MUSSEL BEDS OF *Perumytilus purpuratus* (LAMARCK, 1819) (BIVALVIA: MYTILIDAE): A COMPLEX OF MICROHABITATS FOR POLYCHAETES IN THE CENTRAL COAST OF CHILE.

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Introduction

Perumytilus purpuratus is widely distributed throughout the intertidal rocky shores in the south-eastern Pacific coast of South-America, to Cape Horn and round into the south Atlantic (Argentina: 41º08´ S and 63º10´ W) (1). This mytilid constitutes an important item in the trophic structure of the rocky coast (2), comprising an important part of the diet of *Octopus mimus* and *Larus dominicanus.* On the other hand, like other gregarious bivalve mollusks, this mussel also provides a great number of microhabitats for an important variety of invertebrates including the polychaetes (3). This study presents a quantitative analysis of the abundance and coexistence in a assemblage of polychaetes associated with mussel beds in a rocky intertidal habitat on the Pacific coast of Chile.

Methodology and study area

In order to identify the polychaete community associated with *P. purpuratus*, a seasonal field study was conducted (summer and winter) on a beach in Las Cruces, on the central coast of Chile (33º31'S, 71º38'W) (Fig. 1). Sampling was done at four stations of the intertidal zone considering zones that were exposed and protected from wave action. At each station two samples were taken from two levels: the level of *Jehlius cirratus* (Cirripedia) and the level of *Lessonia nigrescens* (Algae) for each season (summer and winter). Using a 0.04 m^{-2} quadrat (Fig. 2). All the mussels and associated organisms within the quadrat, were removed using a knife and spatula. The organisms were placed in previously labelled plastic bags. In the laboratory the polychaetes were filter with a 500µm mesh, and were fixed in a solution of 10% formaldehyde. Al organisms were identified to the species level and counted. We evaluated significant differences using two-ways analysis of variance (ANOVA), considering levels (Cirripedia and Algae) and seasonal abundances, data transformed to $Log_2(n+1)$

Fig. 1.- Geographic location of the study area

Fig. 2.- Square over *Perumytilus purpuratus* beds in intertidal rocky shores at Las Cruces, Chile.

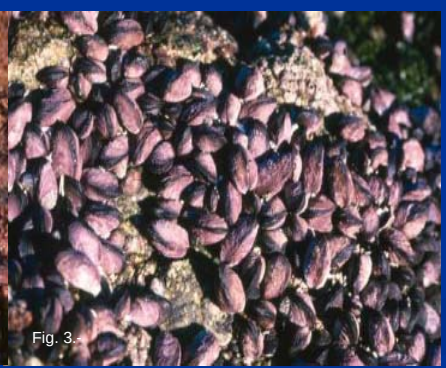

Fig. 3.- Perumytilus purpuratus beds in intertidal rocky shores at Las Cruces, Chile.

Results and discussion

We analyzed 2523 polychaetes, and 29 species were identified belonging to 14 families (Table 1). The best represented families were Nereididae and Terebellidae, each with five species. *Boccardia tricuspa* was one of the most abundant species during the summer, representing the 32.6% of the total collected for this period, however this species was absent during the winter, when *Pseudonereis gallapagensis* represented 33.9% of total species.

Significant differences were found (two-ways ANOVA, 4.909*, p<0.05) between seasonal abundances, but not among levels; with greater abundance and species richness during the summer with 3025 ind.m-2 and 24 species. On the other hand, we found that the species richness and abundance were greater in the level of *Lessonia nigrescens* (seaweed) that in the one of *Jehlius cirratus* (Cirripedia) , agreeing with Suchanek (1980). The diversity and evenness were similar for both periods.

Species richness associated to *P. purpuratus* was greater to the recorded by Tokeshi & Romero (2000), who identified 12 polychaete species from Peru, Thiel & Ulrich (2002)(7) with 15 species Chilean coast from Arica to Chiloé, and Prado & Castilla (2006), with 17 species from Punta de Tralca Bay-Chile. The importance of the bivalve beds as true ecological islands or habitat structural complexity has been referred in previous studies about polychaetes associated to *Pinctada imbricata, Spondylus americanus, Spondylus princeps* (9), *Isognomon alatus, Crassostrea rhizophora, Perna viridis* (3, 4, 5, 6) and *Semimytilus algosus*, indicating that the presence of seaweed and interstitial spaces, between the bivalves that live in dense colonies, allow to the sand accumulation increasing therefore the availability of microhabitats that are colonized by numerous marine invertebrates that find refuge and protection of the environmental conditions, reducing the desiccation during low tides and increases protection against the mechanical effects of waves, between these organisms we found the polychaetes. Tokeshi (1995)(8) indicated that the mussel beds on rocky substrates are the main habitat for many “infaunal” polychaetes species. Nevertheless, it referred that the dominant species are the highly-mobile ones and that the sedentary ones were poorly represented, whereas in this study, the abundance of sedentary species was greater than the mobile ones, during the summer, and similar during the winter. Our results indicate that the community of polychaetes tends to be reduced in winter, agreeing with the reproductive cycle of many subtropical species. ,

Table 1.- Abundance of polychaetes species associated to *P. purpuratus*

Especie	Summer	Winter
Phragmatopoma moerchi Kinberg, 1867	38	25
Flabelligeridae sp. A	13	13
Boccardia polybranchia (Haswell, 1885)	1213	575
Boccardia tricuspa	7900	
Cirratulus sp.	5763	2125
Dodecaceria sp.	13	
Spiochaetopterus sp.		13
Streblosoma comatus	300	25
Nicolea chilensis	63	313
Polycirrus hamiltoni		350
Polycirrus sp.		13
Terebellidae sp.	38	
Chone sp.		238
Hyboscolex sp.	25	
Naineris dendritica chilensis	350	150
Paleanotus chrysolepis	88	88
Arabella cincta	413	88
Eumidia sanguinea	275	200
Phyllodoce (Anaitides) sp.	38	25
Polynoidae sp. A	1225	
Halosydna sp.		613
Harmothoe sp.	13	
Pseudonereis gallapagensis	4625	2488
Perinereis falklandica	1388	
Pseudonereis variegata	150	
Nereis calaona	75	
Nereis grubei	125	
Nereis sp. A	38	
Nereididae sp. A	38	

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