and whether the habitat is a marine, estuarine or mangrove environment. The latter three have been included under the heading 'Situation' in Table 4. Few workers have examined the species investigated in this study, but Gerreidae fry (*Gerres, Eucinostomus* and *Diapterus*) consume mainly copepods, polychaetes and ostracods and to a lesser extent whole bivalves and gastropods.

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Notes on the diet of *Rhabdosargus holubi* (Steindachner) and *Rhabdosargus globiceps* (Cuvier) in the marine environment

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Rhabdosargus holubi (Cape stumpnose) and *Rhabdosargus globiceps* (white stumpnose) are common endemic species in the shallow marine waters of South Africa (Barnard 1925; Smith 1965). Adults of both species are found to a lesser extent in estuaries while juveniles are associated with estuaries, in particular *R. holubi* on the east coast and *R. globiceps* on the west coast (Talbot 1955; Wallace 1975).

Detailed examinations of the feeding habits of these fish have been mainly restricted to the juvenile phase in estuaries (Blaber 1974; Talbot 1955). Blaber (1974, Table 5) does, however, quote the Ecological Survey records of the University of Cape Town which record the diet of adult *R. holubi* in the marine environment close to three South African estuary mouths. Similarly Talbot (1955) presents qualitative results on the feeding of adult *R. globiceps* in the marine waters west of Cape Agulhas. Lasiak (1982) documents the feeding of both species in the surf zone at two study sites in Algoa Bay.

Ninety-eight specimens of *R. globiceps* and 114 of *R. holubi* were taken by the R.V. *Thomas B. Davie* during a small-mesh trawling survey of the inshore marine waters between Mossel Bay and Algoa Bay in 1980. The depth and size distribution of fish caught are given in Table 1 and Figure 1 respectively. Stomach content analysis is presented in Table 2. Prey items were quantified in terms of frequency of occurrence and percentage volume, and were assigned a rank computed as the ratio of fish containing a food item to the number of fish sampled (frequency of occurrence) multiplied by the mean percent that item represented of the diet volume (Hobson 1974).

Fourteen different prey items were recognized for *R. holubi*, the most important of which were *Echinocardium cordatum*, polychaetes and isopods. The polychaetes were represented mostly by empty Chaetopteridae tubes, possibly *Phyllochaetopterus socialis* and *Mesochaetopterus minutus* as well as *Glycera* sp. The occurrence of these species is consistent with the soft bottom from which these fish were sampled. By comparison 15 different prey items were recognized in the diet of *R. globiceps*. Important food items included polychaetes, *E. cordatum*, ophiuroids and isopods. The composition of the diet is essentially similar to that of *R. holubi* although the importance of individual items is slightly different.

Table 1 Depth distribution of catches of *Rhabdosargus globiceps* and *Rhabdosargus holubi*

Species	Numbers per depth class					Total
	0–10 m	>10–20 m	>20–30 m	>30–40 m	>40–50 m	
Rhabdosargus globiceps	11	32	47	7	1	98
Rhabdosargus holubi	2	89	17	5	1	114

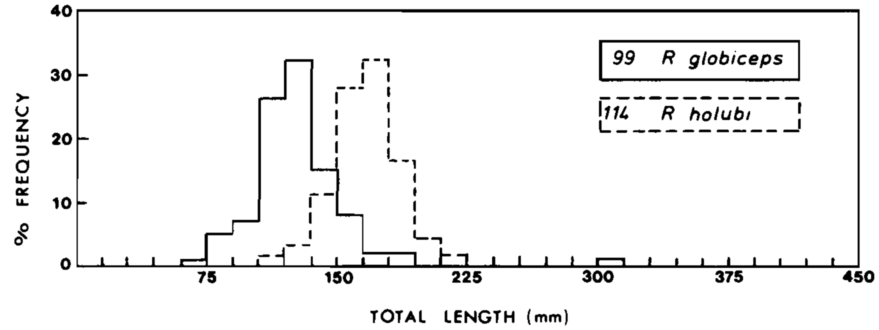

Figure 1 Length distribution of *Rhabdosargus holubi* and *R. globiceps* caught from the R.V. *Thomas B. Davie* during 1980.

