# SOME OBSERVATIONS ON THE SEA COW, DUGONG DUGON FROM THE GULF OF MANNAR AND PALK BAY DURING 1971-1975\*

## ABSTRACT

Sex ratio of the mature male and female dugongs was about 1 : 1 and that of younger size groups was 0.6 : 1.0. The size distribution varies from year to year. The size groups 150-199 cm were dominant in all the years except during 1972. March, August and October were the months when most of the dugongs got entangled in the nets. Dugongs are found fairly in good numbers around the Islands Valai thivu and Musal thivu in the Gulf of Mannar and Devipattanam and Tondi in Palk Bay. Gulf of Mannar accounted for 76% of the dugongs. Large size dugongs were more common in Tondi (Palk Bay).

NAIR, LAL MOHAN AND RAO (1975) reviewed the works on the Indian dugong, studied its systematic position based on morphometric characters and investigated aspects such as length-weight relationship, growth and longevity. The present communication deals with the distribution, occurrence and sex ratio in the Gulf of Mannar and Palk Bay.

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## Material and Methods

Data on 146 dugongs of size range 1.0-3.4 m which got entangled in the nets set for fishes in the Gulf of Mannar and Palk Bay during January, 1971 to September 1975, were collected using the proforma developed by Nair *et al.* (1975). Most of the dugongs caught were brought to Keelakarai where there is good demand for its meat. It is reliably learnt that about 10 per cent of the animals were consumed in the place where they are caught. The sex ratio was studied by analysing the sexes by  $X^2$ —test. The total length was divided into 50 cm class intervals and the percentage of each size group was analysed.

## Distribution

About 24 per cent of the dugongs were obtained from Palk Bay. They were mostly caught from Devipattanam and Tondi forming about 73.7% of the dugongs from this area. It was observed that the largest size group (300-349 cm) were common in Tondi, Valinokam and Thirupalakudi of Palk Bay than in the Gulf of Mannar (Table 1). The vast beds of sea grass (*Cymodocea ciliata*) found along Tondi and Devipattanam Coast may be the reason for the congregation of dugongs in these areas.

TABLE 1. Occurrence of dugong in various places of the Gulf of Mannar and Palk Bay

Places	Length group in cm											
PALK BAY	100-149 F M	150-199 F M	200-249 F M	250-299 F M	300-349 F M	Total	%					
Memisal Tondi Nambuthalai Valinokam Thirupalakudi Devipattanam Mandapam Thankachimadam		$ \begin{array}{c} - & - \\ - & 2 \\ 1 & - \\ - & - \\ 1 & 2 \\ 1 & - \\ - & - \\ \end{array} $	1 - 1 3 1 	$ \begin{array}{c} - & - \\ 2 & 4 \\ - & - \\ 1 & - \\ 1 & - \\ 1 & 3 \\ - & - \\ - & - \\ \end{array} $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	1 10 1 4 2 16 1 1	0.7 6.8 0.7 2.8 1.4 10.9 0.7 0.7					
GULF OF MANNAR Pulli thivu Musal thivu Mulli thivu Valai thivu Puthumadam Manouli thivu Periapattanam Appa thivu Nallathani thivu Ervadi Tuticorin	$ \begin{array}{c} - & 1 \\ 2 & 3 \\ 1 & - \\ - & - \\ 2 & 1 \\ - & - $	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$ \begin{array}{c} - & - \\ 2 & 2 \\ - & - \\ 4 & 5 \\ - & 1 \\ 2 & 1 \\ 3 & 1 \\ 2 & - \\ 1 & - \\ 1 & 1 \end{array} $		1 28 1 41 3 12 8 6 2 4 4	0.7 19.1 0.7 28.7 2.0 8.2 5.4 4.2 1.4 2.8 2.8					
Тота <b>l</b> %	12 7 8.2 4.7	36 23 23.9 16.7	14 10 9.6 6.9	20 18 13.7 12.4	2 6 1.4 3.5	146	100,0					

