

Short Communication

THERE EXISTS A LARGE CARCINOLOGICAL BIODIVERSITY DIFFERENCE BETWEEN THE EASTERN (CIMAR 7) AND WESTERN FJORDS (CIMAR 8) AT THE SOUTHERN OF CHILE?

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Abstract

C.I.M.A.R. program during the steps 7 and 8 of allow us to test the general hypothesis “that the faunal Biodiversity is higher in the area exposed to the ocean than in enclosed areas” in this particular case, the first introduce sea water through the fjords and the last area receipt huge amounts of continental waters from very strong rivers and ice melting that results large areas with low salinities. Our goal was to know if it is true in this particular area using the existing Biodiversity of Stomatopoda and Decapoda in both areas, western and eastern southern fjords of Chile.

The results show us that the mentioned hypothesis, at least for the mentioned area, is not valid below the 50 m because the salinity is similar to the open ocean due to the stratification process and the carcinological biodiversity (families and species) are similar in both sides sampled (being the situation of the Molluscs are very similar, C. Osorio. com. per.)

Keywords: Biodiversity, Decapods, Fjords.

Introduction

The huge and fragmented southern area of Chile is highly productive accordingly the results of the planktonic studies carried out by Antezana 1999, Palma & Aravena, 2001. The main components of the zooplankton are eggs and different stages of larvae (Mujica & Medina, 2000) mainly of pelagic and benthic Decapod and Stomatopoda (Retamal & Gorny, 2001; Retamal, 2007 a and b,) these planktonic and benthic components are the main food of the pelagic and benthic fauna of the fjords.

The western fjords in the sampled area (FIG.1) are very raft, enclosed, with huge quantities of continental waters and ice melting, being the eastern fjords (FIG 2)

conected with the open sea through a large numbers of narrow channels a large area for testing the general H1:

H1: “The marine animals are most abundant and its Biodiversity higher in marine waters that in brackish waters with low salinity”

General goal:

To know the Biodiversity of Stomatopoda and Decapoda existing in both sides of the fjords in the same area between the mouth of theGuafo and Elephants stream .

Specific goals.

To analyze the carcinological Biodiversity of the mentioned taxa in the eastern and western fjords.

To analyze the general water characteristics in both sides of the fjords.

Material and Methods

Oceanographic and biological studies in the eastern and western sides of the fjords of the XI Region were carried out during the cruises C.I.M.A.R. 7 and 8, respectively, between the Guafo’s mouth and Elephants stream, in order to established if the stations sampled in the western fjords in a very deep and closed coast, with large quantities of ice melting and huge continental waters: i.e. Baker river, that shows low salinity,compared with samples located in the eastern fjords opened to the Pacific, large different oceanographic conditions are present with high salinities that could allow the existance of a higher biodiversity, in this particular case Decapod and Stomatopa.

The samples were collected using an Agassiz trawl (0,1 m²) on board of the R/V “Vidal Gormaz” between the mouth of the Guafo gulf and the stream Elephants, between 58 and 530 m.(fig. 1 y 2) The benthic samples allow us to obtained samples of Stomatopoda and Decapoda and latter its identification to specific level,at the laboratory of Carcinology of the University of Concepción.

Results

The general characteristics of the western fjords are: large depths mainly close to the glaciers, huge quantities of freshwaters run off from the ice melting and from the strong rivers such as the Aysén, in the opposite side the

eastern fjords are exposed to the Pacific and received lower quantities of freshwater existing also a narrow throat called Meninea that avoid that waters flows freely to and from the estuarine system. (Guzmán & Silva, 2004). The sampled areas that exhibit the higher biodiversity are those situated in the Guafo gulf, area opened to the Pacific and other located in the stream Pelluche being the areas that receipt the large amount of ice melting from the eastern fjords and huge amount of freshwater from the Aysen River.

The analysis of Biodiversity, according our samples, is very similar so at the eastern fjords we identified and 1 family of Stomatopoda with one species and 16 families of Decapods (15 benthic families and one mesopelagic family) with 25 species (Table I) and the western fjords with 1 family of Stomatopoda with one species and 16 families of Decapod with 26 species. (Table II) .

TABLE I. Families of the eastern fjords

Squillidae, Sergestidae, Pasiphaeidae, Campylonotidae, Hippolytidae, Pandalidae, Lithodidae, Paguridae, Muninidade, Munidopsidae, Porcellanidae, Majidae, Cancridae, Atelecyclidae, Xanthidae, Belliidae, Pinnotheridae

TABLE II. Families of the western fjords

Squillidae, Campylonotidae, Pandalidae, Alpheidae, Hippolytidae, Munididae, Paguridae, Lithodidae, Callianassidae, Hymenosomatidae, Majidae, Cancridae, Xanthidae, Bellioidae, Atelecyclidae, Pinnotheridae, Grapsidae.