Table 2 Analysis of feeding in *Rhabdosargus globiceps* (*N* = 87) and *Rhabdosargus holubi* (*N* = 112)

Food types	*R. globiceps*			*R. holubi*		
	% frequency of occurrence	Mean % Volume	Rank	% frequency of occurrence	Mean % Volume	Rank
Crustacea						
Isopods	10,4	34,5	358,8	4,5	78,4	349,7
Barnacles				0,9	25,0	22,3
Megalopa	1,2	50,0	60,0			
Amphipods	3,5	5,0	17,5	0,9	33,0	29,4
Tanaidacea	2,3	100,0	230,0			
Mysids				0,9	1,0	0,9
Anomura	1,2	5,0	6,0	6,3	47,4	296,4
Macrura	1,2	5,0	6,0			
Unidentified	20,7	55,0	1138,5	12,5	26,0	325,0
Echinodermata						
Ophiuroids	5,8	70,0	408,9	2,7	27,7	74,2
Echinoidea	2,3	2,0	4,6			
Echinocardium	20,7	75,1	1554,6	53,6	72,5	3882,0
Mollusca						
Gastropods	2,3	1,5	3,5	0,9	25,0	22,3
Pelecypods	11,5	31,3	358,8	3,6	21,0	74,9
Cephalopods	1,2	70,0	84,0	0,9	20,0	17,8
Polychaeta						
Chaetopteridae	31,0	74,0	2294,0	18,8	59,0	1106,3
Unidentified	9,1	44,4	404,0	2,7	4,7	12,5
Bryozoans				0,9	2,0	1,8
Fish remains				0,9	20,0	17,8
Plants						
Phaeophyceae	1,2	50,0	60,0	1,8	1,0	1,8
Chlorophyceae	2,3	25,0	57,5			
Sand	2,3	30,0	69,0	21,4	65,0	1392,9
Unidentified remains	28,7	85,7	2459,6	12,5	65,4	816,9
Empty	4,6			15,2		

Prey assemblages found in the diet show that both species feed predominantly on the epibenthos associated with a soft substrate, an observation which is confirmed by considerable amounts of sand found in the stomachs of both predators. Reef-dwelling prey are also represented. Blaber (1974) and Talbot (1955) emphasize the importance of bivalves in the food of *R. holubi* and *R. globiceps* larger than 200 mm. Bivalves were not a major contributer to the diet of the fish in this study possibly because the fish were smaller than 200 mm total length.

Combining the available literature on the feeding of these two species (Talbot 1955; Blaber 1974; Lasiak 1982 and this study), it is clear that although there is some variability in the contribution of individual components, the overall prey assemblages of both species are similar. The life-history and hence diet has two distinct phases. Firstly juveniles which are estuarine-dependent feed predominantly on diatoms associated with plant material. However, Wallace & van der Elst (1975) found that *R. holubi* was able to survive hypersaline conditions in Lake St Lucia in the absence of macrophytes. This suggests that the animals were able to change their diet accordingly. Secondly, the adult phase is essentially marine although the fish are present in estuaries in relatively small numbers. In both environments they are shown to be carnivorous, feeding on a variety of epibenthic prey with little or no algae present in the diet.

Intraspecific competition for food is therefore reduced by resource partitioning between adults and juveniles. Interspecific competition is probably reduced by spacial separation, *R. holubi* being dominant along the east coast and *R. globiceps* along the west coast, with an area of overlap between Port Elizabeth and Mossel Bay.

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Observations on the occurrence of the fish louse *Argulus japonicus* Thiele, 1900 in the western Transvaal

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Parasitological surveys of the fish in Bloemhof Dam and Lake Barberspan were carried out during January 1983 (summer). Bloemhof Dam (27°40'S/26°0'E) is situated in the western Transvaal and is the second largest man-made dam in the Transvaal, 23 035 ha in area when full but it was only 30% full in January 1983. Lake Barberspan (26°35'S/25°35'E) is a natural lake with no outlet and is supplied by overflow water from the Harts River, a tributary of the Vaal River. It covers an area of 2 000 ha when full and was 80% full during the time of this survey. Both water bodies are situated in the Vaal River drainage system.

Fish collections were made by using gill-nets with mesh sizes ranging from 30 to 180 mm. The collected fish were examined for the presence of fish lice, *Argulus* (Crustacea: Branchiura) directly after removal from the nets. If infected, the position of attachment to the host fish was recorded, the parasites counted and each examined fish weighed and measured. The fish lice were subsequently removed from host fish and fixed in hot 10% buffered neutral formalin.

The argulid found in both survey localities was identified as *Argulus japonicus* Thiele, 1900 (Figure 1) by using the key of Meehean (1940). The fish examined and the extent of infection is summarized in Table 1. All the fish in the dam as well as the lake, with the exception of the solitary specimen of *Cyprinus carpio* collected in Lake Barberspan, were infected by this parasite. Infection prevalence (Table 1) of all examined fish species from both survey localities was more than 90%, the only exception being *Clarias gariepinus* in Lake Barberspan with an infection prevalence of 78%.

The prevalence, mean intensity of infection, relative parasite density as well as number of parasites per fish in Bloemhof Dam were higher than in the lake.

For the purpose of analysing the data of attachment sites of *A. japonicus* on the host fish of the two localities, the percentage of total number of parasites per body region of each fish species was calculated and presented in Figure 2. The following body regions are distinguished: head; lateral sides of body; ventral surface and the different fins. From the results obtained it appears that *A. japonicus* is not specific to any attachment site on the body or fins of the fish examined from both study localities. It seems, however, that the head region