

## Influencia de la variabilidad estacional de las condiciones oceanográficas en la ecología trófica larvaria de la merluza europea *Merluccius merluccius* a través del análisis de isótopos estables en aguas del NO de Galicia

### *Seasonal variability of oceanographic conditions off NW Galician waters influencing the early life trophic ecology of European hake *Merluccius merluccius* by stable isotope analysis*

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Stable isotopes of nitrogen ( $^{15}\text{N}$ ) and carbón ( $^{13}\text{C}$ ) have been used as tracers for analyzing the trophic ecology of European hake larvae collected during the winter and summer of 2012 off NW Galicia. The sampling times correspond to periods of high and low hake spawning activity, respectively. Trophic enrichment was analyzed using as baseline two different plankton size fractions, corresponding to micro- (55-200 $\mu\text{m}$ ) and mesozooplankton (>200 $\mu\text{m}$ ). During both seasons, the  $^{15}\text{N}$  signatures of hake larvae showed higher values than the zooplankton fractions. The first survey carried out in late February was characterized by a preceding marked upwelling, low geostrophic velocities in the hydrographic circulation and an intense mixing of the water column. This environmental scenario is hypothesizing that originated a great nutrient availability for primary consumers showed its effect in the low  $^{15}\text{N}$  values observed in plankton and hake larvae. During July, the environmental setting corresponded to period where the water column was stratified, an anticyclonic gyre was formed in the center of the study area that concentrated particles and weak upwelling conditions and strong geostrophic currents were found. This scenario was characterized hypothetically by low nutrient availability in which production is mainly based on regenerated nutrients which would explain the higher  $^{15}\text{N}$  values found during this period. On the other hand, the greater  $^{13}\text{C}$  values observed in summer in comparison to winter suggest differences in the energetic sources of carbon (Fig. 1). The discussion of results is centered in how oceanographic variability conditions signatures of stable isotope fractionation in the early life trophic food web influencing the variable trophic pathways of larval hake subject to contrasting environmental conditions, thereby affecting their larval nutritional condition as estimated by RNA/DNA ratios and the Fulton index. This study was financed by the projects: CRAMER-CTM2010-21856-CO3 y ECOPREGA-10MMA602021PR

**Palabras clave:** Ecología trófica, oceanografía, merluza, isótopos estables, *M. merluccius*

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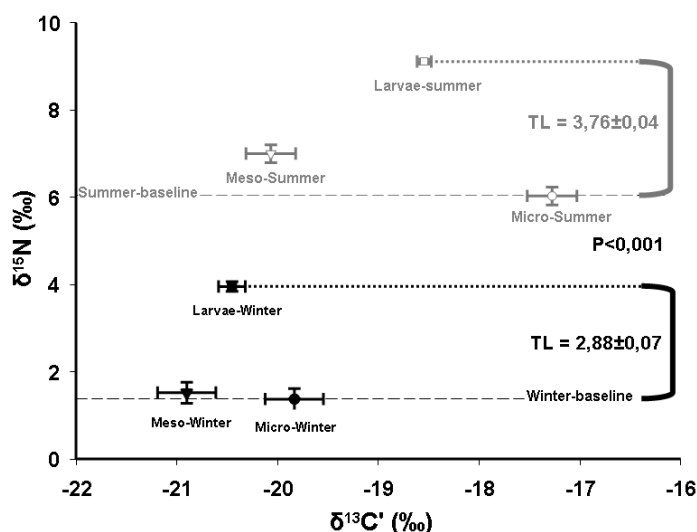


Figure 1.-  $^{13}\text{C}$  vs  $^{15}\text{N}$  (‰) (mean  $\pm$  SEM) of the micro- and meso-zooplankton size fractions, as well as, for winter and summer sampled hake larvae the off NW Galician waters.