

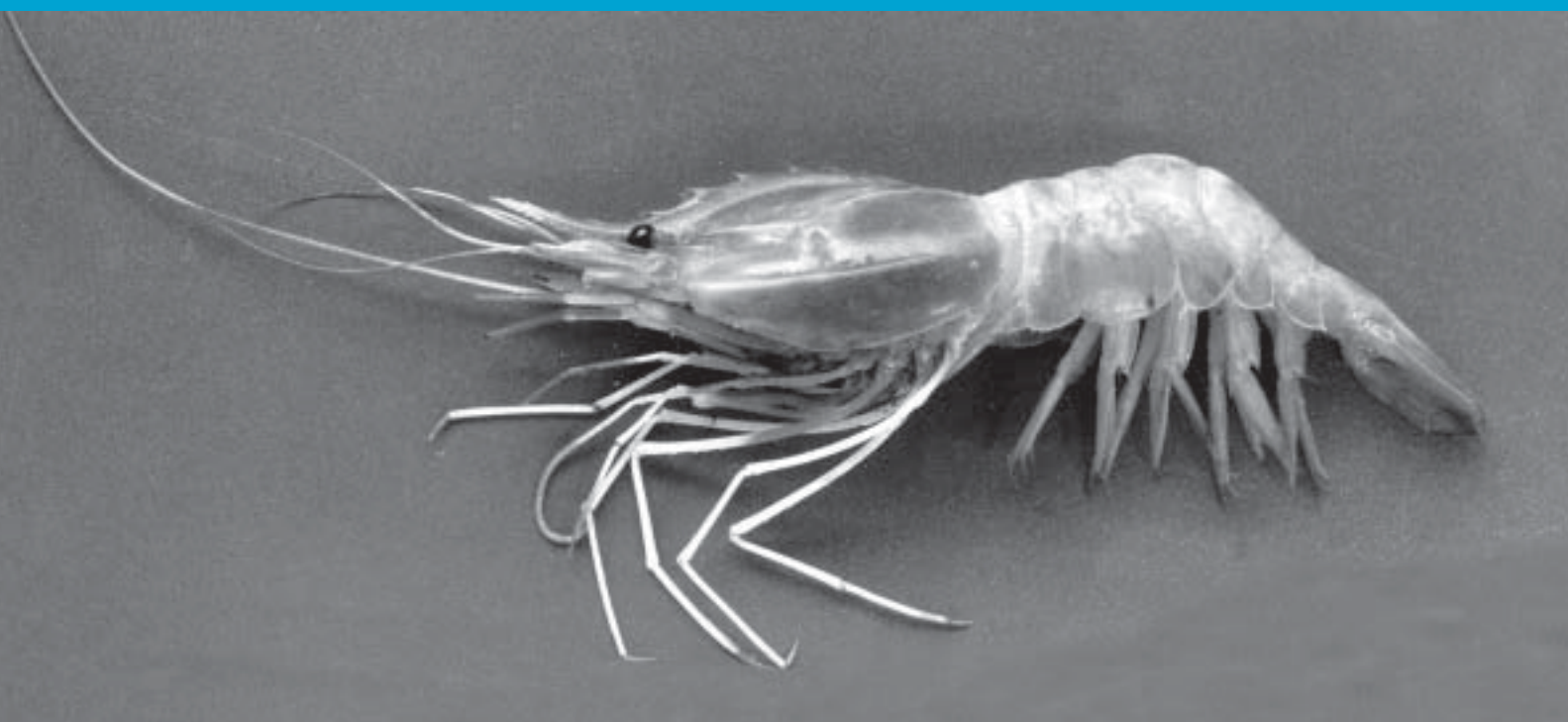
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The prawn resources along Tuticorin coast are exploited mainly by three types of gears viz. prawn gill net and thallumadi in the artisanal sector and trawl net in the mechanised sector. The prawn gill nets, popularly known as disco valai, are operated by the traditional fishermen from many coastal villages south of Tuticorin and the fishery is seasonal extending for a period of four to five months. The gear thallumadi is operated round the year at a few places in and around Tuticorin in shallow coastal waters and exploit mostly juvenile prawns. In the mechanised sector, trawlers keeping their base at Tuticorin Fishing Harbour operate in the ground off Manapad- Uvari in the south and off Erwadi in the north of Tuticorin. Although the prawn fishing in the mechanised sector is carried out round the year, the peak fishing activities normally extend for a few months only from May/June to September/October every year with the catch being dominated by landing of the green tiger prawn, *Penaeus semisulcatus* with moderate landing of *P.indicus*. During the rest of the months although prawn fishing continues, the number of units operated becomes less and the landings are also poor. It is during these lean seasons a few fishing vessels first attempted to explore new fishing grounds and ventured into the deeper waters off Tuticorin in late 1989 in order to exploit the resources available in the deep sea. As the trawlers returned with heavy catch consisting of a variety of deep sea fishes and prawns, a regular fishing to exploit these resources commenced thereafter during the lean season thus marking the beginning of the exploitation of prawn resources from the deep sea. The present article gives an account of the deep sea prawn resources landed at Tuticorin Fishing Harbour over a period of ten years from 1993-2002.

