

A. Box, S. Deudero, A. Blanco, A. M. Grau, F. Riera, (2010). [Differences in \$\delta^{13}\text{C}\$ and \$\delta^{15}\text{N}\$ stable isotopes in the pearly razorfish *Xyrichtys novacula* related to the sex, location and spawning period](#)

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Abstract: In the present study, *Xyrichtys novacula* (Labridae) were sampled at five locations around the islands of Ibiza and Formentera (western Mediterranean Sea). Isotopic signatures of $\delta^{13}\text{C}$, $\delta^{15}\text{N}$ and the C:N ratio were analysed in relation to locality, sex and size differences. $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ partitioning was also studied in the reproductive spawning period. There were significant differences in the $\delta^{13}\text{C}$ signature between localities for both sexes, but not for $\delta^{15}\text{N}$. Sex differences were also found with a mean $\pm$ s.e. value of $-17.38 \pm 0.06\text{‰}$ $\delta^{13}\text{C}$ and $8.36 \pm 0.05\text{‰}$ $\delta^{15}\text{N}$ for females and $-17.17 \pm 0.07\text{‰}$ $\delta^{13}\text{C}$ and $8.80 \pm 0.06\text{‰}$ $\delta^{15}\text{N}$ for males. Increasing total length in both sexes was positively correlated with $\delta^{15}\text{N}$ enrichment and a significant positive linear regression was established for both variables. During the reproductive spawning period, there were changes in $\delta^{13}\text{C}$ fractioning with enrichment in postspawning females and males (with respect to prespawning and spawning periods) and $\delta^{15}\text{N}$ impoverishment in postspawning females (with respect to prespawning and spawning periods). *Xyrichtys novacula* uses local food sources, as confirmed by $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$, and females and males use different food sources, thus avoiding intraspecific competition. This was confirmed by $\delta^{15}\text{N}$ enrichment as size increased. Spawning leads to special requirements for gonad maturation, which is reflected in the isotopic signatures for both sexes.

Keywords: isotopic signature, ontogenic changes, reproduction, western Mediterranean