

ON SOME ASPECTS OF BIOLOGY OF *PRIACANTHUS*
MACRACANTHUS (CUVIER)

T. APPA RAO*

Research Centre of Central Marine Fisheries Research Institute, Waltair.

ABSTRACT

Analysis of stomach contents of *Priacanthus macracanthus* revealed that crustaceans and teleosts are the chief constituents of food; *Penaeus* sp, *Metapenaeus* sp and *Solenocera* sp being the most important items. From frequency distributions of intraovarian eggs, spawning period seems to be from November to January. The ratio between males and females is not constant. Size frequency distribution showed that the species grows at the rate of 10 mm per month.

The fishes belonging to the family Priacanthidae generally do not form a fishery of considerable importance at Waltair coast. But, during the period of 1980-82 an estimated average annual total catch of 2,35,673 kg of these fishes, contributing to 3-5% of total catches, were landed by trawlers. Two species, namely, *Priacanthus macracanthus* (Cuvier) and *P. tayenus* (Richardson), were commonly available but *P. macracanthus* mainly contributed to the catches. The species were acceptable both in dry and fresh conditions, particularly to the poorer people.

The material was collected from the catches of the private trawlers at the fishing harbour. A total of 3,315 specimens, ranging in the size 90-245 mm, were examined to study the size composition, feeding habits, maturation and sex ratio. Effort, catch and catch per effort of *P. macracanthus* during 1980-82 is given in Table 1.

In 1980, the catch-per-hour values during different months varied erratically with a minimum value of 0.33 kg|h and a maximum 3.01 kg|h in January and September respectively. During 1981, also the CPH values fluctuated irregularly, with a minimum of 0.17 kg|h (February) and a maximum of 7.4 kg|h (May). Similar fluctuations in catch rates without any regular trends could also be seen in the subsequent year, with minimum value of 0.04 kg|h (July) and maximum of 1.53 kg|h (February).

* *Present address:* Research Centre of Central Marine Fisheries Research Institute, Veraval.

TABLE 1. Effort, catch and catch per effort of *Priacanthus macracanthus* during the period 1980-1982.

	1980			1981			1982		
	Effort (H)	Catch (Kg)	Catch Effort (Kg h)	Effort (H)	Catch (Kg)	Catch Effort (Kg h)	Effort (H)	Catch (Kg)	Catch Effort (Kg h)
Jan	17,340	5,860	0.33	26,398	56,110	2.12	17,670	15,350	0.86
Feb	29,311	19,325	0.65	35,062	60,538	0.17	18,354	28,256	1.53
Mar	15,353	10,200	0.66	19,311	41,244	2.14	10,862	9,040	0.83
Apr	9,075	7,999	0.88	5,323	14,146	2.60	6,692	5,428	0.81
May	12,385	3,174	0.25	9,491	70,391	7.40	17,395	3,069	0.17
Jun	13,094	2,205	0.16	20,995	11,023	0.53	15,000	1,284	0.08
Jul	24,652	4,905	0.20	18,523	15,563	0.84	19,358	811	0.04
Aug	31,931	55,948	1.75	25,240	10,965	0.43	21,784	15,603	0.71
Sep	20,694	62,465	3.01	20,205	12,573	0.62	28,292	9,814	0.34
Oct	17,825	29,216	1.64	15,946	7,382	0.46	16,718	2,420	0.14
Nov	24,925	36,801	1.47	22,757	6,348	0.27	31,459	7,084	0.22
Dec	21,111	38,195	1.80	13,024	5,922	0.45	26,077	20,633	0.79

The percentage occurrence of the various size groups of *P. macracanthus* that contributed to the fishery during the period March-June 82 is given in Figure 1. It may be seen that during March 81 a mode at 180 mm is formed while in April 81 a different mode at 150 mm is observed. The mode 'a' at 140 mm in May could be traced to 210 mm in December, indicating a growth of 70 mm during the time interval of 7 months, thus showing a growth rate of 10 mm per month. In January 82 a mode 'b' at 160 mm could be seen, which has progressed to 180 mm in March 82, thus giving a growth of 10 mm per month. A new mode 'c' at 160 mm in April 82 was tracable which has shifted to 180 mm in June 82, thus giving 20 mm in two months or showing a growth rate of 10 mm/month. Thus it could be concluded that in *P. macracanthus* a growth rate of 10 mm per month could be seen in specimens measuring 140-240 mm.

