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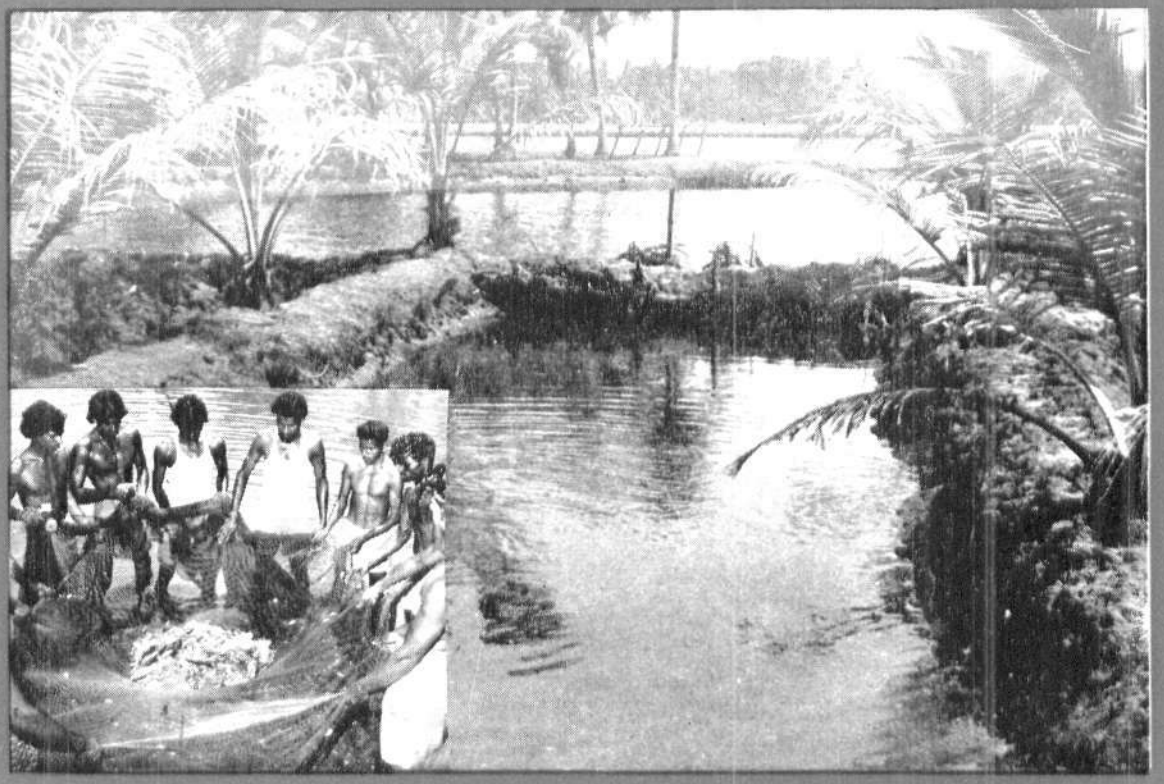

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THE MARINE FISHERIES INFORMATION SERVICE: Technical and Extension Series envisages the rapid dissemination of information on marine and brackish water fishery resources and allied data available with the National Marine Living Resources Data Centre (NMLRDC) and the Research Divisions of the Institute, results of proven researches for transfer of technology to the fish farmers and industry and of other relevant information needed for Research and Development efforts in the marine fisheries sector.

Abbreviation - *Mar. Fish. Infor. Serv. T & E Ser.*, No. 62: 1985

ARTISANAL FISHERY FOR PRAWNS AT UPPADA NEAR KAKINADA IN ANDHRA PRADESH COAST*

Introduction

Uppada (Lat. 17° 6′ N, Long 82° 23′ E) is an important marine fish landing centre of Kakinada region where prawns form about 4% to 95% in the total fish landings. Apart from the studies of Rao *(Indian J. Fish.* **26**: 52–64, 1981) on the marine prawn fishery at Kakinada by shore seine there are no other, reports on this aspect by indigenous gear from this region. Hence studies on the prawn fishery by indigenous gear at Uppada were initiated from January 1979, and the results of a five year study conducted during '79–83 are reported here. Ramamurthy and Muthu *(CMFRI. Bull.* **14**: 235–258, 1969) dealt with the craft and gear of Andhra coast.

