

OBSERVATION ON THE FOOD AND FEEDING HABITS OF EURYGLOSSA ORIENTALIS (BL. AND SCHN.) (FAMILY : SOLEIDAE) FROM KARACHI COAST

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SUMMARY : The pattern of food and feeding habits of Euryglossa orientalis were studied during the period April 1987 to June 1988. The food mainly consisted of annelids (2.82%), crustaceans (14.23%), molluscs (17.85%), platy-helminthes (4.16%), nematohelminthes (4.70%), fish (3.09%), sand grains (30.07%) and miscellaneous food items such as unidentified material, semi-digested parts of fish, crustaceans, and shells etc. (56.51%). The food and feeding habits vary with reference to season.

Key Words : Euryglossa orientalis.

INTRODUCTION

The food and feeding habits of different fishes, depending upon the availability are quite variable. Food and feeding habits of flatfishes have been studied by a number of workers (1,4,6-8,10-12,14,15), but no such information is available on the food and feeding habits of *Euryglossa orientalis* (Bl. and Schn.) which is one of the most commercially important oriental sole found in the coastal waters of Pakistan. It constitutes a significant portion of the food source for rapidly increasing population of the country.

Present work provides an information about the feeding intensity and food habits of *E. orientalis* found in Pakistani coastal waters. The objective of initiating this study is to enhance our knowledge about the food and feeding habits of *E. orientalis*.

MATERIALS AND METHODS

Data on the specimens of *E. orientalis* was obtained for a period of 15 months (April 1987 to June 1988). A total of 745 specimens of *E. orientalis* were collected every week from

commercial landings at Karachi Fish Harbour, West Wharf and Korangi Creek.

In laboratory the fishes were dissected; and the viscera were preserved in 10% formalin for detailed study. The food was evaluated by 'points' method, slightly modified by Hynes (9). Intensity of feed was designated as gorged, full, 3/4 full, 1/2 full, 1/4 full, barley full and empty and were presented as point categories : 100, 75, 50, 25, 12, 6 and 0 (zero) respectively. The food species were identified to the lowest possible taxon.

RESULTS AND DISCUSSION

The data on the stomach contents of *E. orientalis* (Bl. and Schn.) are shown in Tables 1 and 2. The data reveals that 0.27% stomachs were gorged, 0.67% full, 2.01%, 3/4 full, 2.95%, 1/2 full, 10.14% 1/4 full, 39.87% barely full and 43.76% empty (Table 1). The highest percentage of empty guts was recorded in September and the lowest in April and May. The average total points show that the value was lowest in November and highest in May.

The monthly uptake of different food categories is shown in Table 2. Throughout the study, miscellaneous items were found to be of most dominant category

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Table 1: Season of the year and percentage of intensity of feeding in *E. orientalis*.

Month	No. of fish	Length range, mm	Georged	Full	3/4 full	1/2 full	1/4 full	Barely full	Empty	Average of total points
1987 April	20	189-265	-	-	5.00	5.00	15.00	60.00	15.00	9.15
May	41	190-290	-	-	-	4.88	14.63	39.02	41.46	5.32
June	54	150-260	-	-	-	-	9.26	29.63	61.11	2.89
July	41	160-266	-	-	-	7.32	12.20	46.34	34.15	6.07
August	11	125-270	-	-	-	9.09	9.09	63.64	18.18	7.18
September	59	105-305	-	1.69	3.39	-	5.08	16.95	72.88	4.59
October	52	185-350	-	1.92	-	3.84	13.46	38.46	42.31	6.33
November	55	169-315	-	-	-	-	3.63	25.45	70.91	1.96
December	75	107-300	-	-	-	5.33	9.33	32.00	53.33	4.37
1988 January	71	132-256	-	-	-	1.41	9.86	56.34	32.39	4.92
February	68	185-305	-	-	4.41	-	13.23	44.12	38.23	6.44
March	40	103-335	-	-	2.50	5.00	10.00	50.00	32.5	6.70
April	48	139-248	-	-	-	-	-	50.00	50.00	3.00
May	60	144-300	1.67	1.67	8.33	5.00	23.33	43.33	15.00	14.57
June	50	165-314	2.00	4.00	4.00	6.00	10.00	38.00	36.00	11.98
Total	745	103-350	0.27	0.67	2.01	2.95	10.47	39.87	43.76	6.17

