Size, count and meat recovery relationship in the penaeid prawn *Metapenaeus dobsoni*

C.Vasudevappa and C.Suseelan
Central Marine Fisheries Research Institute
Cochin - 682 031

The quality of prawns for processing is largely determined on the basis of count per kg head-on, head-less or peeled and deveined. *M.dobsoni* caught either from wild or from culture fields also forms a part of the sea foods exported by the industry. The economic returns from the prawns in the processed form is directly proportional to the diminishing counts per kg. Keeping this in view, an attempt has been made to study the relationship of different size groups of the species with its count per kg in head-on, headless and peeled and deveined condition and also their wet weight recovery for males and females separately. A study of this kind will be of great use wherever the market demand is for medium sized prawns.

Material and Methods

Prawns collected from perennial prawn culture field Kannuvilakettu were utilized for this study. Prawn of size ranging from 42 to 100 mm were grouped into different size groups of 5mm class interval and in each size group about 10 prawns were randomly selected. The relationship between size of prawn and the count per kg in head-on, headless and peeled and deveined condition was determined by using linear equation y=a+bx. The count per kg of head-on, head-less, peeled and deveined prawns and relative wet weight recovery for different size groups was calculated.

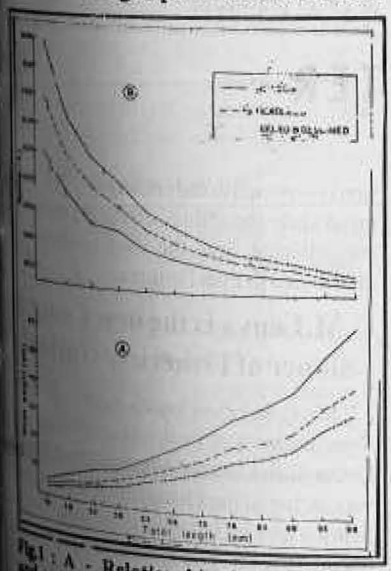

Fig.1 : A - Relationship between length and weight of *M.dobsoni* headon and recovery in headless and peeled & deveined conditions.
B - Count per kg. of *M.dobsoni* headon, headless and peeled & deveined.

Results

The observations on count per kg are presented in Table - 1 and their trend depicted in Fig.1. The results on relative wet weight recovery are presented in Table - 2.

Though in all the smaller size groups, the count per kg of all the three forms exhibited some deviations between sexes, the males showed higher count in the larger size groups beyond 60 mm size. The largest size group of 76-80 mm in male gave a count of 315 head-on, 443 head-less and 575 peeled and deveined prawns. In females the corresponding size group has given a count of 313 head-on, 439 head-less and 572 peeled and deveined. In the largest size group of 96-100 mm encountered in the perennial prawn culture system, the head-on prawns numbered 156, head-less 230 and peeled and deveined 284 per kg, indicating a highly satisfactory level of count per kg for the three different forms.

As in the case of count per kg, the smaller size groups showed some inconsistencies in the mean wet weight (Table 2) for the identical size groups of the two sexes in head-on, head-less and peeled and deveined condition. In most of the size groups the males recorded comparatively higher per centage of wet weight recovery in headless condition than in females

The linear relationship between size of prawn and count per kg in head-on, head-less and peeled and deveined condition is given below.

Males	Females
In Ho = 17.279 - 2.739 In Sz	In Ho = 18.148 - 2.852 In Sz
In Hl = 16.891 - 2.457 In Sz	In Hl = 18.299 - 2.796 In Sz
In Pd = 18.312 - 2.731 In Sz	In Pd = 18.801 - 2.856 In Sz

Where Ho = head-on, Hl - head-less, Pd = Peeled and deveined condition and Sz=size of prawn.

Table - 1 Counts of head-on, head-less and peeled & deveined prawns raised in brackishwater systems

Size groups (mm)	Males - Count/kg.			Females - Count/kg.		
	Headon	Headless	Peeled & deveined	Headon	Headless	Peeled & deveined
41-45	1681	2381	3115	1709	2427	3205
46-50	1183	1675	2174	1198	1675	2207
51-55	978	1379	1786	948	1379	1758
56-60	739	1027	1350	754	1076	1381
61-65	602	871	1144	571	821	1044
66-70	502	732	965	433	629	820
71-75	389	547	708	376	554	707
76-80	315	443	575	313	439	572
81-85	-	-	-	271	400	509
86-90	-	-	-	235	354	444
91-95	-	-	-	180	267	333
96-100	-	-	-	156	230	284 →

Table 2

Relative weight recovery of headon, headless and peeled & deveined prawns by size groups

Size groups (mm)	Total No. of animals studied	Head on		Headless		Peeled & deveined	
		Mean length(mm)	Mean wet weight (g)	Mean wet weight (g)	Wet weight recovery (%)	Mean Wet weight (g)	Wet weight recovery (%
Males:							
41-45	10	44.0	0.595	0.420	75.6	0.321	54.0
46-50	10	48.6	0.845	0.597	70.7	0.460	54.4
51-55	14	53.3	1.023	0.725	70.9	0.560	54.7
56-60	14	58.1	1.353	0.974	72.0	0.741	54.8
61-65	15	62.7	1.662	1.148	69.1	0.874	52.6
66-70	11	72.2	2.572	1.828	68.7	1.036	52.0
71-75	10	72.2	2.572	1.828	71.0	1.412	54.9
76-80	5	78.0	3.180	2.258	71.0	1.738	54.7
Females:							
41-45	10	42.5	0.585	0.412	70.4	0.312	53.3
46-50	10	48.0	0.835	0.597	71.5	0.454	54.2
51-55	10	52.8	1.055	0.725	68.7	0.569	53.9
56-60	10	58.1	1.326	0.929	70.1	0.724	54.6
61-65	14	62.9	1.751	1.218	69.6	0.0958	54.7
66-70	11	68.1	2.309	1.590	67.9	1.219	52.8
71-75	11	72.9	3.199	2.279	69.9	1.749	53.2
76-80	10	77.8	3.199	2.279	67.9	1.964	53.3
81-85	10	86.5	2.255	2.824	66.4	2.252	52.9
86-90	10	86.5	4.255	2.284	66.4	2.252	52.9
91-95	8	93.0	5.545	3.743	67.5	2.994	54.0
96-100	5	94 7	6.397	4.340	67.8	3.518	55.0

for the corresponding sizes. The per centage recovery of head-less prawn worked out to 70.7-75.6 for the smaller males below a mean length or 58.1 mm, while it was slightly low (68.7 - 71.0%) in larger sizes. In peeled and deveined condition, the per centage recovery remained more or less same in all the size groups at about 54.0 - 54.9 except a slight reduction (52.0 - 52.6%) in the size group 61-70 mm. In the case of females, the wet weight recovery of head-less prawn showed a marginal decline from smaller to larger size groups. While in peeled and deveined condition, it remained more or less steady between 52.8 and 55%. The per centage of meat recovery in the two sexes is found to be more or less same for all the identical sizes.

Discussion

The data on size, count and meat recovery relationship of the prawn show a satisfactory level of count per kg and meat recovery from a size group of 66-70 mm onwards which a count of 500 for males and 430 for female The recovery of head-less (69%) and pee and deveined (52.53%) forms also appea be profitable to the processing indus Taking into consideration of all these fact is reasonable to fix the harvestable siz about 66-70 mm which is attained in 2 to months of growing period with a stocking s of 20-25 mm total length and stocking de of 25-30 prawns/m^2