Area of operation

Artisanal fishermen from Subbammapeta, Pallipeta, Kothapeta, Jagga Rajupeta, Ramisettypeta, Suradapeta, Mayapatnam and Ameenabad villages with indigenous craft and gear land their catches. Non-powered catamarans and the *Masula* boats operate different gears in 10–45 m depth.

Gears Operated

a) *Nylon gillnet:* There are four types of nets; *Madras* and *Jookavala*, mesh size 1.5–3 cm, *Big silk net*, mesh size 3–5cm and *Kilevala* (small silk net), mesh size 1.5–2 cm.

b) *Boat seine:* mesh size 1–2 cm at the cod end.

c) *Chinna alivi* (small shore seine), mesh size 0.5–1.5 cm at cod end and shore seine (big), mesh size 1.5–2 cm.

Species exploited

Twenty three species of penaeid prawns and 4 species of non-penaeid prawns contribute to the prawn fishery of which 10 species of penaeid prawns and 3 species of non-penaeid prawns form regular fishery, throughout the year.

Species that contribute to the penaeid prawn fishery are *Penaeus indicus, P. monodon, P. merguiensis, P. semisulcatus, P. japonicus, Metapenaeus monoceros, M. dobsoni, M. brevicornis, M. affinis, M. ensis, Parapenaeopsis sculptilis, P. stylifera, P. hardwickii, P. probata, P. cornuta, P. acclivirostris, Solenocera crassicornis, Metapenaeopsis sp., Parapenaeus longipes, Atypopenaeus stridulans, Trachypenaeus curvirostris* and *T. sedili.*

The non-penaeid prawns are *Acetes* sp., *Exhippolysmata ensirostris, Nematopalaemon tenuipes* and *Exopalaemon styliferus.*

Gearwise catches

The yearly total catch of prawns, the catch rates (catch/unit), monthly trends of average catch by different gears are presented in Figs 1 and 2. In the following account, the trend of prawn fishery by different gears are given.

Nylon gillnet: These nets contributed to an average annual prawn catch of 41.05 t. Prawns formed nil to 3.8% in total fish landings by *Madras, Jooka,* and *Big silk nets* and 30–72% by *Kilevala.* The catch rates varied from 0.28 kg/unit to 1.1 kg/unit with an average of 0.73 kg/unit. *P. indicus, M. brevicornis, P. monodon, P. merguiensis, M. affinis, P. semisulcatus, P. japonicus* and *P. stylifera* contributed to the fishery

*Prepared by S. Lalitha Devi, Kakinada Research Centre of CMFRI, Kakinada.

in the order of abundance. Prawns are caught in the gill nets throughout the year with peak landings in January and September to October.

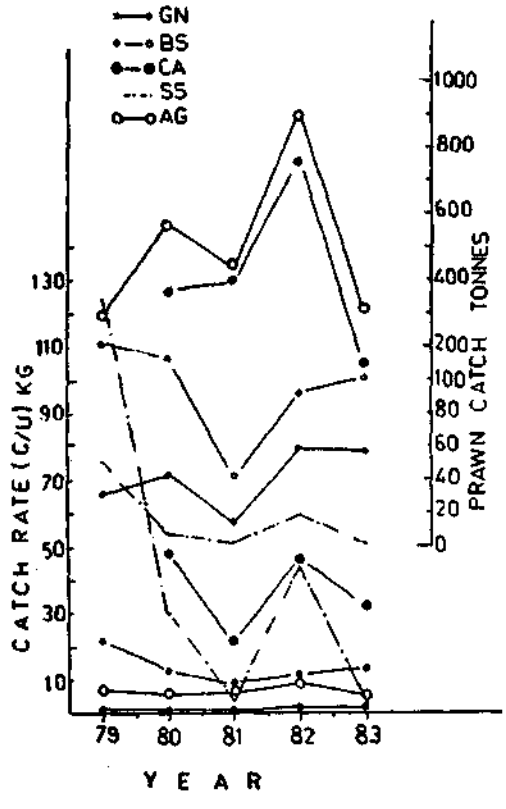

Fig. 1. Trends in the annual catch rates (C/U) of gillnet (GN), chinna alivi (CA), boat-seine (BS), shore-seine (SS) and all gears (AG) during the years from 1979 to 1983.

