TABLES

Table 1: Annual river discharge from Indian Rivers (After Khosla, 1951).

	West Coast Rivers	Km^3/years
1.	Streams from Cape Comorin to Tadri (Excluding Tadri).	114.2
2.	Streams from Tadri to Tapti (excluding Tapti)	114.8
3.	Tapti	9.1
4.	Narmada	49.2
5.	Mati	9.3
6.	Sabarmati	4.7
7.	Streams of Katin	4.8
8.	Luni	0.3
9.	Streams of Kutch	3.7
10.	Sutlej System	36.7
	<u>East Coast Rivers</u>	
1.	Rivers from Cape Comorin to Cauvery (excluding Cauvery).	7.9
2.	Cauvery	10.0
3.	Rivers between Cauvery and Pennar (excluding Pennar)	9.5
4.	Rivers between Pennar and Krishna	1.6
5.	Krishna System	44.9
6.	Godavari System	125.5

Table 1 (Contd.)

		Km^3/years
7.	Rivers between Godavari and Mahanadi (excluding Mahanadi)	16.1
8.	Mahanadi	92.8
9.	Brahmani and Baitarni	39.2
10.	Subarnarekha and streams from Subarnarekha to Baitarni	20.3
11.	Subarnarekha to Damodar (excluding Damodar)	14.0
12.	Damodar	13.0
13.	Hoogly	17.3
14.	Ganges System	489.8
15.	Brahmaputra System	381.1
	Total for West Coast Rivers	346.8
	Total for East Coast Rivers	1283.0

Table 2 A. Biomass (ml/10^3) in the estuarine mouths in the year 1978.

Months	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Premonsoon								
January	0.09	0.04	0.001	1.6	0.07	0.2	0.23	0.4
February	0.03	0.03	0.01	5.8	0.04	0.1	0.14	0.01
March	0.01	0.04	0.001	4.1	0.06	0.5	0.18	0.04
April	1.1	0.1	0.01	8.2	3.5	0.8	1.16	2.1
Monsoon								
May	0.25	0.03	0.001	7.0	1.9	0.5	1.3	0.001
June	0.001	0.05	0.001	0.9	0.2	0.2	0.3	0.03
July	0.02	0.03	0.001	5.1	-	-	0.001	0.01
August	0.01	0.2	0.01	0.8	0.4	0.001	0.001	0.001
September	0.001	0.01	0.001	0.2	0.8	0.001	0.07	0.001
October	0.2	0.04	0.01	1.4	0.2	0.001	0.4	0.001
Postmonsoon								
November	0.01	0.04	-	1.7	0.4	0.5	0.001	0.04
December	0.01	0.2	0.001	2.2	0.5	0.6	0.2	0.02
Annual mean	0.15	0.07	0.003	3.25	0.67	0.28	0.33	0.22
Seasonal average								
Premonsoon	0.31	0.05	0.005	4.9	0.96	0.4	0.42	0.64
Monsoon	0.08	0.06	0.003	2.6	0.60	0.11	0.34	0.007
Postmonsoon	0.01	1.2	0.0005	1.9	0.45	0.5	0.1	0.03

Table 2 B. Counts (No./10m^3) of Zooplankton in the estuaries of Kerala coast during 1978.

Months	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Premonsoon								
January	843	405	25	10450	1838	1964	2447	6275
February	591	589	572	41260	611	1068	2075	626
March	82	577	32	37190	845	4603	3353	1414
April	7861	2167	169	104107	30297	10721	12805	11138
Monsoon								
May	8800	833	43	40270	15606	7376	12877	78
June	22	1436	43	6873	2957	1313	8402	948
July	1090	528	40	26890	-	-	76	200
August	246	2483	225	16012	28	162	180	30
September	7	155	78	2404	6560	27	285	63
October	2804	1384	1025	5804	810	289	4334	40
Postmonsoon								
November	672	1495	-	8047	1666	13490	9	1645
December	258	3139	27	15539	2926	6636	3503	336
Annual mean	1940	1272	23	26237	5345	3971	4195	1899
Seasonal average								
Premonsoon	2342	930	199	48291	8398	4589	5170	4863
Monsoon	2162	1136	239	16375	4326	1528	4359	226
Postmonsoon	465	2317	13	11793	2296	10063	1756	990

Table 2 C. Zooplankton biomass (ml/$10m^3$) and total counts (per $10m^3$) from the mouth to head of Cochin backwaters - 1978 (Values in parenthesis are total counts).

Months	STATIONS 1	2	3	4	5	6	7
January	1.6 (10450)	1.3 (5730)	7.2 (4810)	2.9 (3362)	0.9 (2270)	9.6 (950)	0.7 (20)
April	8.2 (104107)	4.1 (12060)	20.0 (13960)	6.8 (46330)	2.0 (5160)	4.2 (1660)	1.1 (5320)
July	5.1 (26890)	0.06 (20)	0.04 (10)	0.05 (5)	0.06 (20)	0.02 (5)	0.02 (2)
November	1.7 (8047)	0.6 (940)	0.4 (290)	0.3 (160)	0.1 (10)	0.1 (3)	0.1 (10)

Table 3. Results of Analysis of Variance.

A. Biomass.

Source	SS	df	ms	F
Total	197.930	95		
Months	30.020	11	2.729	3.02**
Estuaries	98.434	7	14.062	15.58***
Error	69.476	77	0.902	

CD for months = 0.9307

CD for estuaries = 0.7599

** - $P < 0.01$

*** - $P < 0.001$

Table 3 (Contd.)

B. Total Numbers.

Source	SS	df	ms	F
Total	109.538	95		
Months	23.131	11	2.102	3.32**
Estuaries	37.671	7	5.381	8.5***
Error	48.736	77	0.632	

CD for months = 0.7794

CD for estuaries = 0.6365

** - $P < 0.01$

*** - $P < 0.001$

Table 4. Result of three way ANOVA.

A. Groups.

Source	SS	df	ms	F
Total	1467.69	1439		
Months	205.67	11	18.69	33.31**
Estuaries	13.44	7	1.92	3.99**
Groups	197.54	14	14.11	25.14**
Months x estuaries	181.56	77	2.35	4.90**
Months x groups	129.03	154	0.83	1.49**
Estuaries x groups	221.78	98	2.26	4.70**
Error	518.63	1078	0.48	

CD for months = 0.207

CD for groups = 0.2312

CD for estuaries = 0.1579

** Significant at 1% level.

Table 4 (Contd.)

B. Common Copepod species

Source	SS	df	ms	F
Total	855.36	1267		
Months	74.64	11	6.78	13.31**
Estuaries	13.96	7	1.99	5.60**
Species	152.91	12	12.74	24.99**
Months x estuaries	85.25	77	1.11	3.11*
Months x species	161.16	132	1.22	2.39*
Estuaries x species	30.81	84	0.36	1.03*
Error	336.59	944	0.35	

CD for months = 0.2287

CD for estuaries = 0.1617

CD for species = 0.2380

** Significant at 1% level

* Significant at 5% level.

Table 5. Seasonal distribution and annual mean (No./10m^3) of various groups and their percentage to total counts in the estuaries - 1978.

