SHORT NOTE

Feeding habits of the temperate octocoral *Tripalea clavaria* (Studer, 1878) (Octocorallia, Gorgonaria, Anthothelidae), from sublittoral outcrops off Mar del Plata, Argentina

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Recent studies and reviews have shown the importance of passive suspension feeders in marine food webs, and noted the role that cnidarians (hydroid colonies and soft corals) play in shallow water ecosystems (1, 2).

Hydroids are assumed to be carnivorous, capturing zooplankton prey by means of nematocysts of the tentacles, although protozoans, diatoms and organic detritus can be important for some hydroid species. In contrast, gorgonians ingest and assimilate particulate and dissolved organic matter (3, 4), while other species are phytoplankton feeders (5). Capture of zooplanktonic prey has been documented in few studies (3, 6), and some researchers have postulated that the ability of these organisms to capture vagile prey is low, based on low densities of nematocysts on the tentacles (3, 4, 7).

Gorgonians are quantitatively important in certain benthic communities, and provide a good example of the role of suspension feeders in littoral food chains and of the relationship between plankton and benthos in temperate seas (8).

This study analyzed feeding habits, throughout the year, of *Tripalea clavaria*, an unbranched azooxanthellate octocoral widely distributed in the SW Atlantic Ocean (9, 10, 11). It is abundant, and a dominant component in rocky outcrops off Mar del Plata city (12). We compared the results with data on other anthozoans.

Collections and underwater observations were carried out during SCUBA dives at Banco del Medio (38º 10´S - 57º 28´W), a quartzitic rocky outcrop 18-20 m depth. Monthly samples were obtained from November 2000 to October 2001, except in July owing to persistent bad weather conditions. The gastral contents of 1072 polyps belonging to 117 colonies were examined in the laboratory under a microscope. Food items were identified to the lowest taxonomic level possible. Trophic parameters (vacuity index, frequency index of prey and percentage of prey) were calculated as in Acuña & Zamponi (13).

Table 1 lists all prey items found, ranging from small diatoms 60-80 µm in diameter to crustacean and echinoderm larvae up to 72.5 µm. The number of prey items polyp^{-1} was mostly one or two. Table 2 shows the percentage of empty gastric cavities (vacuity index), indicating that most colonies fed more actively in spring and summer in coincidence with high prey abundance. Frequency indices of prey (Table 3) show that larvae of the mytilid *Mytilus edulis platensis* d'Orbigny, 1846 were the main food item, while invertebrate eggs were a minor component except in spring when their importance as food was similar to mytilid larvae. Other food items were occasional prey only.

T. clavaria is one of a few zooplanktivore gorgonians that prey on a large variety of organisms (Table 1), mainly

TABLE 1

Number (N) total of the different prey – item and their relative abundance (%), found in the diet of *T. clavaria* in each season.* Presence, can not be identified individuals.

Item	Spring		Summer		Fall		Winter	
	N	%	N	%	N	%	N	%
Mytilus edulis platensis larvae	24	45.3	78	93.4	28	70.0	22	68.7
nauplii	1	1.9	-	-	1	2.5	1	3.1
crustacean larvae (unidentified)	-	-	-	-	1	2.5	1	3.1
Gammaridea	-	-	-	-	-	-	3	9.4
Copepoda	-	-	1	1.2	2	5.0	-	-
Ostracoda	2	3.8	-	-	-	-	-	-
crustaceans (unidentified)	1	1.9	-	-	-	-	-	-
invertebrate eggs	23	43.4	3	3.6	6	15.0	2	6.2
Nematoda	1	1.9	1	1.2	-	-	-	-
echinoderm larvae	-	-	-	-	1	2.5	-	-
Tardigrada	1	1.9	-	-	1	2.5	1	3.1
filamentous algae	*	-	*	-	-	-	-	-
diatoms	-	-	-	-	-	-	2	6.2
Total	53	100.0	83	100.0	40	100.0	32	100.0

TABLE 2

Percentage of empty gastric cavities (vacuity index).

Season	examined colonies	examined polyp	polyps with content	Vacuity index (V)
spring	24	199	42	78.89
summer	30	269	65	75.84
fall	32	305	34	85.57
winter	21	199	27	86.43

TABLE 3

Frequency index (f) and percentage of prey (Cn) of *Tripalea clavaria*.
f = n/N. n : number of gastral cavities containing a certain prey, N : the total number of gastral cavities examined. Cn= n'.100/Np. n' : total number of individuals of a certain prey, Np : the total number of prey items. * Presence, can not be identified in individuals.

Item	n	N	f	n'	Np	Cn	Result
Mytilus edulis platensis larvae	124	1072	0.12	159	222	71.62	Preferential
nauplii	4	1072	0.005	6	222	2.70	Occasional
crustacean larvae (unidentified)	2	1072	0.002	2	222	0.90	Occasional
Gammaridea	3	1072	0.003	3	222	1.35	Occasional
Copepoda	3	1072	0.003	3	222	1.35	Occasional
Ostracoda	2	1072	0.002	2	222	0.90	Occasional
crustaceans (unidentified)	2	1072	0.002	2	222	0.90	Occasional
invertebrate eggs	31	1072	0.03	35	222	15.76	Minor
Nematoda	2	1072	0.002	2	222	0.90	Occasional
echinoderm larvae	1	1072	0.001	1	222	0.45	Occasional
Tardigrada	3	1072	0.003	3	222	1.35	Occasional
filamentous algae	2	1072	0.002	*	*	*	*
diatoms	2	1072	0.002	3	222	1.35	Occasional

on larvae of *M. edulis platensis* with a 37.5-434.3 µm size range. Similar diets were observed for the gorgonian *Paramuricea clavata* (Risso, 1826), which regularly feeds on zooplanktonic prey of small size (100-200 µm) and low motility, such as nauplii and eggs (COMA et al*.,* 1994). Some species of alcyonaceans with polyps very similar in size to those of the majority of gorgonians (e.g. *Alcyonium siderium* Verrill, 1922), capture mostly small (256-345 µm) prey items of low motility, such as foraminiferans and invertebrate larvae (14).

Despite low density of tentacular nematocysts (3, 4, 7), *T. clavaria* is able to ingest many vagile organisms, implying a different mechanism for food capture, related to the transport of potential food sources by the water current ("aerosol filtration theory") (2). These results furnish evidence that gorgonians, like other benthic zooplanktivores, may play a role in the flow of energy between the plankton and the benthos (8). Further studies should be conducted to determine the extent and scale of the feeding strategies of gorgonians and other benthic zooplanktivores.

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