

NOTES

Fecundity of *Portunus* species from Karwar Waters

Fecundity is an index of reproductive capacity and is designated in terms of the number of eggs produced by the organism. Knowledge of fecundity of any commercially important species is an essential pre-requisite for the efficient resource management. Chhapgar (1956) discussed the reproductive cycles and fecundity of the crabs of Bombay coast. Contributions by Pillay & Nair (1971), Joel & Raj (1980) and Prasad & Neelakantan (1989) have substantiated the existing knowledge on fecundity of Indian portenid crab species. No information is, however, available with regard to reproductive potentials of *Portunus* spp. from Karwar waters (14°46' 54" N and 14°03'00" E).

22 specimens of *Portunus pelagicus* and *P. Sanguinolentus* ranging in size 84.50-184.00 mm were collected from trawl catches of Karwar. Egg masses removed from the abdomen were blotted and weighed accurately. A known quantity (0.75-1.0 g) of sample taken from each of the egg masses was teased out, dispersed with a little water and the eggs were counted through binocular compound microscope. The total number of eggs calculated on the egg mass was then computed. Correlation coefficients (*r*) were used to determine the fecundity relationships (Snedecor & Cochran, 1967).

The number of eggs carried by crabs varied between the species and size of the same species. There has been a considerable increase in the number of eggs carried by *P. pelagicus* with respect of increase in size (Table 1) but in the case of *P. sanguinolentus* the increase was quite inconsistent (Table 2) Number of eggs present in the sponge of *P. pelagicus* ranged between 80,281 and 8,62,725 whereas in *P. sanguinolentus* it was between 1,58,608 and 7,12,526.

The statistical relationships as shown in Table 3, suggest that there has been a precise

lineralty between fecundity and carapace width/crab weight/and egg mass weight in both the species of *Portunus*. Moreover, the above relationships are highly significant ($P < 0.001$).

Table 1. *Fecundity and other particulars in P. pelagicus*

Carapace width	Crab weight	Egg mass weight	No. of eggs
mm	g	g	
97.2	42.80	6.28	80281
114.6	61.80	8.78	162086
121.8	109.60	12.62	242102
138.2	162.00	16.28	239696
141.8	186.20	19.07	242442
142.0	187.50	19.09	344628
142.0	200.50	20.09	457818
153.0	238.00	34.05	535947
161.0	294.00	37.10	623976
162.1	254.60	29.09	861725
184.1	289.00	31.00	627726

Table 2. *Fecundity and other particulars in P. sanguinolentus*

Carapace width	Crab weight	Egg mass weight	No. of eggs
mm	g	g	
84.50	34.50	6.10	158608
93.40	48.10	7.11	239464
95.00	53.00	12.75	511112
96.00	57.60	7.26	200230
96.00	52.00	8.29	228031
98.00	52.26	11.21	303214
99.00	66.10	11.45	394884
100.00	79.00	11.98	518205
102.00	78.00	9.76	356044
114.20	88.50	10.56	366432
121.00	110.00	12.01	712526

Table 3. Allometric equation and correlation coefficients (r) of fecundity relationships

Species	X	Y	$\log Y = a + b \log X$	r^{**}	df
<i>P.sanguinolentus</i>					
	C.W	No.E	$\log Y = -2.2966 + 3.6440 \log X$	0.9286	9
	B.Wt	No.E	$\log Y = 3.2476 + 1.0320 \log X$	0.9321	9
	E.Wt.	No.E	$\log Y = 4.0410 + 1.1627 \log X$	0.9413	9
<i>P.pelagicus</i>					
	C.W	No.E	$\log Y = -1.3083 + 3.4176 \log X$	0.7298	9
	B.Wt	No.E	$\log Y = 3.5657 + 1.0886 \log X$	0.7897	9
	E.Wt	No.E	$\log Y = 3.9014 + 1.6479 \log X$	0.9129	9

X = independent variable; Y=dependent variable; ** highly significant at $P < 0.001$; df = degree of freedom; C.W = carapace width; B.Wt=Body weight; E.Wt = Egg mass weight; No.E = Number of eggs.

Earlier studies from Pulicat lake (Joel & Raj, 1980) have indicated a range 10,800-4,00,000 of eggs carried by *P.pelagicus*. A similar range of fecundity was reported in *P.pelagicus* from southwest coast of India and however with slightly different values (1,51,780-3,07,500) were reported for *P.sanguinolentus* (Pillay & Nair, 1971).

Several factors such as salinity, temperature, photoperiod, abundance of food in the environment and instinsic state of the animal have been attributed to both interspecific and intraspecific variability of fecundity (Giese & Pearse, 1974).

Reference

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