VELI

6	Hydro-medusae	Cteno-phora	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-poda	Decapod larvae	Serge-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	69	-	109	117	7345	-	764	318	96	-	450
Monsoon											
May - June	301	-	200	-	5965	-	1300	375	153	-	525
July- Oct.	-	-	-	14	2454	66	1252	126	84	-	52
Postmonsoon											
Nov - Dec.	-	-	-	139	404	10	317	-	-	-	54
Annual mean.	30.7	-	25.7	22.5	1347.3	6.3	302.7	68.2	27.7	-	90.0
% to annual totnl	1.6	-	1.3	1.1	69.5	0.32	15.6	3.5	1.4	-	4.6

Table 5 (Contd.)

NEENDAKARA

	Hydro-medusae	Cteno-phora	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-phoda	Decapod larvae	Serge-stidae	Other Inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	97	13	53	22	1341	49	970	878	61	11	140
Monsoon											
May - June	222	90	159	-	1310	-	287	71	24	-	-
July - Oct.	31	4	218	491	2317	448	373	103	227	19	110
Postmonsoon											
Nov - Dec.	223	16	56	324	3452	-	112	68	25	22	74
Annual mean.	47.7	10.2	40.5	69.7	701.7	45.5	145.2	93.3	28.1	4.3	27.0
% to annual total	3.7	0.8	3.2	5.5	55.2	3.6	11.4	7.3	2.2	0.34	2.1

Table 5 (Contd.)

THOTTAPPILLY

6	Hydro-medusae	Cteno-phore	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-phoda	Decapod larvae	Serge-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	20	-	-	-	579	2	97	25	5	-	70
Monsoon											
May - June	-	-	-	-	31	-	52	2	-	-	1
July - Oct.	-	-	-	84	1123	5	44	17	24	-	5
Postmonsoon											
Nov - Dec.	-	-	-	1	17	-	4	1	1	-	3
Annual mean	1.6	-	-	7.1	145.8	0.6	16.4	3.75	2.5	-	6.6
% to annual total	0.87	-	-	3.7	76.8	0.3	8.6	1.9	1.3	-	3.5

Table 5 (Contd.)

COCHIN

	Hydro-medusae	Cteno-phore	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-poda	Decapod larvae	Serge-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	130	390	290	-	174090	390	12300	410	480	2680	1110
Monsoon											
May - June	770	60	65	70	41130	100	3710	280	240	20	320
July - Oct.	-	-	20	150	27300	680	3125	213	90	20	1030
Postmonsoon											
Nov - Dec.	20	20	90	3440	12240	140	5620	20	220	920	110
Annual mean	76.7	37.5	38.7	305.0	21230	109.2	2062.9	76.9	85.8	303.3	214.2
% to annual total	0.29	0.14	0.15	1.2	80.9	0.41	7.9	0.29	0.33	1.1	0.81

Table 5 (Contd.)

KALLAI

	Hydro-medusae	Cteno-phore	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-poda	Decapod larvae	Serge-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	905	591	9	-	23377	300	2319	1500	1530	862	600
Monsoon											
May - June	157	196	-	-	11044	-	2936	1261	2940	-	1265
July - Oct.	-	-	-	10	1004	4	52	70	23	-	~~233~~ 223
Postmonsoon											
Nov - Dec.	205	-	263	-	3125	52	490	399	14	-	19
Annual mean	105.6	65.6	22.6	0.8	3212.5	29.7	483.1	269.2	375.6	71.8	175.6
% to annual total	2.0	1.26	0.43	0.02	61.7	0.57	9.3	5.2	7.2	1.4	3.4

Table 5 (Contd.)

BEYPORE

	Hydro-medusae	Cteno-phore	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-poda	Decapod larvae	Serge-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr	4662	3552	258	-	5422	39	938	2810	380	64	73
Monsoon											
May - June	128	2080	112	-	1274	-	1633	2967	64	-	226
July - Oct.	3	-	-	312	9	1	144	2	-	-	5
Postmonsoon											
Nov - Dec.	495	713	289	4	11039	30	4312	1646	-	-	63
Annual mean	440.7	528.7	54.9	26.3	1478.7	5.8	585.6	618.7	37.0	5.3	30.6
% to annual total	11.1	13.3	1.4	0.7	37.2	0.15	14.7	15.6	0.93	0.13	0.77

Table 5 (Contd.)

MAHE

	Hydro-medusae	Cteno-phore	Chaeto-gnatha	Clado-cera	Cope-poda	Amphi-poda	Decapod larvae	Sergo-stidae	Other inverte-brate larvae	Appendi-cularia	Fish eggs & Fish larvae
Premonsoon											
Jan - Apr.	420	225	834	30	9718	371	3202	1342	792	775	455
Monsoon											
May - June	-	-	77	-	29	79	652	-	38	-	27
July - Oct.	-	-	-	-	36	36	135	3	-	-	3
Postmonsoon											
Nov - Dec.	34	-	-	30	222	1066	118	2	61	33	299
Annual mean	37.8	18.7	75.9	5	833.7	129.3	342.2	112.2	74.2	67.3	65.3
% to annual total	1.9	0.98	3.9	0.26	43.8	6.8	17.9	5.9	3.9	3.5	3.4

Table 6: Systematic list of species identified from the eight estuaries of Kerala.
(+ = Present; - = Absent).