Boat seine: Average annual prawn landings are estimated at 119.39 t which was 22.55% in total fish catch. The unitwise catch rates varied from 8.95 kg to 22.04 kg with an average of 14.05 kg which accounted for 7.62% to 66.18% of the total fish landings. Penaeid prawns formed 46.74% and non-penaeid prawns 53.26%. *M. dobsoni, P. stylifera, P. hardwickii, M. brevicornis, M. monoceros, P. indicus, M. affinis, S. crassicornis, P. cornuta* and *P. acclivirostris* contributed to the penaeid prawn fishery in the order of abundance. *Acetes* sp., *N. tenuipes E. styliferus* and *E. ensirostris* are the important non-penaeids in the order of abundance. Catches were good from June to September and in December with peak landings during August and September.

Chinna alivi: Average annual prawn catch by this gear amounted to 326.51 t, accounting for 94.78% of the total fish landings with an average catch rate of 35.58 kg/unit. The catch rates varied from 21.90 kg/unit to 48.30 kg/unit, accounting for 85.65% to 98.69% in the total fish landings. Penaeid prawns formed 92.79% on an average and non-penaeid prawns 7.21%. In 1979, non-penaeids accounted for 29.72%.

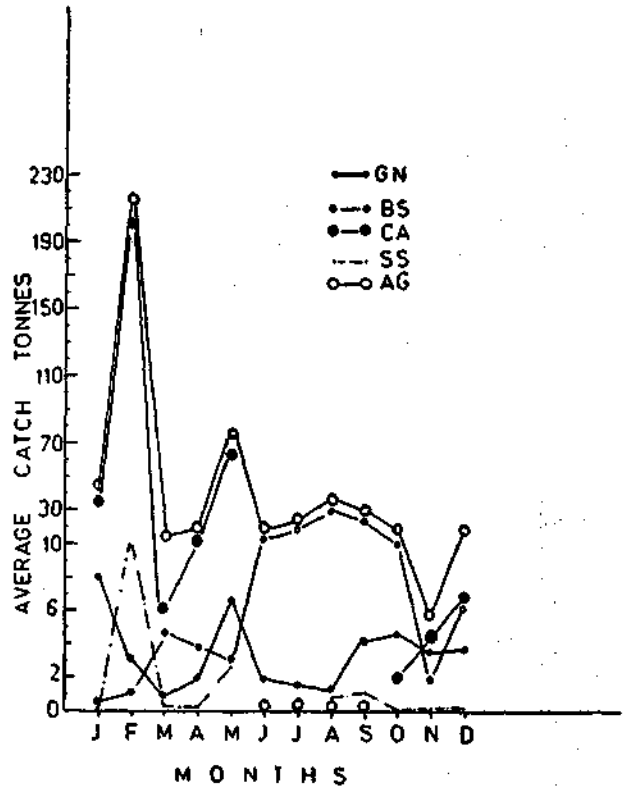

Fig. 2. Trends in the average monthly catch rates (C/U) of gillnet (GN), chinna alivi (CA), boat-seine (BS), shore seine (SS) and all gears (AG).

M. dobsoni, P. indicus, M. monoceros, P. stylifera, M. brevicornis, P. merguiensis and *P. monodon* contributed to the penaeid prawn fishery in the order of abundance. *Acetes* sp., *N. tenuipes, E. ensirostris* and *E. styliferus* contributed to the non-penaeid prawn fishery in the order of abundance. Using this gear prawns are caught in considerable quantities during the season May to December.

Shore seine: Estimated average annual catch of prawns is 14.53 t, which accounted for 11.49% of the total fish landings. The catch rates ranged from 1.31 kg/unit in '83 to 123.52 kg/unit in '79, with an average of 44.75 kg/unit. Penaeid prawns formed 90.9% and the balance by non-penaeids. Important penaeid prawns in the order of abundance are *M. dobsoni, M. brevicornis, M. monoceros, P. indicus, P. acclivirostris, P. japonicus, P. stylifera, M. ensis, P. sculptilis* and *P. hardwickii.* Fishery lasts from

November to May, with good landings in February and May.

Biological notes on the commercially important prawns

Penaeid prawns

P. indicus: This was a major component of the nylon gill net prawn fishery at Uppada, contributing 60–90% of the prawn landings. Annual landings were estimated at 38.09 t.

The length ranged from 50 to 216 mm and modal sizes from 95 to 179 mm. In most of the months, the modes ranged between 130–149 mm. Preponderance of females over males was observed, except in January to February and April to May of 1980 and '81. Mature females were found throughout the year with two peaks in January–April and August–October (Fig. 3).