Almost all the species identified were known also its bathymetric and latitudinal range are between the boundaries known but these are the first records of Decapod collected in the western area of these fjords opened to the Pacific

The presence of species in both areas closed and exposed to the Pacific, the first with large influence of the huge amount of freshwaters on the bottom, where the adults can be found, could be explained according the salinity values obtained in a parallel study carried out by the Catholic University of Valparaíso, Chile (C. Calvette pers. com), the low salinities affect just the upper layers, up to 50 m of the water column because a stratification is produced in the water column, so the marine salinity on the benthic organisms, in general, must be high.

The patches distribution of the adults of the taxa Decapoda and Stomatopod could be explained by the detritus concentrations, where the decapods feed, because the high and low tides do not affect in the same way all the sampled stations also observed through a R.O.V. (Remote Operated Vehicle), some of them were naked of detritus, epifauna and sediments, mainly at the head of the fjords opened to the Pacific Ocean.

TABLE I. Order, families and species into the eastern fjords of the X Region

TABLA II. Order, families and species of the western fjords of the X Region)

Acknowledgments

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Figures

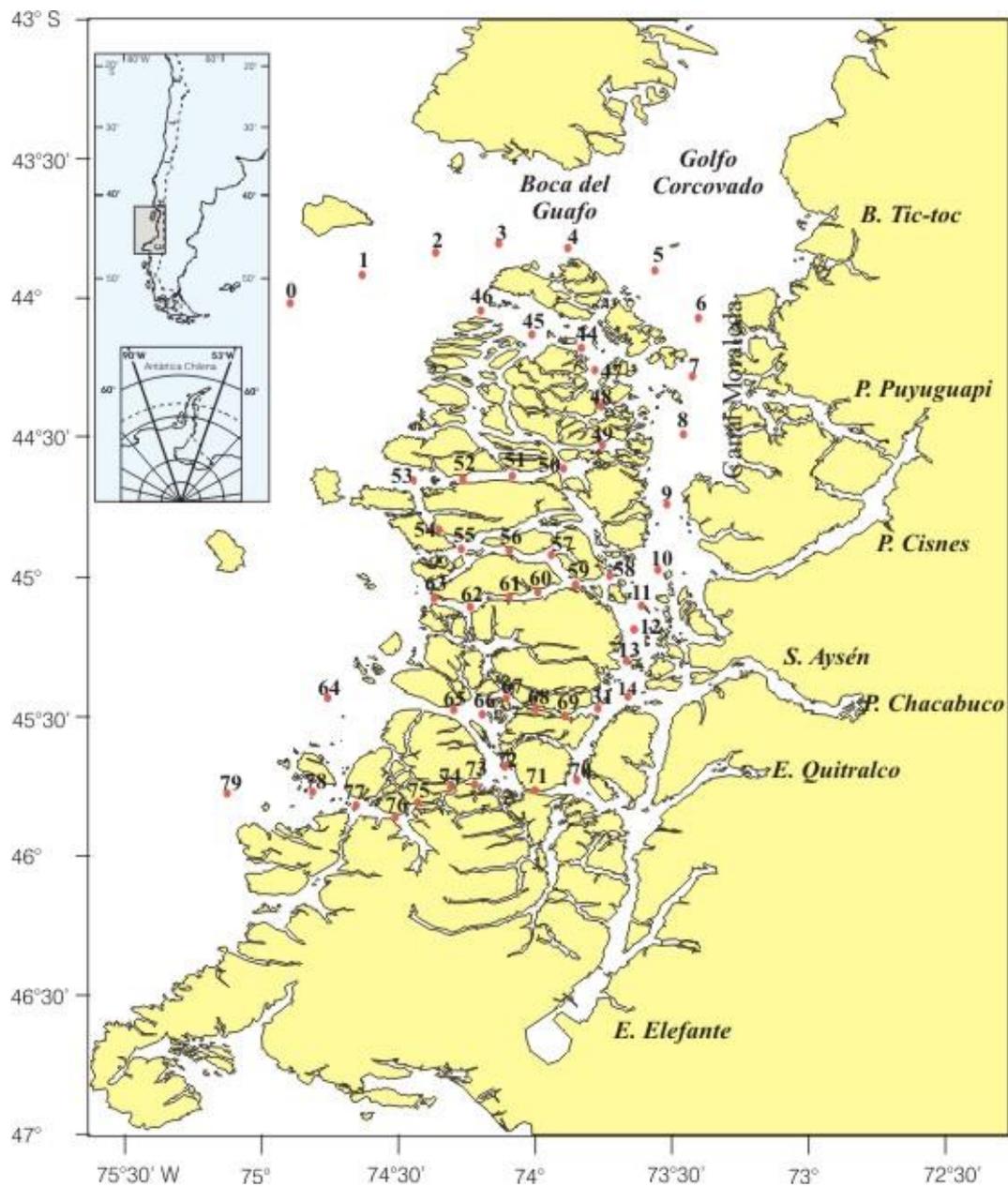


Figure 1: Sampled stations (red points) on the western fjords, between Guafo and Elefantas stream