Estimated catch and effort : The estimated catch, effort and catch rate of the deep sea prawn resources landed at Tuticorin Fishing Harbour during the period 1993-2002 are given in Table 1. Fishing operation was carried out in two phases, the first phase extending from January to March/April almost all the years with the second operation lasting for another three months from October to December during certain years. The total

number of units (trawlers) operated during different months in the ten year period of study showed wide fluctuation ranging between 140 in January during 2002 to the maximum of 1755 units in March during 1994. Likewise, the number of fishing days during different months also fluctuated widely with a mere 7 days of operation in October during 1995 and in January during 2002 with the maximum number of fishing days (26 days) being recorded in February and March during most of the years.

Table 1. Month-wise estimated catch and catch per effort of deep sea prawns landed at Tuticorin Fishing Harbour during the period 1993 to 2002

| Year | Months | Units | Fishing days | Total catch (t) | C/E Kg/unit |
|------|--------------|-------------|--------------|-----------------|-------------|
| 1993 | December | 300 | 10 | 8 | 27 |
| | Total | 300 | 10 | 8 | 27 |
| 1994 | January | 480 | 24 | 79 | 164 |
| | February | 1360 | 23 | 192 | 141 |
| | March | 1755 | 26 | 150 | 85 |
| | April | 520 | 26 | 55 | 107 |
| | October | 650 | 26 | 178 | 275 |
| | December | 440 | 22 | 14 | 32 |
| | Total | 5205 | 147 | 671 | 129 |
| 1995 | February | 240 | 23 | 10 | 43 |
| | March | 585 | 26 | 75 | 128 |
| | October | 350 | 7 | 27 | 18 |
| | November | 990 | 22 | 891 | 900 |
| | December | 700 | 14 | 0 | 1 |
| | Total | 2865 | 92 | 1004 | 350 |
| 1996 | January | 1050 | 21 | 787 | 750 |
| | February | 500 | 25 | 36 | 73 |
| | March | 650 | 20 | 113 | 175 |
| | April | 400 | 20 | 9 | 24 |
| | Total | 2600 | 86 | 946 | 364 |
| 1997 | January | 300 | 10 | 150 | 500 |
| | February | 440 | 22 | 75 | 170 |
| | March | 780 | 26 | 298 | 383 |
| | April | 390 | 13 | 82 | 212 |
| | October | 640 | 16 | 74 | 116 |

| | | | | | |
|------|--------------|-------------|------------|-------------|------------|
| | November | 440 | 11 | 74 | 169 |
| | December | 600 | 20 | 107 | 179 |
| | Total | 3590 | 118 | 862 | 240 |
| 1998 | January | 400 | 20 | 41 | 104 |
| | February | 180 | 18 | 151 | 840 |
| | March | 260 | 26 | 84 | 325 |
| | Total | 840 | 64 | 277 | 330 |
| 1999 | October | 320 | 16 | 18 | 57 |
| | Total | 320 | 16 | 18 | 57 |
| 2000 | April | 300 | 15 | 110 | 366 |
| | Total | 300 | 15 | 110 | 366 |
| 2001 | January | 270 | 11 | 41 | 155 |
| | February | 600 | 24 | 660 | 1100 |
| | March | 845 | 25 | 898 | 1063 |
| | April | 240 | 12 | 195 | 812 |
| | Total | 1955 | 72 | 1795 | 918 |
| 2002 | January | 140 | 7 | 30 | 216 |
| | February | 450 | 17 | 270 | 600 |
| | March | 200 | 8 | 111 | 555 |
| | April | 150 | | 72 | 480 |
| | Total | 940 | 38 | 483 | 514 |