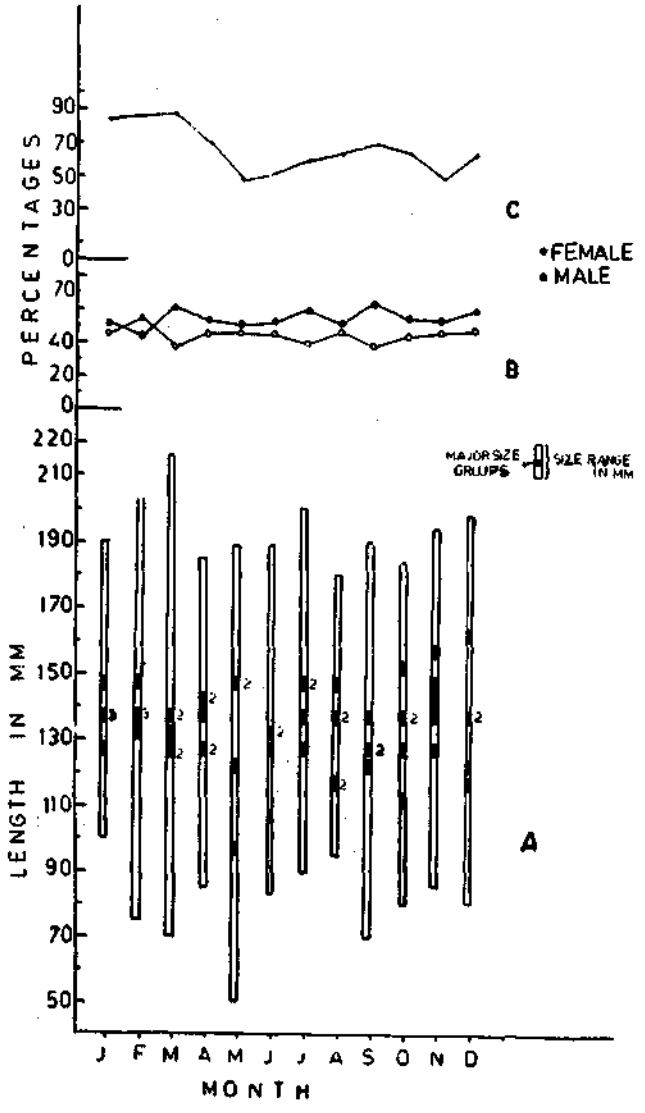

Fig. 3. Biological notes on *Penaeus indicus.*
*A. Size range and modal size in mm.
B. Sex ratio in percentage.
C. Mature females in percentage (stages III, IV & V).

M. dobsoni: This was another important species caught in 'chinna alivi', boat seine and shore seine, and ranked 1st among the penaeid prawns. The average annual landings were estimated at 267.83 t, forming about 65 % of the total penaeid prawn landings of this centre. Landings were good from December to May with peak landings during January to March.

The size ranged from 50–119 mm, with majority of them in the model size ranging from 50–70 mm during December–April and 80–99 mm during June–November. Females outnumbered males in all the months. Mature females were present in abundance during August–November and January–February (Fig. 4).