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Places		J F	M	F F	M	M F. M	A F M	1	M F M	J F M	J F M	A F M	S F M	O FM	N FM	D F M	Total	%
PALK BAY																		
Memisal	••	-	-	- 1	l							• •					1	0.7
Fondi	••	-	•	- 3	l		- 1		<b>.</b> , .			14	2 -	- 1			10	6.8
Nambuthalai	••	-	-	-	•	1 -				÷ •						<b>-</b> -	1	0.7
alinokam	••	- 3	3	-	•					• •		1 -			• •		4	2.8
hirupalakudi		-	-	-	•	1 1								• •			2	1.4
<b>Devipattanam</b>	••	• :	1	1	-	- 1	- 1		1 -	1 -	1 -		4 -	2 1	1 -	- 1	16	10.9
fandapam	••	-	-	•	•										1 -	• •	1	0.7
bankachimadam	••	•	-	-	•	• •				• •				1 -			1	0.7
GULF OF MANNAR																		
ulli thivu	••		-			- 1				• •			• -				1	0.7
fusal thiyu	••	2	2	3	1	48	1 -		1 -	1 -			1 -	1 1	1 1		29	19.8
alai thiyu		1	1	2	1	42	23		12	1 1	7 .	52	2 -		- 1	- 3	41	28.0
uthumadam			•	- 3	L	- 1									1 -		3	2.0
fulli thivu			-						<b>.</b> .						1 -		1	0.7
fanouli thivu		-		<b>.</b>			31			- 3				4 1		• -	12	8.2
eriapattanam		1 -	•	1	1							12			1 -	- 1	. 8	5.4
opa thivu		-	-			1 -				2 •			1 -	11			6	4.2
allathani thivu		-	-						<b>-</b> -			- 1		1 -			2	1.4
rvadi				-	1								1 -	1 -		1 -	4	2.8
uticorin	• •	- •	•	-	•							• 1	21	• •		• •	4	2.8
TOTAL	••	4 7	t .	7 7	,	12 13	66		32	54	8 -	8 10	13 1	11 5	62	15	146	<u> </u>
%		7.5	i	9.5	5	17.1	8.3		3.4	6.2	5.5	13.0	8.1	10.9	5.5	4.2		100.0

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TABLE 2. Occurrence of dugongs during different months in Gulf of Mannar and Palk Bay

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The Gulf of Mannar accounted for 76% of the dugongs caught. Dugongs were more common around the islands of Musal thivu, Valai thivu, Manouli thivu and Appa thivu. The shallow areas around these islands with rich growth of sea grass contribute about 60% of the dugongs caught. The large sized dugongs measuring more than 3m were found around Nallathani thivu and off Ervadi.

The dugong caught in different places were tabulated sexwise. In most places the males and females were in equal ratio (Table 2). It was observed if an adult male was entangled in the net, within two or three days the adult female also was caught from the same area. This shows that usually the dugongs occur in pairs.

During the months of January to March, dugong seem to be common around Musal thivu. During February to April, July and August they are common around Valai thivu. At Tondi, dugongs are commonly found during August and September while at Valinokam, they are observed during January. Along Nallathani thivu, Ervadi and Tuticorin they occurred more during August and December. It was seen that 70% of the dugongs occur during February to April and August to October.

## Seasonal occurrence of dugongs

Dugongs get entangled in the nets almost throughout the year though the number varies in each month. In March it was 17.1% in August 13.0% and in October 10.9%. Only 3.4% of the dugongs were caught during May when rough sea condition prevailed in the Gulf of Mannar. The occurrence of large size groups (250-349 cm) was found mainly during August to March. In the meantime the size group 100-140 cm also occurred in the same locality. It was observed that within a short time after the capture of larger dugongs, the smaller size group of 100-149 cm was captured. Dugongs appear to be scarce during April to July.

The occurrence of male and female dugongs in different months during the period 1971-75 is shown in Table 3.

Months		J	ſ	F		N	1	ł	L	N	1	]	ſ	J		A	•	S		۰C	۴ 1	N		Ī	S	Tota
<b>_</b>			_									5	ex			,						_	ł			
	, I		M	F	М	F	М	F	М	F	м	F	М	F	M	F	M	F	Ņ	F	М	F	M	F	М	
1971		•	-	1	-	4	1	1	3	-	•	1	1	4	-	1	1	-	•	7	3	•		•	2	30
1972		•	•	-	-	1	-	-	-	1	-	3	-	3	•	3	4	3	1	2	1	-	-	•	1	23
1973	1	l	1	4	1	2	2	1	÷	-	-	-	-	-	-	-	-	5	•		1	4	•	1	1	24
1974 <sup>:</sup>	2	2	1	2	2	3	5	3	2	2	2	1	3	1	•	1	1	1	•	2	-	2	2	-	1	39
1975	2	2	4	•	4	2	5	1	1	•	-	•	•	-	-	4	4	3	•	•	•	•		-	-	<u>,</u> 30
Total	5		6	7	7	12	13	6	6	3	2	5	4	8	-	9	10	12	1	11	5	6	2	1	5	146
%	7.	.5	-	9,5	;	17	.1	8,	3	3.	4	6.	2	5.:	5	13	3.0	8	.9	1	0.9	;	5.5		4.2	100

 TABLE 3. The occurrence of male and female dugongs in various months of 1971-1975

The Gulf of Mannar and Palk Bay are alternatively calm and rough depending upon the prevailing monsoons. A female dugong of 3.1 m caught at Tondi in October had a well developed foetus measuring about a metre in length.

