**Boccardia** sp. (Polychaete: Spionidae) presence in *Crassostrea gigas* [Thunberg, 1873] oysters reared in the mid coast of the Mexican Pacific

Presencia de *Boccardia* sp. (Polychaete: Spionidae) en el ostión *Crassostrea gigas* [Thunberg, 1873] cultivado en la costa media del Pacífico mexicano

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**Abstract**

Several studies on the culture of the Pacific oyster *Crassostrea gigas* have been carried out since 1997 in the lagoon of Barra de Navidad (Jalisco, México). The presence of mud blisters in the oyster inner valves caused by shell-boring polychaetes has represented one of the main culture problems. *Boccardia* sp. (Polychaete: Spionidae) was identified from the mud blisters of 60 oysters. Despite the commercial significance of this organism to the oyster culture, there is a lack of information about its impact over the Mexican shellfish industry. This paper represents the first report on the presence of this worm in an oyster culture facility located at the mid coast of the Mexican Pacific.

**Keywords**


**Resumen**

Desde 1997 se han realizado varios estudios acerca del cultivo del ostión del Pacífico, *Crassostrea gigas*, en la Laguna de Barra de Navidad (Jalisco, México). La presencia de ampollas de lodo en las valvas internas del ostión causadas por gusanos barrenadores de la concha, ha representado uno de los principales problemas en el cultivo. *Boccardia* sp. (Polychaete: Spionidae) fue identificado de una muestra de 60 ostiones estudiados. A pesar del efecto de este gusano en el cultivo de ostión, se carece de información sobre su impacto en la industria ostrícola mexicana. El presente trabajo representa un primer reporte sobre la ocurrencia de este poliqueto en los cultivos de C. gigas que se localizan en la costa medía del Pacífico mexicano.

**Palabras clave**

Gusanos barrenadores de concha, *Boccardia* sp., ostión del Pacífico, Jalisco, México.
The polychaete worms represent one of the largest infaunal communities found in benthic environments world-wide. Some species are able to bore into and live inside living and non-living substrates of calcareous nature, including mollusc shells [Blake, 1996; Martin and Britayev, 1998]. Although these organisms do not feed directly from the host, they are considered a nuisance for shellfish industry due to the damage produced to several oyster, mussel, scallop and pearl oyster species. Irritation produced by the worm penetration into the inner shell layers leads to the secretion of nacreous and chitinous material, which isolates it into a “mud blister” [Glasby et al., 2000]. It is believed that the energy expenditure that results from the nacreous secretion leads to a poor growth and meat quality, increasing morbidity and decreasing the ability to accumulate nutritional reserves [Wargo and Ford, 1993]. For bivalves of commercial value, the disgusting appearance of these blisters makes the molluscs less attractive to potential consumers, therefore lowering their market value [Martin and Britayev, 1998].

The Pacific oyster Crassostrea gigas [Thunberg, 1873] dominates the market as the major mollusc species in the world to be commercially cultured. In México, the Pacific states of Baja California, Baja California Sur, Sonora and Sinaloa are the major oyster producers, and the most common technologies used for production are suspension systems, floating rafts, racks and baskets [Mazón, 1996]. Oyster seed is produced in hatcheries located at the north of México, or imported from other countries. Several attempts have been made to encourage oyster culture in the Pacific state of Jalisco, México. Since 1997, the Laboratorio de Ciencias Marinas (L.C.M.) has developed several experiments with C. gigas in the lagoon of Barra de Navidad, Jalisco, in order to evaluate its farming in this region [García-Ulloa et al., 1998; Gallo-García et al., 2001]. However, several significant problems, such as the growing presence of mud blisters related to boring worms, could restrict further commercial cultures. As a part of a general project, the present work was carried out to identify the burrowing worms that affect the L.C.M. oyster stock.

The study was developed with 60 oysters, randomly collected from the culture stock, of an average height of 2.75 ± 0.73 cm and a mean wet weight of 3.55 ± 3.45 g. Bivalves were grown from spat in modules of stack trays (Nestier boxes) suspended with ropes, at a 1.5 m depth, from a floating raft placed in the lagoon. Oysters were sacrificed and polychaetes were collected directly from the mud blisters located on the inner valves surface. To avoid worms dying during collection, valves were kept into containers filled with salt water taken from the lagoon. Nacre from the blister perimeter was carefully broken with a common needle, and salt water was applied by dropping, in order to clear off mud and allow internal inspection. All worms were manipulated, narcotised, fixed and preserved with the techniques proposed by Salazar et al. [1988].
From 20 polychaetes isolated from the total oyster sample, three specimens were identified as spionid polychaete worms (Figure 1).

Figure 1. Shell-boring polychaete worm (Family Spionidae, Grube, 1850), found in the oyster *C. gigas* cultured at the mid coast of the Mexican Pacific (50X).

Taxonomical identification to the genus *Boccardia* [Carazzi, 1895] was carried out by means of keys to family and genera published by Salazar *et al.* [1988]. The rest of the polychaetes belonged to other families, and it is believed that they could be opportunistic species. *Boccardia* is member of the family Spionidae and can be found in almost any benthic marine soft bottom sample taken from anywhere in the world [Fauchald, 1977]. A review of symbiotic polychaetes given by Martin and Britayev [1998], showed a list of polydorids related to *C. gigas*. Although, *Boccardia* was not cited as a boring agent for *C. gigas* in their work, four species of this genus (*B. accus*, *B. chilensis*, *B. knoxi* and *B. outakouica*) were recorded as damaging oyster cultures in New Zealand (Handley, 1998).

Despite the commercial significance of these organisms to the oyster farming, there is a lack of information about its presence in México. Cáceres *et al.* [1998], reported *Polydora* sp. infestation in Baja California, which is one of the major producers of *C. gigas* in the country. We should point out that although information about polychaetes has grown enormously in recent years, further research has to be done in order to assess the economical impact of these organisms over the growing Mexican shellfish
industry. This paper represents the first report on the presence of *Boccardia* sp. in an oyster culture facility located at the mid coast of the Mexican Pacific.

**Literature**


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