M. brevicornis: Average annual landings of this species were estimated at 21.19 t forming about

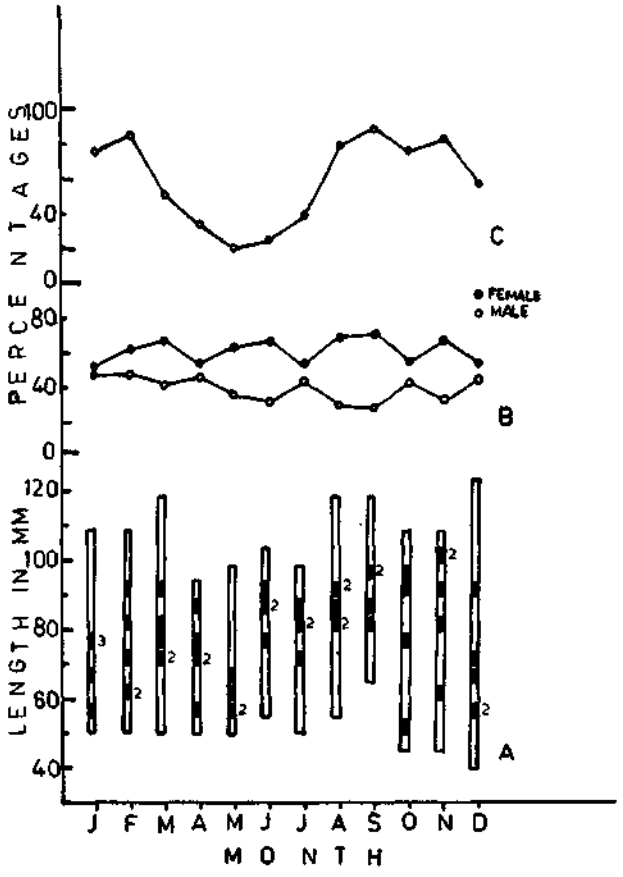

Fig. 4. Biological notes on *Metapenaeus dobsoni.*
A. Size range and modal size.
B. Sex ratio in percentage.
C. Mature females in percentage.

5% of the penaeid prawn catches. The landings were considerable during January–February and September–November. Size ranged from 50–164 mm, with majority of prawns in 110–120 mm size range in most of the months of the year. Females outnumbered males during the period of observation. Mature females occurred throughout the year with peak abundance during August–October and February–March (Fig. 5).

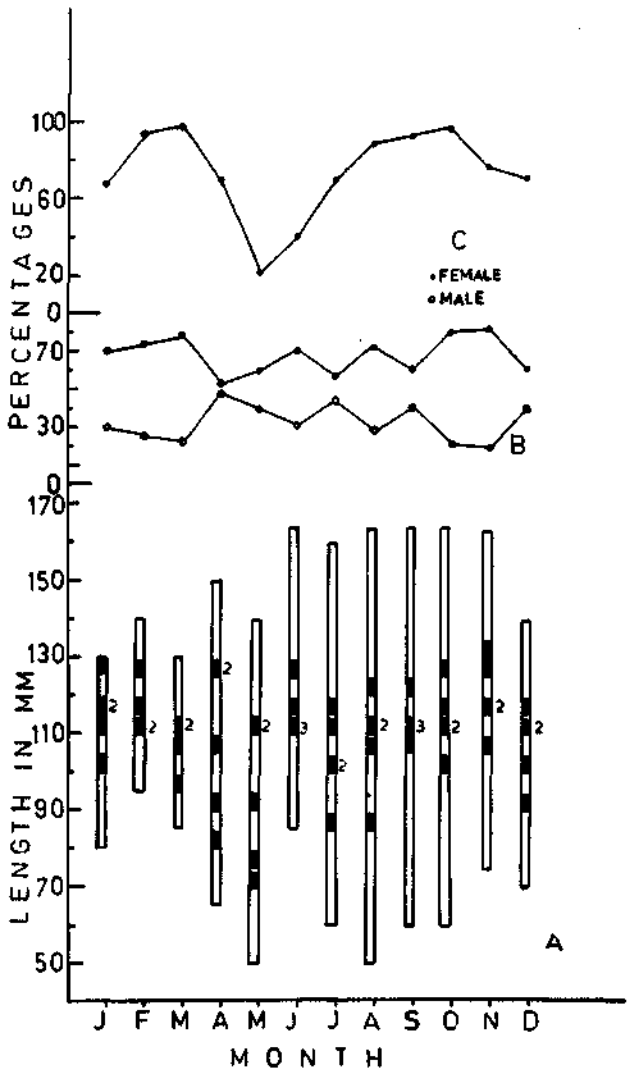

Fig. 5. A–C. Size range and modal size, sex ratio in percentage and mature females in percentage of *M. brevicornis*.

P. stylifera ranked 4th in total penaeid prawn catches with average annual landings at 20.65 t. Mostly boat seines, shoreseines and 'chinna alivi' landed this species in good quantities during August–November and February–March.

M. monoceros: Average annual landings were estimated at 15.08 t, forming 4% of the penaeid prawn catches. The fishery was good during August–September and in February.

The size ranged from 60–169 mm, with majority of prawns in 120–129 mm size group. Males outnumbered females during January–March and in August. Thirty per cent females in mature condition occurred during July–September.

P. monodon: The average annual catch was estimated at 8.1 t and it formed 2% of the penaeid prawns landings. Fishery was good during September–November and January–February.

P. merguiensis: On an average 8.11 t of this species were landed per year which accounted for 2% of the penaeid prawn catches. Fishery was good during January–February and July–September.