The total catch of prawns landed also varied widely. The landing was found to exceed 500 t in November during 1995; January 1996; February and March during 2001. During the rest of the months also the landings fluctuated from year to year with poor landings of less than 10 t being recorded in December 1993 and in April 1996. Similarly, the catch per unit effort also showed wide variation with the value exceeding 500 kg/unit in November 1995, January 1996 and 1997, February 1998, from February to April during 2001; February and March during 2002.

Species composition and size distribution : The deep sea prawn catch landed at Tuticorin Fishing Harbour during the ten year period were constituted by five species namely, *Plesionika spinipes*, *Heterocarpus woodmasoni*, *Aristeus alcocki*, *Metapenaeopsis andamanensis* and *Solenocera hextii*.

The estimated catch of different species and their percentage composition both month-wise, year-wise showed wide variation during different years and within the same year during different months. For

instance, during 1994 although all the five species were recorded in the catch, *P. spinipes* was found to dominate the catch most of the months with an average annual composition of 45% out of 671 t of total quantity of deep sea prawn landed. But during the subsequent year *H. woodmasoni* was the dominant species with an estimated catch of 682 t constituting 67.9% of the total quantity of deep sea prawns landed. The landing of *A. alcocki* was found to be good during the year 1996 with an estimated landing of 273 t constituting 28.8%. *S. hextii* supported the fishery significantly in 1994, 2001 and 2002 with its annual landing exceeding 100 t. *M. andamanensis* dominated the landings during 1996, 1998 and 1999.

An analysis of the overall species composition of the deep sea prawn landed at Tuticorin Fishing Harbour during the ten year period from 1993 to 2002 clearly indicates that *H. woodmasoni* dominated the fishery with an average annual landing of 224 t constituting 36.3% of the total catch of deep sea prawns (Table 2). *Plesionika spinipes* came second in the order of abundance with an average annual landing of 188 t forming 30.5% of the total landing of deep sea prawns. The landing of *M. andamanensis* was moderate with an average annual landing of 117 t constituting 19.0%, whereas the landing of *A. alcocki* and *S. hextii* was poor with their average annual landing being less than 50 t constituting less than 10% of the total landing of deep sea prawns.

The size range recorded were in the order of 76-128, 105-108, 76-104 and 89-123 mm in the males of *H. woodmasoni*, *P. spinipes*, *M. andamanensis* and *S. hextii* respectively. In the case of females the size ranges recorded for the above mentioned species were in the order of 81-132, 72-108, 72-118 and 96-137 mm.

The exploration of the new ground in the deeper waters and the exploitation of the deep sea prawn resources, which was hitherto unknown to the fishermen of the mechanised sector of south-east Tuticorin area, have opened a new chapter in the history of mechanised fishing. This venture offers good opportunity for the fishermen in the mechanised sector of Tuticorin to utilize their trawlers fully for active fishing even during the lean season.

Table 2. Month-wise species composition of deep sea prawns landed at Tuticorin Fishing Harbour during the period 1993 to 2002 (in tonnes and percentages)