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beyppre	Mahe
Phylum - Coelenterata								
Class - Hydrozoa								
Order - Hydroida								
Family - Companularidae								
Obelia sp.	+	-	+	+	+	+	+	+
Blackfordia virginica Mayer	+	+	+	+	+	-	+	-
Family - Lovenellidae								
Echeilota menoni Kramp	-	-	-	+	-	-	-	-
Family - Eirenidae								
Eirene ceylonensis Browne	+	+	+	+	+	+	+	+
Eirene menoni Kramp	-	-	-	+	-	-	+	-
Family - Eutimidae								
Eutima commensalis Santhakumari	+	+	+	+	+	+	+	+
Eutima neucalidonia Uchida	-	-	-	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Order - Siphonophora								
Family - Diphyidae								
Diphyes chamissonis Huxley	-	-	-	+	+	+	+	-
Lensia subteloides (Lens & Van Riemsdijk)	-	-	+	+	+	+	-	+
Phylum - Ctenophora								
Class - Tentaculata								
Pleurobrachia globosa	-	-	+	+	+	+	+	+
Class - Nuda								
Beroe sp.	-	-	+	+	-	-	-	-
Phylum - Chaetognatha								
Sagitta bedoti Be'raneck	+	-	+	+	+	+	+	+
Sagitta enflata Grassi	+	-	+	+	+	-	+	+
Sagitta oceania Gray	-	-	+	+	-	-	-	-
Sagitta robusta Doncaster	-	-	-	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Phylum - Arthropoda								
Class - Crustacea								
Order - Cladocera								
Podon polyphemoides Leukart	+	-	-	-	-	+	+	-
Evadne tergestina Claus	+	+	+	+	+	-	+	-
Penilia avirostris Dana	-	+	+	+	-	-	+	-
Daphnia sp.	+	+	-	-	-	-	-	-
Order - Ostracoda								
Family - Halocyprididae								
Euconchoecia aculeata Th. Scott	-	-	+	+	-	-	-	-
Order - Copepoda								
Sub Order- Calanoida								
Family - Calanidae								
Canthocalanus pauper (Giesbrecht)	-	-	-	+	-	-	-	-
Undinula vulgaris (Dana)	-	-	-	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Family - Eucalanidae								
Eucalanus monachus Giesbrecht	-	-	+	+	-	-	-	-
Eucalanus attenuatus (Dana)	-	-	+	-	-	-	-	-
Family - Paracalanidae								
Paracalanus aculeatus Giesbrecht	+	+	+	+	+	+	+	+
Paracalanus crassirostris Dahl f. cochinensis Wellershaus	-	-	-	+	-	-	-	-
Acrocalanus similis Sewell	+	+	+	+	+	+	+	+
Acrocalanus gibber Giesbrecht	+	-	+	+	+	-	-	+
Family - Centropagidae								
Centropages alcocki Sewell	+	+	+	+	+	+	+	+
Centropages furcatus (Dana)	-	-	+	+	+	+	+	-
Centropages trispinosus Sewell	-	-	+	+	-	-	-	-
Centropages tenuiremis Thompson & Scott	-	-	+	+	+	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Family - Diaptomidae								
Heliodiaptomus cinctus Gurney	+	+	-	+	-	-	-	-
Allodiaptomus mirabilipes Kiefer	+	+	-	+	-	-	-	-
Family - Pseudodiaptomidae								
Archidiaptomus sreorus Madhupratap & Haridas	-	+	-	+	-	-	-	-
Pseudodiaptomus annandalei Sewell	+	+	+	+	+	+	+	+
Pseudodiaptomus binghami malayalus Wellersheus	+	+	-	+	-	+	-	-
Pseudodiaptomus jonesi Pillai	+	-	+	+	+	+	+	+
Pseudodiaptomus aurivilli Cleve	+	+	+	+	+	+	+	+
Pseudodiaptomus mertoni Fruchtl	-	-	+	+	+	+	+	+
Pseudodiaptomus serricaudatus (T. Scott)	+	+	+	+	+	+	+	+
Pseudodiaptomus tollingarae Sewell	-	-	-	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Family - Temoridae								
Temora turbinata (Dana)	-	-	+	+	+	-	-	-
Temora stylifera (Dana)	+	-	-	+	+	-	-	-
Family - Lucicutidae								
Lucicutia flavicornis (Claus)	-	-	+	-	-	-	-	-
Family - Candacidae								
Candacia bradyi A. Scott	-	-	-	+	-	-	-	-
Family - Pontellidae								
Calanopia elliptica (Dana)	-	-	-	+	-	-	-	-
Labidocera pectinata Thompson & Scott	+	-	+	+	+	+	+	+
Labidocera acuta (Dana)	-	-	-	+	-	-	+	-
Family - Acartiidae								
Acartia centrura Giesbrecht	+	+	+	+	+	+	+	+
Acartia spinicauda Gießbrecht	+	+	+	+	+	+	+	+
Acartia erythraea Giesbrecht	+	-	+	+	-	+	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Acartia bilobata Abraham	+	+	+	+	+	+	+	+
Acartia southwelli Sewell	-	-	-	+	-	-	-	+
Acartia negligens Dana	+	-	-	+	-	-	-	-
Acartia plumosa T. Scott	+	+	+	+	+	+	-	+
Acartia pacifica Steur	+	+	+	+	+	-	+	+
Acartiella keralensis Wellershaus	+	+	+	+	+	+	-	-
Acartiella gravelyi Sewell	+	+	-	+	+	+	-	-
Family - ~~Temoridae~~ Tortanidae								
Tortanus gracilis (Brady)	+	-	-	-	-	-	-	-
Sub order - Harpacticoida								
Family - Techidiidae								
Euterpina acutifrons (Dana)	+	-	+	+	-	-	-	-
Family - Canthocamptidae								
Nitocra spinipes Boeck	+	+	+	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Family - Macrosetellidae								
Macrosetella gracilis (Dana)	-	-	-	+	-	-	-	+
Sub Order - Cyclopoida								
Family - Oithonidae								
Oithona hebes Giesbrecht	-	-	+	+	+	+	+	+
Oithona nana Giesbrecht	+	+	+	+	+	+	+	+
Oithona rigida Giesbrecht	-	-	-	+	-	-	-	-
Oithona plumifera Baird	-	-	+	-	-	-	-	-
Oithona brevicornis Giesbrecht	-	-	-	+	-	-	-	-
Family - Corycaeus								
Corycaeus sp.	+	-	+	+	-	-	-	-
Family - Sapphirinidae								
Sapphirina sp.	-	-	-	+	-	-	-	-
Order - Mysidacea								
Family - Mysidae								
Rhopalophthalmus indicus Pillai	-	-	-	+	-	-	-	-

Table 6 (Contd.)

Species	Veli	Thottappilly	Neendakara	Cochin	Korapuzha	Kallai	Beypore	Mahe
Order - Decapoda								
Family - Penaeidae								
Subfamily - Sergestidae								
Acetes sp.	+	-	-	+	-	-	-	-
Lucifer haniseni Nobili	+	+	+	+	+	+	+	+
Lucifer typus H.M. Edw.	-	-	-	+	-	-	-	-
Phylum - Chordata								
Subphylum - Urochordata								
Class - Thaliacea								
Family - Salpidae								
Thalia democratica Forskal	-	-	-	+	-	-	-	-
Class - Appendicularia								
Oikoplura sp.	-	-	+	+	+	+	+	+

Table 7: Distribution of Groups/Species (those not represented in diagrams) in the different estuaries in 1978 - Nos./$10m^3$ are given in parenthesis.
* Represented in diagrams; - absent.

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
HYDROMEDUSAE								
Blackfordia virginica	May (75)	*	Mar.(1); Apr.(3)	*	*	*	*	-
Eucheilota menoni	-	-	-	Dec.(17)	-	-	-	-
Eirene ceylonensis	Apr.(25) May (50)	*	Apr.(4)	*	*	*	*	*
Eirene menoni	-	-	-	*	-	Mar.(19)	-	-
Eutima commensalis	Apr.(45) May (175)	*	Apr.(5)	*	*	*	*	*
SIPHONOPHORA								
Diphyes chamissonis	-	-	-	Dec.(14)	Mar.(19); May(294)	Nov.(22)	Apr.(12)	-
Lensia subteloides	-	Dec.(26)	-	Nov.(7)	Apr.(526)	-	Sept.(14)	May (9)

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
CTENOPHORA								
Pleurobrachia globosa	-	*	-	*	*	*	*	*
Beroe sp.	-	May (7)	-	Mar.(8) Apr.(3)	-	-	-	-
CHAETOGNATHA								
Sagitta bedoti	Apr.(82) May (200)	*	-	*	Jan.(9) Nov.(54) Dec.(209)	*	*	*
S. enflata	Apr.(27)	Jan.(3) Aug.(20) Oct.(5) Nov.(8) Dec.(30)	-	*	-	Jan.(2) Nov.(205)	*	Apr.(319)
S. oceania	-	Apr.(13)	-	*	-	-	-	-
S. robusta	-	-	-	Jun.(2) Dec.(18)	-	-	-	-
POLYCHAETE LARVAE	Feb.(8) Apr.(27) May(150) Jun.(3) Jul.(13) Aug.(71)	Jan.(5) May (14) Aug.(164) Dec.(30)	Apr.(4) Jul.(16) Sept.(8)	Jan.(10) Mar.(10) Jun.(190) Jul.(40) Sept.(10)	Mar.(13) Apr.(1053) May(98) Oct.(23)	Jan.(4) May (119)	Apr.(8) May(101) Oct.(171)	Jan.(411) Feb.(32) Apr.(53) Dec.(41)