## Size distribution

The number of dugongs getting entangled in the nets in each year ranged from 23-39 (Tables 4 and 5). The size distribution during the years 1971 to 1975 as given in the Table 5 does not indicate any pattern. However, the size group 150-199 cm formed more than 50% of the total capture except in 1972.

		Len					
Months	100-14 <del>9</del>	150-199	200-249	250-299	300-349	Total	%
	FΜ	FΜ	FΜ	FΜ	FΜ		
January		<b>2</b> 1	1 3	1 1	- 2	11	7.5
February	22	4 3	- 1	1 1		14	9,5
March	12	56	2 1	43	- 1	25	17.1
April	- 1	53	1 1	- 1		12	8.3
May	1 —	21		<u> </u>		5	3.4
June	1	1 3	1 -	2 1		9	6.2
July	<u> </u>	5	3 —			8	5.5
August		31	1 3	54	2	19	13.0
September	2 —	2 1	2 —	4 1	1	13	8.9
October	4	1 1	2	34	1 —	16	10, <del>9</del>
November	1 1	4 1	1 —			8	5.5
December	- 1	12	- 1	<u> </u>	<u> </u>	6	4.2
Total	12 7	35 23	14 10	20 18	2 5	146	100.0
Percentage	8.4 4.7	23.9 15.7	9.5 6.8	13.7 12,4	1.4 3.5	_	
Xª test	1.3	1.28	0,6 <b>6</b>	1.05	0.64		
5%	n.s*	n.s.	n.s.	n.s.	п.s.		

TABLE 4. Size and sex distribution of the dugongs during 1971-1975

\* Insignificant,

Size Groups	1971		1972		1973		1974		1975		Total	%
(cm)	F	М	F	М	F	м	F	м	F	М		
100-149	4	1	1	<b>_</b>	3	1	4	4	_	1	19	13.1
150-199	10	5	3	2	7	1	7	8	9	6	58	39.6
200-249	1	1	7	4	1	4	4			2	24	16.3
250-299	5	2	4	2	4	2	5	.4	3	7	38	26.1
300-349	_	1	-		1		1	2		2	7	4.9
Total	20	10	15	8	16	8	21	18	12	18	146	100.0
X <sup>*</sup> test	3.35		2.13		2,66		0.23		1.2			•
At 5%	n	.8.*	r	1.8.		n.s.		n.s.	п	.s.		

TABLE 5. Size Distribution of the female and male dugongs

\*Insignificant.

## Sex ratio

The data on sexes and size range of dugongs are presented in Table 6. It may be observed that the females were dominant in the length groups 100-149, 150-199and 200-249 cm. The ratio was 1:0.58, 1:0.65, and 1:0.71 respectively. But the sex ratio of the 250-299 cm group was found to be close to 1:1 whereas in the 300-349 cm group males were found to be dominant.

Size group in cm 		Num	bers	Total	Percen	tage	X٩	5%	1%
	F	emale	Male		Female	Male			
	••	12	7	- 19	65.0	35.0	1.80	л.§.	n.s.
150-199	••	35	23	58	62.0	38.0	3.37	n.s.	п.\$.
200-249	••	:4	10	24	60.0	40.0	1.00	n.s.	n.s.
250-299		20	18	38	52.6	47.4		n.s.	n.s.
300-349	••	2	5	7	28.5	71.5	1.28	п.\$.	n.s.
Total		84	63	146	57.5	42.4	3.31	n.s.	n.s.

TABLE 6. Sex ratio of dugong during 1971-1975

Though there is an apparent dominance of females in the younger groups, when the data were analysed by  $X^2$ -test the deviation from the expected 1 : 1 ratio was not significant at 5% level. It was further observed that the sex ratio differs from year to year. During 1971 to 1974 the females were dominant over the males while in 1975 males were dominant (Table 2). To find out whether there is any congregation of females or males in various months during 1971-75, the data were further analysed and it was observed that more number of females were caught in March, July and October in 1971, June, July and September in 1972, February, September and November in 1973, April and October in 1974 and September in 1975. The males were found to be dominant in April and December in 1971, July and August in 1972, March and June in 1974, February and March in 1975 (Table 4).

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## REFERENCE

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