

Sclerochronological study of the Chilean bivalve *Eurhomalea rufa*

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A living specimen of *E. rufa* has been sampled at the end of November 2005 at Hornitos (Antofagasta, Chile) in the aim to learn about its growth pattern at high resolution and the possibility to use its shell as recorder of environmental parameters. To determine Rhythmicity and daily growth variations of *E. rufa* a sclerochronological study has been realised by observation of thin sections under optical microscope. A temporal framework for these species has been proposed via sclerochronological observations. Results show a monthly growth rhythm of 42 increments/month for this species and support the hypothesis that its daily growth rhythm is linked to the tidal range periodicity. During a monthly period the organism seems to form one increment at the lower low water of the semi diurnal cycle (28 lines/month) and also one increment at the higher low water of the diurnal cycle (14 lines/month), thus accumulating 42 increments a month. Next step was the study of the daily increment growth thickness. Realised on a period of 15 month, the mean thickness of the increments is $42 \pm 22 \mu\text{m}$. These growth variations have been compared with a temperature recorder (Cendhoc, Antofagasta). The growth speed of the shell is correlated with daily sea temperature ($R^2 = 0.65$). Moreover isotopic analysis on a period of 15 month on the same shell shows a R^2 correlation of 0.19 between $\delta^{18}\text{O}$ and sea temperature. Thus, *Eurhomalea rufa* could be used as direct recorder of temperature by the study of its increment thickness.

Key words: bivalve, sclerochronology, environmental recorder, stable isotopes, Chile

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