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
CIRREPEDE LARVAE	Jan.(3) Feb.(54) Mar.(4)	Jan.(34) Feb.(17) Mar.(3)	-	Jan.(40) Feb.(360) May(20) Aug.(10) Nov.(200) Dec.(20)	Jan.(21) Mar.(39) Apr.(1404) May(1078) Jun.(234)	Feb.(32) Mar.(169) Apr.(52) May (64)	Mar.(10) Apr.(333) May (808) Jun.(119)	Jan.(276) Mar.(11) Dec.(4)
DECAPOD LARVAE	*	*	*	*	*	*	*	*
OSTRACODA								
Euconchoecia aculeata	-	Apr.(7)	-	Apr.(12)	-	-	-	-
CUMACEA	-	Jan.(4) Feb.(2) Jul.(11) Aug.(226)	-	May(10) Jun.(15) Jul.(157) Nov.(6)	Apr.(8)	Mar.(38)	Mar.(9)	Mar.(3)
ISOPODA	-	-	-	May(12) Jun.(3) Oct.(4) Dec.(4)	-	-	Mar.(9)	-
MYSIDACEA	Jul.(13)	-	-	Jan.(10) Feb.(10) Mar.(20) Apr.(30)	---	-	-	-
SERGESTIDAE								
Lucifer hanseni	Feb.(15) Mar.(3) Apr.(301) May(375) Oct.(126)	*	Jan.(14) Feb.(8) Apr.(13) Sept.(12)	*	*	*	*	*

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Lucifer typus	-	-	-	*	-	-	-	-
COPEPODA								
Canthocalanus pauper	-	-	-	Feb.(3) Mar.(8)	-	-	-	-
Undinula vulgaris	-	-	-	Jan.(10)	-	-	-	-
Eucalanus monachus	-	Apr. (20)	-	Jan.(7) Apr.(13)	-	-	-	-
Eucalanus attenuatus	-	Aug. (20)	-	-	-	-	-	-
Paracalanus aculeatus	Mar.(200)	*	Apr.(2)	*	*	*	Dec.(149)	Nov.(8) Dec.(4)
Paracalanus crassirostris	-	-	-	*	-	-	-	-
Acrocalanus similis	Apr.(1110) May (250)	*	Apr.(8)	*	*	*	Dec.(587)	*
Acrocalanus gibber	Dec.(2)	Dec.(130)	-	Apr.(112)	-	-	Dec.(110)	Mar.(6)
Centropages alcocki	Mar.(329) Jul.(13)	*	Apr.(3)	*	*	Jan.(15) Nov.(183)	*	Apr.(691) Jun.(12)

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Centropages furcatus	-	Mar.(4) Dec.(33)	-	Jan.(16) Dec.(14)	Jan.(5)	Jan.(15)	Apr.(83)	-
C. trispinosus	-	Jan.(4) Mar.(2) May(14) Nov.(17)	-	Jan.(12) Dec.(22)	-	-	-	-
C. tenuiremis	-	Aug.(20)	-	Mar.(63)	-	-	Sept.(9)	-
Heliodiaptomus cinctus	Feb.(23)	-	Jan.(3) May(2) Aug.(6) Sept.(11) Oct.(342) Dec.(4)	Jul.(750) Aug.(60)	-	-	-	-
Allodiaptomus mirabilipes	Feb.(54)	-	Jan.(3) May(2) Aug.(10) Sept.(15) Oct.(552) Dec.(13)	Jul.(68)	-	-	-	-
Archidiaptomus argorus	-	-	Dec.(2)	Oct.(16)	-	-	-	-
Pseudodiaptomus annandalei	*	*	Jan.(1) Aug.(8)	*	Mar.(26) May(137)	Jun.(69)	Jun.(795)	Mar.(548) Nov.(8) Dec.(4)

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Pseudodiaptomus binghami malayalus	Jan.(44) Mar.(2) Jul.(13) Dec.(25)	-	Feb.(214) Mar.(12) Aug.(12) Sept.(4)	Aug.(18)	Jun.(213) Oct.(11)	-	-	-
P. jonesi	Mar.(1) Dec.(19)	Jan.(2) Mar.(1)	-	*	Feb.(4)	Feb.(~~44~~ 64) Dec.(20)	Feb.(260)	Jan.(69) Mar.(318)
P. aurivillii	Apr.(178) Jun.(10) Jul.(63)	Mar.(2) Apr.(247) Aug.(123) Sept.(6)	Apr.(4)	May(40)	Apr.(1228) May(39) Dec.(55)	Jan.(7) Feb.(48) Mar.(50) Apr.(765) May(64) Dec.(145)	Jan.(65) Feb.(109) Mar.(5) May(606) Sept.(9)	Feb.(27) Apr.(32)
P. mertoni	-	Mar.(4) May(14)	-	Jun.(75)	Apr.(702)	Mar.(215)	Mar.(75) Apr.(101) May(28)	Jan.(137) Mar.(4) Apr.(425)
P. serricaudatus	Jul.(25) Dec.(6)	*	Apr.(7)	*	*	Jan.(79) Nov.(411) Dec.(12)	*	Jan.(69) Feb.(48) Apr.(479) Nov.(16)
P. tollingarae	-	-	-	Sept.(5)	-	-	-	-
Temora turbinata	-	Mar.(2) Jul.(5) Sept.(1) Dec.(22)	-	Jan.(28) Nov.(5)	-	-	Nov.(3)	-
T. stylifera	Mar.(2) Apr.(55)	-	-	Jan.(38)	-	-	Mar.(15)	-

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Lucicutia flavicornis	-	Aug. (20)	-	-	-	-	-	-
Candacia bradyi	-	-	-	Apr.(3)	-	-	-	-
Calanopia elliptica	-	-	-	Jan.(6) Feb.(18) Mar.(25)	-	-	-	-
Labidocera pectinata	Jul.(12) Dec.(1)	*	-	*	*	*	*	*
L. acuta	-	-	-	May(30)	-	Jan.(15)	-	-
Acartia centrura	*	*	Feb.(73) Apr.(34)	*	*	*	*	*
A. spinicauda	*	*	Apr.(23)	*	*	*	*	*
A. erythraea	Mar.(12) Dec.(4)	Feb.(12) Mar.(61)	-	Apr.(740) Dec.(670)	Mar.(6) Apr.(1404)	-	-	-
A. bilobata	Mar.(1500)	*	Feb.(94) Apr.(19)	*	*	*	*	Apr.(1489)
A. southwelli	-	-	-	*	-	-	-	Nov.(32)
A. negligens	Dec.(4)	-	-	Apr.(16)	-	-	-	-

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Acartia plumosa	*	Oct.(300) Nov.(128)	Feb.(107) Mar.(7) May(10) Aug.(42)	*	Nov.(10)	-	*	Dec.(22)
A. pacifica	Apr.(822) May(425)	Mar.(4) Aug.(390)	Apr.(2)	*	-	Jan.(7)	Dec.(207)	Nov.(4)
Acartiella keralensis	*	Oct.(65)	Jan.(2) Mar.(3) May(12) Aug.(15)	*	Jun.(850)	-	*	-
A. gravelyi	*	-	Jan.(6) Feb.(133) Mar.(3) May(6) Aug.(30)	*	Jun.(745) Oct.(250)	-	*	-
Tortanus gracilis	Dec.(2)	-	-	-	-	-	-	-
Euterpina acutifrons	Mar.(2)	Jan.(3) Nov.(6) Dec.(52)	-	May(40)	-	-	-	-
Nitocra spinipes	Feb.(31)	Jan.(1) Feb.(19)	Feb.(12)	Jan.(12) Jun.(67)	-	-	-	-
Macrosetella gracilis	-	-	-	Mar.(6)	-	-	-	Apr.(8)

