

The juveniles of the species of length 80-90 mm occurred from February to May. This may indicate that spawning season may be from December to February, considering that the fingerlings may take 3 months to attain 80-90 mm length (Lavina and Alcola 1973). However, Manacop (1937) had observed that *S. canaliculatus* spawned during January-April and July-September in Phillipines. Lam (1974) recorded its spawning season to be from January to April though he could not confirm its second spawning season from July to October in Singapore. More or less similar spawning season has been observed in Palau also (Lam 1974). The spawning season of this species in Gulf of Mannar also agrees somewhat with that in Singapore though the spawning starts and ends a little earlier here.

Prabhu (1954) had estimated that 10.45 t of fishes were caught by traps in Gulf of Mannar and 36.83 t in Palk Bay annually. Further, he found that the catch per trap was better in the Palk Bay than in the Gulf of Mannar. He attributed the disparity in the catch to the use of different types of baits, mode of setting of the traps, distance and depth of the fishing grounds and the nature of the bottom. The present observations indicated that the trap catches were better in the Gulf of Mannar than in the Palk Bay as the average catch/trap/month was 10.5 kg in Keelakarai and 8.5 kg in Rameswaram. However, the monthly average catch was estimated to be 2844 kg at Keelakarai and 1329 kg at Rameswaram. This increase in the catch may be attributed to the present use of prawn peelings as bait in the traps.

The study of the percentage composition of the species caught in the traps indicated that *S. canaliculatus* formed the dominant species in Palk Bay, whereas *L. nebulosus* was dominant in Gulf of Mannar. But Prabhu (1954) found that *L. cinereus* (— *L. nebulosus*) formed the major catch both in Palk Bay and Gulf of Mannar. *C. ghobban* and *Teuthis marmorata* occupied second

place in the catches of Gulf of Mannar and Palk Bay respectively. The species composition seemed to vary within the fishing season also. The Gulf of Mannar becomes rough during S.W. monsoon, when the traps are set in the shallow waters, nearer to the seaweed beds, resulting in the capture of more siganids. But during November-March, when the sea is calm, the traps were operated near the coral reefs, and coral fishes like *C. gkobban* and *L. nebulosus* occurred more in the traps.

*S. canalicuhtus* spawns almost in the same period as in Phillipines and Singapore. Lam (1974) observed that in Singapore the reproductive cycle of *S. canaliculatus* was annual and juveniles appeared during March-April, attaining full maturity by January-February and spawning till April. In the Gulf of Mannar, juveniles measuring 80 mm started appearing from February to May, almost the same period as in Singapore.

I am thankful to Mr. C. Mukundan, Officer-in-Charge, Vizhinjam Research Centre of CMFRI., Vizhinjam, for critically going to the manuscript and offering his comments.

#### REFERENCES

- BWATHONDI, P. O. J. 1982. *Aquaculture*, 27: 205-211.
- BEN - TUVIA, A. 1971. *F.A.O. Aquaculture Bull.*, 3(2): 4-5.
- LAM, T. J. 1974. *Aquaculture*, 3: 325-354.
- LAVINA, E. M. AND A. C. ALCOLA. 1973. Abstract No. Mss|ABS|2|l, Marine Science special symposium, Hongkong (1973).
- MANACOP, P. R. 1937. *Philipp. J. Sci.*, 62: 229-237.
- PAI, M. V. 1968. Ph.D. Thesis, Bombay University.
- PRABHU, M. S. 1954. *Indian /. Fish.* 1: 94-129.
- THOMAS, P. A. 1963. Ph.D. Thesis, Rajasthan University.