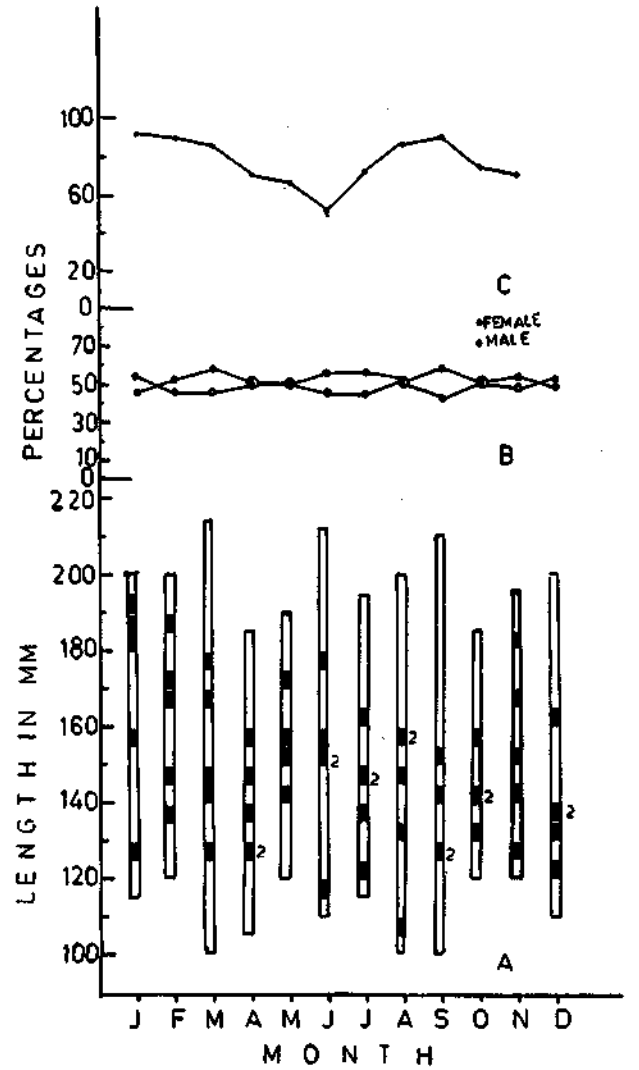

Fig. 6. *P. merguiensis*. A–C. Size range and modal size, sex ratio in percentage and mature females.

Sizes ranged from 100–214 mm, with majority in the size range 170–190 mm during January–February and 120–140 mm during the rest of the year. Males and females were found almost in 1:1 ratio, with slight predominence of females during January–March and September–November (Fig. 6).

Non-penaeid prawns

Acetes sp: This species ranked 1st in the total non-penaeid prawn catches with average annual landings at 60.2 t. Mostly boat seines and 'chinna alivi' landed this species in good quantities during May–September with peak landings during August.

N. tenuipes: Its average annual landings amounted to 15.6 t ranking 2nd in the non-penaeid prawn landings. Size ranged from 25–78 mm with majority of prawns in the 40–55 mm groups (Fig. 7). Females outnumbered males throughout with above 70% females in mature condition (late maturing and berried) during July–December. Landings were good during May to October with peak landings in July.

E. ensirostris: This species amounted to 8.1 t on an average, accounting for 9% in the non-penaeid prawn landings. Size ranged from 25–84 mm with majority of prawns in 50–60 mm modal size (Fig.8). Females outnumbered males throughout the year. Mature females occurred throughout the year with above 60% females in berried condition in April and September.