(56.51%) in all respects e.g. percentage of occurrence, average points and percentage of total points. Sand grains formed the second important group on the basis of percentage of occurrence (30.07%), molluscs (17.85%), followed by crustaceans (14.23%). Annelids were absent in August, September, November and January. But their percentage was high (2.82%) in April, May and October. Crustaceans and molluscs were frequently seen throughout the year.

Occurrence of nematodes (4.70%) was directly related with the fish as the nematodes occur generally in those months in which fish were also found a part of the gut content (3.09%) except March and September.

Food contents of sole, *E. orientalis* consist of 8 categories : (1) Annelids, (2) Molluscs, (3) Crustaceans, (4) Platy-helminthes, (5) Nematohelminthes, (6) Pisces (fish), (7) Sand grains, and (8) Miscellaneous or semi-digested

consisting of unidentified food materials. The details of food contents are shown in Appendix 1.

E. orientalis has been found to be a carnivorous fish which mainly feed upon crustacean and molluscs. Annelids were found less frequently than nematodes. As stated by Sigler (16) platy-helminthes and nematodes (nematohelminthes) do not form a part of the food materials and they might have been swallowed along with the sand. Hence it is concluded that *E. orientalis* is a crustacean-mollusc-annelid feeder and the fish changes its food habits with the change in season. Similar observations have also been made by De-Groot (6), Lande (13), Dewan and Saha (5) and Bhuiyan and Nazrul Islam (2).

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Table 2: Monthly patterns of feeding of *E. orientalis* by food categories.