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Baypore	Korapuzha	Mahe
Oithona hebes	-	Jan.(6) Feb.(52) Apr.(27) Nov.(87)	-	Jan.(8) Feb.(16) Apr.(43) Sept.(14) Nov.(5)	Mar.(6) Apr.(970) May(130)	Jan.(19)	May(606)	Jan.(4)
O. nana	Apr.(110)	Feb.(9) Sept.(26) Nov.(21) Dec.(43)	Apr.(9)	Feb.(12) Apr.(24) Jun.(9) Aug.(7) Nov.(18)	Apr.(610) May(120) Oct.(11) Dec.(27)	Mar.(2354) Jun.(61) Oct.(8)	Jun.(448) Sept.(9) Oct.(113) Dec.(132)	Dec.(2)
O. rigida	-	-	-	Feb.(7) Apr.(32)	-	-	-	-
O. plumifera	-	Mar.(2)	-	-	-	-	-	-
O. brevicornis	-	-	-	Feb.(84) Jun.(10) Dec.(235)	-	-	-	-
Corycaeus sp.	Mar.(2)	Mar.(6) Nov.(8) Dec.(57)	-	Jan.(136) Feb.(4) Mar.(18)	-	-	-	-
Sapphirina sp.	-	-	-	Apr.(14)	-	-	-	-
AMPHIPODA	*	*	May(5) Aug.(5)	*	*	*	*	*

Table 7 (Contd.)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
GASTROPODA	Dec.(4)	Feb.(12) Mar.(3) Jun.(32)	Aug.(8)	Apr.(15) May(10) Jun.(180) Aug.(11670) Sept.(2140) Oct.(120)	-	Mar.(104)	Jan.(32) Oct.(34)	Mar.(32) Apr.(319) Jul.(70)
BIVALVES	Feb.(100) Mar.(5) Jun.(3) Aug.(14) Dec.(2)	Feb.(68) Mar.(17) Jun.(32) Dec.(28)	Jul.(20) Aug.(20) Sept.(4)	Apr.(20) Aug.(4010)	Dec.(27)	Apr.(61) May(144) Nov.(1530)	Apr.(333) May(505) Jun.(179) Oct.(285)	Jan.(685) Feb.(16) Apr.(159) Jul.(50) Nov.(71) Dec.(18)
THALIACEA								
Thalia democratica	-	-	-	4	-	-	-	-
APPENDICULARIA								
Oikonlura sp.	-	*	-	*	*	*	*	*
FISH EGGS	*	*	-	*	*	*	*	*
FISH LARVAE	*	*	*	*	*	*	*	*

Table 8 : Occurrence of species of Cladocera (Nos./10m^3) in different estuaries of Kerala in 1978.

(Months of occurrence are given in parenthesis)

Species	Veli	Neendakara	Thottappilly	Cochin	Kallai	Beypore	Korapuzha	Mahe
Evadne tergestine	10(Dec.)	10(Feb.) 70(Aug.) 10(Sept.) 320(Dec.)	30(Aug.)	20(Jun.) 1700(Aug.) 50(Sept.) 3(Oct.) 276(Nov.) 2(Dec.)	-	920(Aug.) 110(Oct.)	30(Jun.) 60(Aug.)	20(Nov.)
Penilia avirostris	-	350(Aug.) 70(Sept.)	-	2(Jun.) 29(Jul.) 1788(Aug.) 12(Oct.) 75(Nov.)	-	700(Aug.) 20(Oct.)	110(Aug.)	10(Nov.)
Podon polyphemoides	10(Jan.)	-	30(Oct.)	-	10(Oct.)	20(Oct.)	-	-

Table 9 : Number of species observed, evenness index ($E = \frac{e^H - 1}{S-1}$) and diversity index ($D = \frac{S - 1}{\log^e N}$) in the estuaries studied.

Months	Veli			Thottappilly			Neendakara			Cochin		
	No. of species	E	D	No. of species	E	D	No. of species	E	D	No. of species	E	D
January	9	0.49	1.8	8	0.99	3.4	26	0.62	4.7	23	0.21	3.6
February	18	0.71	4.1	12	0.61	2.8	19	0.72	4.4	22	0.22	3.1
March	15	0.92	4.9	8	0.99	3.4	31	0.38	7.0	14	0.11	2.3
April	18	0.47	2.5	17	0.91	5.2	22	0.35	3.9	22	0.11	2.5
May	16	0.64	2.2	9	0.99	3.6	18	0.62	3.8	13	0.13	2.3
June	6	0.69	1.6	-	-	-	17	0.53	3.2	22	0.44	3.9
July	10	0.18	1.9	3	0.93	1.2	17	0.71	3.9	4	0.99	2.2
August	10	0.71	2.9	15	0.86	4.3	21	0.64	3.6	17	0.19	2.6
September	-	-	-	10	0.96	3.7	21	0.92	6.1	9	0.94	3.3
October	9	0.70	1.4	9	0.29	1.7	21	0.39	4.0	18	0.86	5.3
November	6	0.65	1.2	-	-	-	25	0.45	4.8	23	0.69	4.9
December	21	0.71	5.4	11	0.99	4.2	25	0.45	4.2	27	0.09	4.3

Table 9 (Contd.)

Months	Korapuzha			Kallai			Beypore			Mahe		
	No. of species	E	D	No. of species	E	D	No. of species	E	D	No. of species	E	D
January	18	0.32	3.1	20	0.50	3.6	29	0.47	5.2	24	0.62	3.6
February	16	0.67	2.8	21	0.59	4.8	11	0.47	2.1	16	0.56	3.5
March	17	0.28	2.8	22	0.62	4.7	25	0.27	3.9	21	0.34	4.0
April	16	0.43	2.1	24	0.60	2.9	20	0.25	2.7	24	0.68	3.3
May	20	0.67	2.6	20	0.64	2.6	17	0.33	2.4	4	0.99	2.2
June	14	0.39	1.9	10	0.71	1.6	11	0.65	2.0	12	0.22	2.5
July	3	0.86	1.0	-	-	-	-	-	-	4	0.89	1.0
August	-	-	-	3	0.99	1.8	-	-	-	-	-	-
September	14	0.74	3.8	2	0.89	0.56	3	0.91	1.4	7	0.93	2.7
October	14	0.44	2.1	7	0.19	1.4	14	0.65	4.1	3	0.91	1.4
November	3	0.99	1.8	5	0.39	1.5	12	0.44	1.5	21	0.35	3.9
December	13	0.65	2.0	15	0.26	2.5	25	0.22	3.7	20	0.78	5.2

Table 19: Correlation matrix for major groups of zooplankton in the different estuaries - 1978.
(a, $P < 0.1$; b, $P < 0.05$; c, $P < 0.02$; d, $P < 0.01$; e, $P < 0.001$) VELI