Qualitative and quantitative analysis of stomach contents revealed that the intensity of feeding was low during November-December 81 and the species fed mainly on crustaceans and teleosts. Among crustaceans, *Penaeus* sp, *Metapenaeus* sp and *Solenocera* sp, were predominant.

Ovaries of the fish, whose total length ranged from 175 mm to 244 mm, were examined for ova-diameter frequency studies, and the results are shown in Fig. 2. The mode 'a' which was formed by mature ova at 0.20 mm had shifted first to 0.25 mm and later to 0.30 mm showing the growth in the size

of ova. Fig. 2 D depicts the frequency distribution of ova from the ripe ovaries of fishes whose total length varied from 215 to 244 mm, collected during the

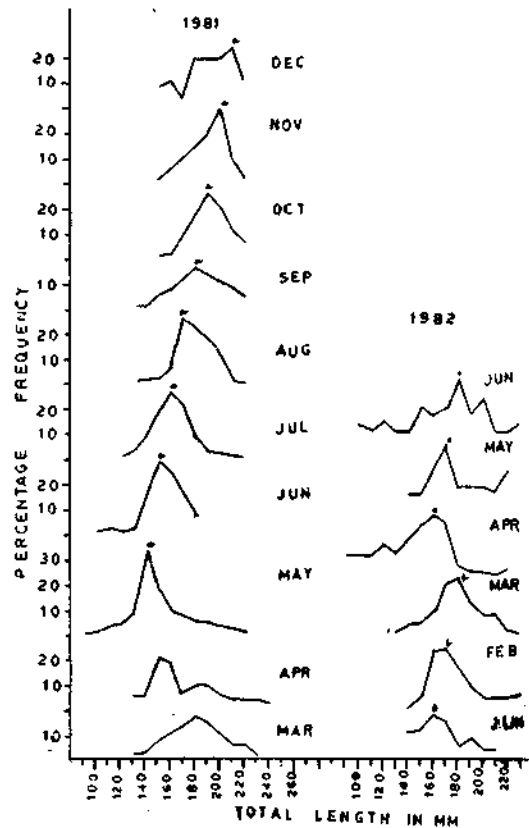


FIG. 1. Size-frequency distribution of *P. macracanthus*.

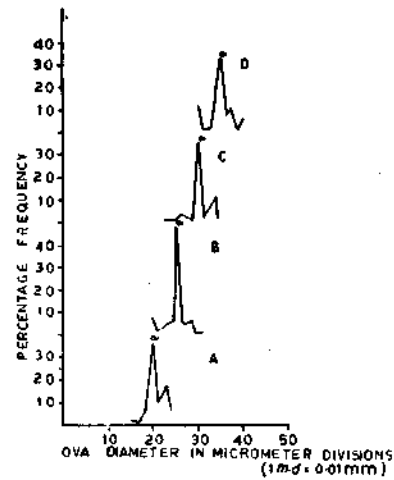


FIG. 2. Frequency polygons of ova diameter in the ovaries of *P. macracanthus*.

period December-January. Since the mature ova formed a single mode at 0.35 mm, as they were sharply separated from the rest of the stocks of eggs, it could be concluded that the spawning period in *P. macracanthus* is not prolonged one. Further specimens with running ovaries were obtained during the period November-January 82.

Studies on sex ratio showed that, except in certain months, i.e., March, August, October-December 81 and January 82, females dominated over males in the percentage contribution.

Sixteen mature specimens, whose total length ranged from 196 to 244 mm, were examined to study the fecundity. It was observed that mature ovary contained an average of 1,09,411 eggs.