		FOOD CATEGORIES							
		Annelida	Crustacea	Mollusca	Platyhelm.	Nemato-helminth	Fish	Sand grains	Misc
APRIL	% occurrence	5.00	5.00	45.00	-	20.00	10.00	10.00	85.00
N=20	% total points	10.93	4.37	22.95	-	8.74	3.83	12.02	37.16
Points	= 183 Average point/fish	1.00	0.40	2.1	-	0.80	0.35	0.10	3.4
MAY	% occurrence	9.76	19.51	36.59	-	-	-	-	60.98
N=41	% total points	23.85	17.53	25.69	-	-	-	-	33.03
Points	= 218 Average point/fish	1.27	0.93	1.37	-	-	-	-	1.76
JUNE	% occurrence	1.85	14.80	16.67	-	5.56	3.90	-	38.89
N=54	% total points	2.50	17.95	12.82	-	5.13	8.97	11.54	41.03
Points	= 156 Average point/fish	0.07	0.52	0.37	-	0.15	0.26	0.33	1.19
JULY	% occurrence	7.32	2.44	31.7	-	-	-	46.34	51.22
N=41	% total points	12.85	3.21	43.37	-	-	-	16.86	25.70
Points	= 249 Average point/fish	0.78	0.20	2.63	-	-	-	0.90	1.56
AUGUST	% occurrence	-	36.37	36.36	-	-	-	81.82	81.82
N=11	% total points	-	8.86	18.99	-	-	-	26.58	45.57
Points	=79 Average point/fish	-	0.17	0.37	-	-	-	0.51	0.88
SEPTEMBER	% occurrence	-	6.79	8.47	-	-	5.08	13.56	25.43
N=59	% total points	-	21.40	4.43	-	-	47.23	5.90	21.03
Points	=271 Average point/fish	-	0.98	0.20	-	-	2.17	0.27	0.97
OCTOBER	% occurrence	7.69	15.38	13.46	-	5.77	1.92	51.92	50.00
N=52	% total points	26.14	20.97	3.95	-	1.82	3.04	17.33	26.75
Points	= 329 Average point/fish	1.65	1.33	0.25	-	0.12	0.19	0.10	1.69
NOVEMBER	% occurrence	-	1.82	3.64	-	1.82	1.82	25.45	32.73
N=55	% total points	-	3.70	3.70	-	5.56	1.85	31.48	53.70
Points	= 108 Average point/fish	-	0.07	0.07	-	0.11	0.04	0.62	1.05
DECEMBER	% occurrence	2.67	12.00	13.33	-	4.00	2.67	36.00	40.00
N=75	% total points	1.83	15.24	11.59	-	2.13	8.54	26.22	34.45
Points	= 328 Average point/fish	0.08	0.67	0.50	-	0.09	0.37	1.15	1.51
JANUARY	% occurrence	-	15.49	16.90	-	5.63	1.41	29.5	67.61
N=71	% total points	-	10.03	13.47	-	3.44	2.29	11.46	22.06
Points	= 349 Average point/fish	-	0.49	0.66	-	0.17	0.11	0.56	1.08
FEBRUARY	% occurrence	1.47	23.53	10.29	-	5.88	7.35	17.65	61.76
N=68	% total points	0.46	15.75	4.57	-	2.74	26.94	6.39	43.15
Points	= 438 Average point/fish	0.03	1.01	0.29	-	0.18	1.74	0.41	2.78
MARCH	% occurrence	2.50	17.5	15.00	-	7.5	-	40.00	75.00
N=40	% total points	4.48	14.55	16.04	-	7.46	-	14.18	43.28
Points	= 268 Average point/fish	0.30	0.98	1.08	-	0.50	-	0.95	2.9
APRIL	% occurrence	2.08	10.42	22.92	-	-	-	37.50	58.33
N=48	% total points	0.69	3.47	15.97	-	-	-	22.92	56.94
Points	= 144 Average point/fish	0.02	0.10	0.48	-	-	-	0.69	1.71
MAY	% occurrence	3.33	26.67	21.67	33.33	8.33	5.00	46.67	86.67
N=60	% total points	0.34	26.77	7.89	7.55	2.29	10.41	9.04	35.70
Points	= 874 Average point/fish	0.05	3.90	1.15	1.10	3.33	1.52	1.32	52.00
JUNE	% occurrence	2.00	14.00	20.00	22.00	10.00	6.00	28.00	78.00
N=50	% total points	0.67	6.18	15.86	4.01	2.50	21.04	7.35	42.40
Points	= 599 Average point/fish	0.08	0.74	1.90	0.48	0.30	2.52	0.88	5.08
Total	% occurrence	2.82	14.23	17.85	4.16	4.70	3.09	30.07	56.51
N=	745 % total points	4.83	15.00	13.17	1.96	2.66	11.58	12.04	38.76
P=	4593 Average point/fish	0.30	0.92	0.81	0.12	0.16	0.71	0.74	2.39

APPENDIX I
FOOD CONTENT OF *E. ORIENTALIS*

Annelids	: Nereis sp.
Molluscs	: Solen sp. Tellinna iridescens Theoraopalina sp. Gastropod Bivalve
Crustacean	: Scylla serrata. Leucosid sp. Anamuran Sarennilla indica Mactra luzinica Penneas monodon Penneas stylifera Squilla orato
Platy-helminthes	: Liverfluk
Nematohelminthes	: Nematodes
Pisces	Gymnothorax undulatus Juvenile of eel Fish parts (Head, spine, fins, bone and scales)
Sand grains	: Sand, mud, pebbles, gravels, sea weeds.
Miscellaneous	: Unidentified specimens, semi-digested, Heads, eyes and appendages of crabs and shrimps, (crustacean) Larvae of fishes and crustacean, Skeleton, fins, vertebrae, skull, bones, scales of fishes. Shell pieces of Mollusc.

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