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestidae	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larvae	Cirripede larvae
Hydromedusae	0.00														
Ctenophora	0.95[e]	0.00													
Chaetognatha	-0.17	0.00	-0.20												
Cladocera	0.76[e]	0.00	0.90[e]	-0.23											
Copepoda	-0.18	0.00	-0.21	-0.16	-0.28										
Amphipoda	0.15	0.00	0.14	-0.12	0.07	0.72[e]									
Decapoda	0.58[e]	0.00	0.61[d]	0.40	0.61[d]	-0.33	-0.06								
Caridea	0.85[e]	0.00	0.94[e]	-0.23	0.98[e]	-0.27	0.09	0.62[c]							
Sergestidae	0.93[e]	0.00	0.98[e]	-0.23	0.93[e]	-0.25	0.11	0.62[c]	0.99[e]						
Zoea	0.89[e]	0.00	0.82[e]	-0.21	0.66[c]	0.11	0.16	0.43[a]	0.70[d]	0.79[e]					
Polychaeta	0.89[e]	0.00	0.82[e]	-0.21	0.66[c]	0.11	0.16	0.43[a]	0.70[d]	0.79[e]					
Appendicularia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Fish eggs	0.92[e]	0.00	0.98[e]	-0.21	0.89[e]	-0.21	0.11	0.66[c]	0.93[e]	0.94[e]	0.78[e]	0.00			
Fish larvae	0.89[e]	0.00	0.91[e]	-0.14	0.81[e]	-0.19	0.16	0.55[c]	0.83[e]	0.86[e]	0.78[e]	0.00	0.88[e]		
Cirripede larvae	-0.12	0.00	-0.14	0.55[c]	-0.16	-0.16	-0.14	-0.20	-0.14	-0.15	0.01	0.00	-0.13	-0.15	

Table 10 (Cont.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestidae	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larva	Cirripede larva
Hydromedusae															
Ctenophora	0.28														
Chaetognatha	-0.02	0.63[d]													
Cladocera	-0.20	-0.18	0.51[b]												
Copepoda	0.53[b]	-0.14	0.01	0.04											
Amphipoda	-0.43[a]	-0.21	0.51[b]	0.64[d]	0.05										
Decapoda	0.28	0.12	0.13	-0.00	-0.01	-0.02									
Caridea	0.31	-0.25	-0.41[a]	0.00	0.49[b]	-0.42[a]	0.07								
Sergestidae	0.33	0.05	0.01	-0.11	0.01	-0.14	0.98[d]	0.19							
Zoea	0.18	0.29	0.01	0.27	-0.38	-0.32	0.14	0.32	0.19						
Polychaeta	-0.24	-0.09	0.68[d]	0.71[d]	0.25	0.98[d]	-0.01	-0.35	-0.13	-0.34					
Appendicularia	0.01	-0.11	-0.21	-0.19	-0.01	-0.01	-0.16	-0.23	-0.20	-0.11	-0.01				
Fish eggs	-0.14	-0.15	-0.30	-0.26	0.07	-0.03	-0.24	0.22	-0.18	-0.12	-0.21	0.12			
Fish larva	-0.10	-0.19	0.12	0.19	0.35	0.51[b]	-0.02	0.04	-0.04	-0.21	0.41[a]	0.28	0.65[d]		
Cirripede larva	-0.35	-0.17	-0.29	-0.18	-0.39	0.04	-0.17	-0.20	-0.16	0.09	-0.20	0.18	0.15	0.19	

Table 10 (cont.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestidae	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larvae	Cirripede larva
Hydromedusae		0.00	0.00	0.00	-0.98	0.00	0.00	-0.98	0.98	-0.98	0.00	0.00	0.00	-0.98	0.00
Ctenophora			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Chaetognatha				0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cladocera					0.17	0.00	0.00	0.98	-0.98	0.00	0.00	0.00	0.00	0.00	0.00
Copepoda						0.98	0.63	0.98	0.40	0.98	0.98	0.00	0.00	0.58	0.00
Amphipoda							0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Decapoda								0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Caridea									0.98	0.98	0.98	0.00	0.00	0.00	0.00
Sergestidae										0.00	0.00	0.00	0.00	0.00	0.00
Zoea											0.00	0.00	0.00	0.00	0.00
Polychaeta												0.00	0.00	0.00	0.00
Appendicularia													0.00	0.00	0.00
Fish eggs														0.00	0.00
Fish larvae															0.00
Cirripede larva															

Table 10 (cont.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestida	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larvae	Cirripede larva
Hydromedusae	+0.61														
Ctenophora	0.60	0.64													
Chaetognatha	-0.30	-0.47	-0.26												
Cladocera	0.49	0.61	0.70	-0.18											
Copepoda	-0.25	0.14	-0.01	0.21	0.51										
Amphipoda	0.22	0.25	0.69	-0.23	0.75	0.30									
Decapoda	-0.04	-0.02	-0.03	-0.17	0.23	0.53	0.09								
Caridea	0.48	0.59	0.34	-0.36	0.78	0.34	0.41	0.30							
Sergestida	0.04	0.43	0.72	-0.14	0.42	0.02	0.50	-0.14	-0.01						
Zoea	0.26	0.18	-0.32	-0.12	0.13	0.32	-0.48	0.17	0.14	-0.33					
Polychaeta	-0.04	0.03	0.37	0.03	0.17	-0.10	0.35	-0.50	-0.21	0.68	-0.12				
Appendicularia	0.26	0.38	0.79	0.18	0.37	-0.07	0.47	-0.43	0.31	0.68	-0.48	0.52			
Fish eggs	0.04	0.09	0.05	-0.21	0.50	0.47	0.31	0.98	0.54	-0.02	0.22	-0.29	-0.36		
Fish larvae	-0.09	0.06	0.19	0.07	-0.03	-0.05	0.19	-0.43	-0.41	0.57	-0.04	0.62	0.49	-0.45	
Cirripede larva															

Table 10 (Contd.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestida	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larva	Cirripede larva
Hydromedusae	0.91														
Ctenophora	-0.15	-0.14													
Chaetognatha	0.19	-0.13	0.00												
Cladocera	0.00	0.00	0.00	0.00											
Copepoda	0.93	0.98	-0.05	0.00	-0.11										
Amphipoda	-0.15	-0.14	-0.07	0.00	-0.11										
Decapoda	0.32	0.56	-0.14	0.00	0.50	-0.11									
Caridea	0.93	0.98	-0.11	0.00	0.98	-0.15	0.41								
Sergestida	0.83	0.92	0.09	0.00	0.89	-0.16	0.75	0.83							
Zoea	0.61	0.82	-0.13	0.00	0.75	-0.15	0.94	0.68	0.92						
Polychaeta	0.94	0.98	-0.09	0.00	0.94	-0.10	0.21	0.98	0.72	0.51					
Appendicularia	0.89	0.84	-0.11	0.00	0.89	0.06	0.11	0.92	0.64	0.41	0.97				
Fish eggs	0.35	0.62	-0.15	0.00	0.53	-0.12	0.98	0.45	0.78	0.93	0.25	0.14			
Fish larva	0.58	0.76	-0.18	0.00	0.75	+0.07	0.80	0.71	0.78	0.82	0.55	0.49	0.83		
Cirripede larva	0.84	0.97	-0.15	0.00	0.93	-0.14	0.73	0.91	0.94	0.91	0.81	0.74	0.76	0.87	

Table 10 (Contd.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Zoea	Sergestidae	Polychaeta	Appendicularia	Fish eggs	Fish larvae	Cirripede larvae
Hydromedusae	0.69														
Ctenophora	-0.15	0.02													
Chaetognatha	-0.06	-0.06	0.84												
Cladocera	-0.06	-0.06	0.10	0.00											
Copepoda	0.55	0.38	-0.26	0.12	0.17										
Amphipoda	0.58	0.98	0.10	0.00	0.60	-0.11									
Decapoda	0.02	0.09	-0.09	-0.03	0.44	0.52	0.04								
Caridea	0.82	0.59	0.32	0.48	0.44	0.52	0.04	0.01							
Zoea	0.02	0.09	-0.15	-0.09	0.65	-0.09	0.98	0.01							
Sergestidae	0.01	-0.12	-0.03	-0.12	-0.07	-0.14	-0.08	0.05	-0.09						
Polychaeta	0.01	-0.12	-0.04	-0.12	-0.07	-0.14	-0.07	0.05	-0.09	0.98					
Appendicularia	0.25	0.49	-0.09	-0.12	0.06	0.56	0.04	0.16	0.19	-0.20	-0.20				
Fish eggs	0.00	0.40	0.06	-0.14	0.07	0.43	0.29	-0.02	0.42	-0.01	-0.01	0.89			
Fish larvae	0.23	0.27	-0.03	-0.14	0.07	0.27	-0.16	0.25	-0.17	0.68	0.68	-0.01	0.12		
Cirripede larvae	-0.11	-0.15	-0.17	-0.05	0.48	-0.15	-0.10	-0.11	-0.10	-0.09	-0.09	-0.01	-0.21	-0.02	

Table 10 (Contd.)