| Years | Months | Species composition | | | | | | | | | |
|---------------|--------------------|---------------------|--------------------|----------------------|-----|--------------------|------------------|------------------------|-----|--------------------|-----|
| | | <i>P. spinipes</i> | | <i>H. woodmasoni</i> | | <i>A. alcocki</i> | | <i>M. andamanensis</i> | | <i>S. hextii</i> | |
| | | (t) | (%) | (t) | (%) | (t) | (%) | (t) | (%) | (t) | (%) |
| 1993 | December | 4.5 [55.6] | | | | | | | | 3.6 [44.4] | |
| | Annual | 4.5[55.6] | | | | | | | | 3.6 [44.4] | |
| 1994 | January | 79.0 [100] | | | | | | | | | |
| | February | 171.5[89.0] | | 2.0 [1.0] | | | | | | 19.3[10.0] | |
| | March | 12.3[8.2] | | 62.8[41.8] | | 1.9[1.3] | | | | 73.4[48.8] | |
| | April | | | 45.5[81.4] | | | | | | 10.4[18.6] | |
| | October | 31.9[17.9] | | | | 3.2[1.8] | | 143.7[80.3] | | | |
| | December | 7.3[51.2] | | 7.0[48.8] | | | | | | | |
| | Annual | 302.0[45.0] | | 117.3[17.5] | | 5.1[0.8] | | 143.7 [21.4] | | 103.1[15.4] | |
| 1995 | February | | | 4.2[40.0] | | | | 6.3[60.0] | | | |
| | March | 7.0[9.3] | | 35.2[46.9] | | | | 12.4[16.6] | | 20.3[27.1] | |
| | October | | | | | | | 27.1[100.0] | | | |
| | November | 5.8[0.7] | | 641.8[72.0] | | | | 243.4[27.3] | | | |
| | December | | | 0.3[44.0] | | 0.1[12.0] | | | | 0.3[44.0] | |
| | Annual | 12.8[1.3] | | 681.5[67.9] | | 0.1[0] | | 289.2[28.8] | | 20.6[2.1] | |
| 1996 | January | 62.4 [7.9] | | 62.4[7.9] | | 272.9[34.7] | | 389.8[49.5] | | | |
| | February | | | 22.8[62.8] | | | | 13.5[37.2] | | | |
| | March | 4.1[3.6] | | 26.1[23.1] | | | | 83.1[73.5] | | | |
| | April | | | | | | | | | 9.6[100.0] | |
| | Annual | 66.8[7.0] | | 111.3[11.8] | | 272.9[28.8] | | 486.4[51.4] | | 9.6[1.0] | |
| 1997 | January | 37.5[25.0] | | 75.0[50.0] | | | | 37.5[25.0] | | | |
| | February | 22.3[29.8] | | 32.1[42.8] | | | | 20.6[27.4] | | | |
| | March | 220.7[73.9] | | 78.0[26.1] | | | | | | | |
| | April | | | 82.9[100.0] | | | | | | | |
| | October | 74.4[100.0] | | | | | | | | | |
| | November | 17.2[23.1] | | 57.2[76.9] | | | | | | | |
| | December | 41.4[38.6] | | 66.0[61.4] | | | | | | | |
| Annual | 413.5[47.9] | | 391.2[45.3] | | | | 58.1[6.8] | | | | |
| 1998 | January | 41.6[100.0] | | | | | | | | | |
| | February | | | 86.4[57.] | | | | 64.8[42.9] | | | |
| | March | | | | | | | 84.5[100.0] | | | |
| | Annual | | | 128.0[46.2] | | | | 149.3[53.8] | | | |

| | | | | | | |
|------|---------------|--------------------|--------------------|--------------------|------------------|--------------------|
| 1999 | October | | | | | 18.4[100.0] |
| | Annual | | | | | 18.4[100.0] |
| 2000 | April | 47.5[43.2] | 62.5[56.8] | | | |
| | Annual | 47.5[43.2] | 62.5[56.8] | | | |
| 2001 | January | 32.3[77.2] | 9.6[22.8] | | | |
| | February | 440.0[66.7] | 200.0[30.3] | | | 20.0[3.0] |
| | March | 331.5[36.9] | 456.6[50.8] | | | 110.5[12.3] |
| | April | 159.0[81.5] | | 36.0[18.5] | | |
| | Annual | 962.8[53.6] | 666.2[37.1] | 36.0[2.0] | | 130.5[7.3] |
| 2002 | January | | 21.2[69.9] | | | 9.1[30.1] |
| | February | | 49.0[18.2] | 145.7[54.0] | 27.0[10.1] | 48.3[17.8] |
| | March | | 16.1[14.4] | 22.5[20.3] | | 72.5[65.3] |
| | April | 71.5[99.2] | 0.3[0.4] | | | 0.3[0.4] |
| | Annual | 71.5[14.8] | 86.6[17.9] | 168.2[34.8] | 27.0[5.6] | 130.2[26.9] |