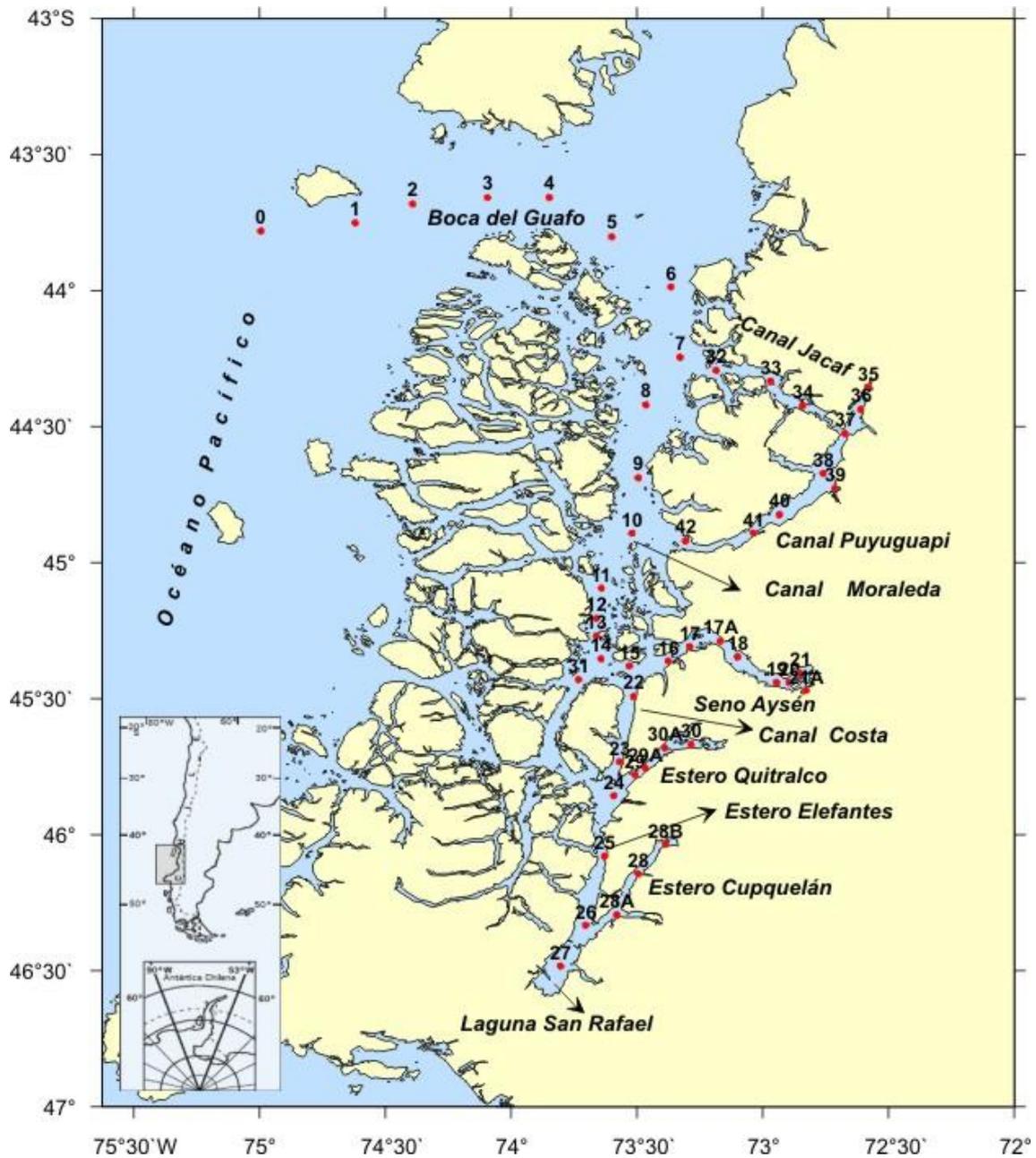


Figure 2: Sampled stations (red points) on the eastern fjords, between Guafo and Elefantes stream.