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestidae	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larva	Cirripede larva
Hydromedusae	0.01														
Ctenophora	0.51[b]	0.27													
Chaetognatha	-0.15	0.98	0.17												
Cladocera	0.29	0.51[b]	0.61[d]	0.48[a]											
Copepoda	-0.14	-0.16	-0.22	-0.14	-0.15										
Amphipoda	0.68[d]	0.02	0.76[g]	-0.11	0.68[d]	-0.17									
Decapoda	0.13	0.38	0.21	0.38	0.09	-0.01	-0.27								
Caridea	0.48[b]	0.83[g]	0.56[g]	0.72[g]	0.72[d]	-0.24	0.48[a]	0.37							
Sergestidae	0.55[b]	0.71[d]	0.33	0.62[d]	0.49[b]	-0.20	0.18	0.68[d]	0.68[g]						
Zoea	0.48[a]	0.01	0.48[b]	-0.08	0.40	0.57[d]	0.67[d]	-0.23	0.22	0.04					
Polychaeta	0.51[b]	0.61[d]	0.86[e]	0.50[b]	0.77[d]	-0.22	0.78[g]	0.12	0.82[g]	0.53[b]	0.53[b]				
Appendicularia	0.27	0.49[b]	0.49[b]	0.41[a]	0.92[g]	-0.28	0.68[d]	-0.12	0.70[d]	0.42[a]	0.28	0.68			
Fish eggs	0.19	-0.25	0.56[g]	-0.27	0.39	0.31	0.41[a]	0.33	0.00	-0.01	0.47[d]	0.27	0.12		
Fish larvae	0.19	-0.25	0.56[g]	-0.27	0.39	0.31	0.41[a]	0.33	0.00	-0.01	0.47[d]	0.27	0.12		
Cirripede larva	0.61[d]	0.49[b]	0.82[g]	0.29	0.68[d]	-0.22	0.91[g]	-0.09	0.72[g]	0.43[a]	0.62[d]	0.98[g]	0.78[g]	0.28	

	Hydromedusae	Ctenophora	Chaetognatha	Cladocera	Copepoda	Amphipoda	Decapoda	Caridea	Sergestidae	Zoea	Polychaeta	Appendicularia	Fish eggs	Fish larvae	Cirripede larva
Hydromedusae															
Ctenophora	0.85														
Chaetognatha	0.82	0.97													
Cladocera	-0.08	-0.13	0.03												
Copepoda	0.83	0.93	0.97	0.17											
Amphipoda	0.09	0.14	0.13	0.40	0.13										
Decapoda	0.82	0.98	0.97	-0.14	0.92	0.14									
Caridea	0.71	0.82	0.91	0.36	0.96	0.08	0.82								
Sergestidae	0.56	0.60	0.73	0.61	0.83	0.04	0.58	0.94							
Zoea	0.41	0.42	0.60	0.61	0.86	0.03	0.46	0.80	0.87						
Polychaeta	0.06	0.00	0.19	0.86	0.34	-0.03	0.00	0.55	0.79	0.81					
Appendicularia	0.71	0.76	0.88	0.44	0.94	0.06	0.75	0.98	0.96	0.81	0.63				
Fish eggs	0.81	0.98	0.97	-0.15	0.91	0.13	0.99	0.81	0.57	0.47	-0.003	0.74			
Fish larvae	0.44	0.39	0.37	0.40	0.39	0.85	0.35	0.32	0.29	0.26	0.11	0.34	0.34		
Cirripede larva	-0.02	-0.10	0.09	0.87	0.24	-0.07	-0.11	0.47	0.73	0.72	0.98	0.55	-0.11	0.03	

Table 11 : Correlation matrix for the common copepod species in the different estuaries - 1978.

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(a, $P < 0.1$; b, $P < 0.05$; c, $P < 0.02$; d, $P < 0.01$; e, $P < 0.001$)

	Acartia centrura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelvi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. annandalei	P. aurivilli	Acrocalanus gibbus
Acartia centrura													
A. spinicauda	0.97[e]												
A. bilobata	0.99[e]	0.00											
A. erythraea	0.99[e]	0.00	0.00										
A. pacifica	-0.99[e]	0.99[e]	0.00	0.00									
A. plumosa	0.00	0.00	0.00	0.00	0.00								
A. keralensis	0.00	0.00	0.00	0.00	0.00	0.99[e]							
A. gravelvi	0.00	0.00	0.00	0.00	0.00	0.87[e]	0.79[e]						
Centropages alcocki	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
Pseudodiaptomus serricaudatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				
P. annandalei	0.99[e]	0.00	0.99[e]	0.00	0.00	0.99[e]	0.99[e]	0.99[e]	0.00	0.99[e]			
P. aurivilli	0.99[e]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.99[e]	0.00	0.00		
Acrocalanus gibbus	0.99[e]	0.99[e]	0.00	0.00	0.99[e]	0.00	0.00	0.00	0.00	0.00	0.99[e]	0.00	

	Acartia centrura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. annandalei	P. aurivilli	Acrocalanus gibbus
Acartia centrura													-0.17
A. spinicauda	-0.13												
A. bilobata	0.41	0.15											
A. erythraea	0.73**	-0.25	-0.21										
A. pacifica	-0.31	0.38	-0.20	-0.10									
A. plumosa	0.28	-0.32	0.78**	-0.14	-0.13								
A. keralensis	0.14	-0.24	0.63**	-0.10	-0.10	0.91**							
A. gravelyi	-0.27	-0.13	-0.18	-0.10	-0.10	-0.12	0.09						
Centropages alcocki	-0.24	0.60**	0.09	-0.27	0.81**	-0.02	-0.04	0.24					
Pseudodiaptomus serricaudatus	0.78**	0.07	0.03	0.90**	0.01	-0.12	-0.12	-0.14	0.03				
P. annandalei	0.46*	0.21	0.82**	-0.18	-0.17	0.42	0.12	-0.15	0.13	0.10			
P. aurivilli	-0.30	0.23	-0.26	-0.15	0.36	-0.17	-0.13	-0.10	0.15	-0.13	-0.22		
Acrocalanus gibbus	0.74**	-0.36	-0.09	0.96**	-0.16	0.02	0.03	-0.12	-0.32	0.88**	-0.11	-0.12	