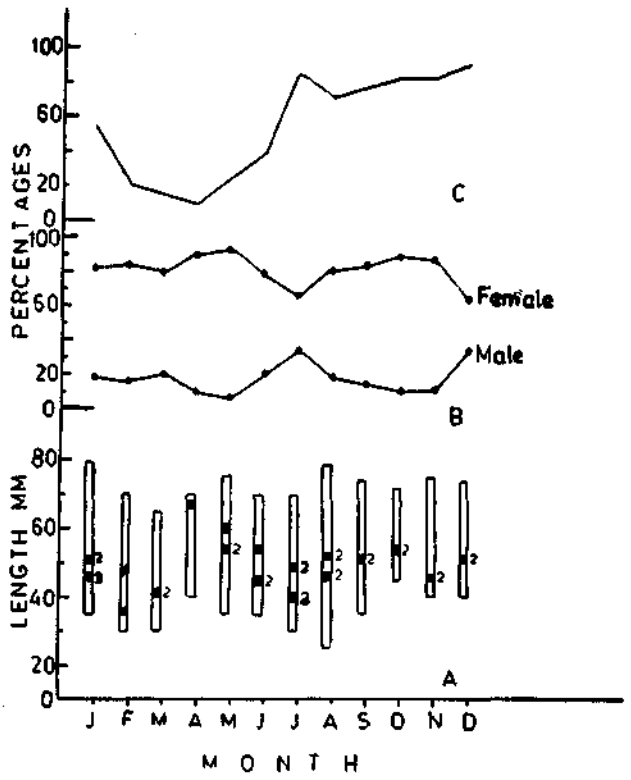

Fig. 7. *N. tenuipes* A–C. Size range and modal size, sex ratio in percentage and mature females.

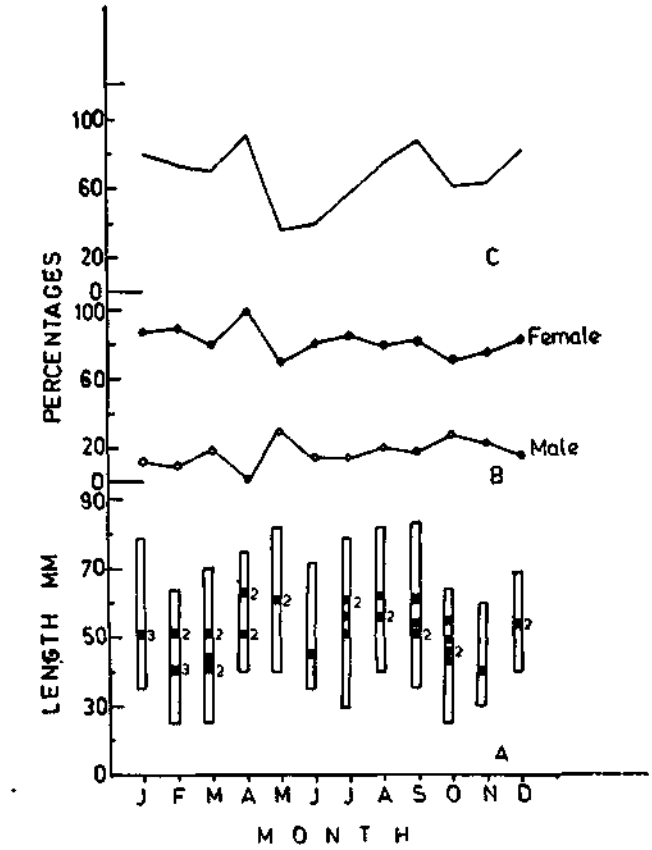

Fig. 8. *E. ensirostris.* A-C. Size range and model size, sex ratio in percentage and mature females.
*Number in Figs. 3A–8A indicates the *No.* of times that particular modal size has occurred during 79–83.

General remarks

Data on prawn catches at Uppada collected for a period of 5 years from 1979 to 1983 show that an average 501.5 t of prawns are landed per annum at this centre, accounting for 24.1% of the total fish landings. Penaeid prawns formed 82.4% in total prawn landings and 19.8% in total fish landings. The chief constituents of penaeid prawn fishery are *M. dobsoni, P. stylifera, P. hardwickii, M. brevicornis, M. monoceros, P. indicus, M. affinis* and *S. crassicornis* in the order of abundance.

Non-penaeid prawns accounted for 17.6% in total prawn landings and 4.3% in total fish landings. *Acetes* sp., *N. tenuipes* and *E. ensirostris* contributed to the fishery in the order of abundance.

Prawn fishery at Uppada is carried out throughout the year. Year to year fluctuations were noticed with maximum landings during 1982 and minimum in 1979; and catches declined in '83. Generally prawn landings were appreciable during January, February, May and July to October, with peak in February, May and August. Year to year fluctuations in the prawn landings of different gears were noticed, and the minimum and maximum sizes of the prawns caught in different gears were 85–249 mm by gillnets, and 25–170 mm by chinna alivi 30–185 mm by boat seines and 25–210 mm by shore seines.

From the foregoing observations it is seen that out of 4 gears operated at Uppada, chinna alivi is the most efficient gear for prawns, though it is operated seasonally.

The author express her gratitude to Dr. M.J. George, for suggesting improvements. Assistance rendered by Shri J. B. Varma, T–1, is gratefully acknowledged.