	Acartia centura	A. antiqueuda	A. bilobata	A. curvithraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serriqaudatus	P. annandalei	P. aurivilli	P. binghami	Acrocalanus gibber	Allodiaptomus mirabilipes	Heliodiaptomus cinctus
Acartia centura	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. antiqueuda	0.98	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. bilobata	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. curvithraea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. pacifica	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. plumosa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. keralensis	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. gravelyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Centropages alcocki	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pseudodiaptomus serriqaudatus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P. annandalei	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P. aurivilli	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
P. binghami	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Acrocalanus gibber	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Allodiaptomus mirabilipes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heliodiaptomus cinctus	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 11 (Contd.) COCHIN

	Acartia centrura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. annandalei	P. aurivilli	Acrocalanus gibbulus
Acartia centrura													
A. spinicauda	0.45[a]												
A. bilobata	0.41	0.62[a]											
A. erythraea	0.28	0.59[a]	0.94[a]										
A. pacifica	0.30	0.69[a]	0.98[a]	0.93[a]									
A. plumosa	0.19	-0.20	-0.12	-0.16	-0.05								
A. keralensis	-0.23	-0.21	-0.10	-0.13	-0.15	0.98[a]							
A. gravelyi	-0.24	-0.23	-0.12	-0.13	-0.14	0.14	0.13						
Centropages alcocki	0.15	0.15	0.57[b]	-0.13	0.19	-0.11	-0.10	-0.12					
Pseudodiaptomus serricaudatus	0.86[a]	0.75[a]	0.79[a]	0.49[a]	0.18	-0.23	-0.10	-0.19	0.26				
P. annandalei	0.43	0.67[a]	-0.63[a]	-0.14	-0.04	0.69[a]	0.74[a]	-0.12	-0.03	0.47[a]			
P. aurivilli	0.89[a]	0.98[a]	0.70[a]	0.08	0.87[a]	0.00	-0.13	-0.13	0.46[a]	0.80[a]	-0.27		
Acrocalanus gibbulus	0.56[b]	0.21	0.54[b]	0.95[a]	0.98[a]	-0.12	-0.11	0.11	0.09	0.80[a]	0.09	0.31	

	Acartia centrura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. annandalei	P. aurivilli	Acrocalanus similis
Acartia centrura													
A. spinicauda	0.96												
A. bilobata	0.95	0.93											
A. erythraea	0.89	0.87	0.87										
A. pacifica	0.00	0.00	0.00	0.00									
A. plumosa	-0.16	-0.13	-0.12	-0.09	0.00								
A. keralensis	-0.16	-0.13	-0.12	-0.09	0.00	-0.09							
A. gravelyi	-0.16	-0.13	-0.12	-0.09	0.00	-0.09	0.93						
Centropages alcocki	0.62	0.74	0.74	0.33	0.00	-0.12	-0.12	-0.12					
Pseudodiaptomus serricaudatus	0.29	0.36	0.35	-0.11	0.00	-0.11	-0.11	-0.11	0.86				
P. annandalei	0.24	0.37	0.37	-0.11	0.00	-0.10	-0.10	-0.10	0.89	0.95			
P. aurivilli	0.96	0.89	0.89	0.96	0.00	-0.09	-0.09	-0.09	0.36	-0.08	-0.07		
Acrocalanus similis	0.96	0.87	0.87	0.96	0.00	-0.09	-0.09	-0.09	0.32	-0.11	-0.11	0.99	

Table 11 (Contd.) BEFORE

	Acartia centura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. annandalei	P. aurivilli	Acrocalanus similis
Acartia centura	0.98	-0.13	-0.12	0.00	-0.06	0.00	0.00	0.00	-0.06	0.98	-0.08	-0.12	0.98
A. spinicauda	0.98		-0.07	0.00	-0.07	0.00	0.00	0.00	-0.07	0.98	-0.13	-0.09	0.98
A. bilobata	-0.12	-0.07		0.00	-0.15	0.00	0.00	0.00	-0.15	-0.18	0.31	0.12	-0.13
A. erythraea	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
A. pacifica	-0.06	-0.07	-0.15	0.00		0.00	0.00	0.00	-0.15	0.00	-0.09	-0.12	-0.01
A. plumosa	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.09	0.00	0.00	0.00
A. keralensis	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
A. gravelyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Centropages alcocki	-0.06	-0.07	-0.15	0.00	0.98	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Pseudodiaptomus serricaudatus	0.98	0.98	-0.18	0.00	0.09	0.00	0.00	0.00	0.00		-0.11	-0.15	0.98
P. annandalei	-0.08	-0.13	0.31	0.00	-0.09	0.00	0.00	0.00	0.00	-0.11		-0.12	-0.09
P. aurivilli	-0.12	-0.09	0.12	0.00	-0.12	0.00	0.00	0.00	0.00	-0.15	-0.12		-0.13
Acrocalanus similis	0.98	0.98	-0.13	0.00	-0.01	0.00	0.00	0.00	0.00	0.98	-0.09	-0.13	

Table 11 (Contd.) KORAPUZHA

	Acartia centrura	A. spinicauda	A. bilobata	A. erythraea	A. pacifica	A. plumosa	A. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. amandalei	P. aurivilli	Acrocalanus gibberus
A. spinicauda	0.88												
A. bilobata	0.78	0.52											
A. erythraea	0.00	0.00	0.00										
A. pacifica	0.18	-0.13	-0.13	0.00									
A. plumosa	-0.23	-0.14	-0.01	0.00	-0.09								
A. keralensis	-0.26	-0.16	-0.02	0.00	-0.11	0.98							
A. gravelyi	-0.20	-0.13	-0.14	0.00	-0.09	-0.01	0.12						
Centropages alcocki	0.68	0.97	0.40	0.00	-0.11	-0.11	-0.12	-0.10					
Pseudodiaptomus serricaudatus	0.67	0.93	0.24	0.00	-0.11	-0.14	-0.15	-0.13	0.93				
P. amandalei	-0.22	-0.13	0.01	0.00	-0.09	0.98	0.97	-0.09	-0.10	-0.13			
P. aurivilli	0.63	0.98	0.26	0.00	-0.12	-0.13	-0.14	-0.12	0.97	0.98	-0.12		
Acrocalanus gibberus	0.10	-0.14	-0.15	0.00	0.98	-0.12	-0.12	-0.10	-0.11	-0.10	-0.09	-0.11	

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Table 11 (Contd.)

	Acartia centura	P. spinicauda	P. bilobata	P. scythracea	P. pacifica	P. plumosa	P. keralensis	A. gravelyi	Centropages alcocki	Pseudodiaptomus serricaudatus	P. amandalei	P. aurivilli	Acrocalanus gibber
A. spinicauda	0.85*												
A. bilobata	0.88	0.98											
A. scythracea	0.00	0.00	0.00										
A. pacifica	-0.12	0.19	-0.09	0.00									
A. plumosa	-0.12	-0.12	-0.09	0.00	-0.09								
A. keralensis	0.00	0.00	0.00	0.00	0.00	0.00							
A. gravelyi	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
Centropages alcocki	0.88	0.98	0.98	0.00	-0.09	-0.09	0.00	0.00					
Pseudodiaptomus serricaudatus	0.98	0.98	0.98	0.00	-0.08	-0.11	0.00	0.00	0.98				
P. amandalei	-0.13	-0.11	-0.11	0.00	0.02	0.02	0.00	0.00	-0.11	-0.14			
P. aurivilli	-0.13	-0.12	-0.09	0.00	-0.09	-0.09	0.00	0.00	-0.09	-0.01	-0.11		
Acrocalanus gibber	0.98	0.68	0.68	0.00	-0.13	-0.06	0.00	0.00	0.68	0.78	-0.16	-0.13	