

## Transferencia materna de la huella isotópica ( $^{15}\text{N}$ , $^{13}\text{C}$ ) y su evolución durante el desarrollo ontogénico de las larvas de atún rojo (*Thunnus thynnus*) en cultivo experimental

### Maternal transference of isotopic signature ( $^{15}\text{N}$ , $^{13}\text{C}$ ) and its evolution during ontogenic development of reared bluefin larvae (*Thunnus thynnus*)

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An experimental rearing experiment of bluefin tuna larvae was undertaken in the Spanish Oceanographic Institution (IEO) based in the aquaculture plant of Murcia that started June 24, 2013 when caged bluefin spawned naturally. Bluefin tuna eggs were transferred to rearing tanks and where hatched larvae were sampled regularly every 2 days till 15dph. After this period, larvae were sampled every 3 days till 37dph (Temperature range 22-26°C). The standard length (SL) of larvae were measured after frozen and conserved deep-frozen in a -80°C for undertaking posterior nitrogen (N) and carbon (C) stable isotope analysis. The results of the experiment showed very high initial values of  $^{15}\text{N}$  and  $^{13}\text{C}$  in the eggs and lecithotrophic larvae till 4dph, explaining a transgenerational transference of the heavy isotopes through maternal inheritance. After this time lapse, the stable isotope values declined progressively till 12dph and maintained this low level till 15dph. This period coincides with the notochord post-flexion development established at a mean SL of 6,7mm ( $\pm 0,57$ ) measured. Coinciding with this ontogenic stage, larvae were started to be fed with newly hatched larvae of aquaculture-bred gilt-head seabream whose  $^{15}\text{N}$  and  $^{13}\text{C}$  values were consequently enriched. This diet produced an increasing trend in the  $^{15}\text{N}$  and  $^{13}\text{C}$  values till 24dph reaching similar values of the initial developmental times. The results show that pre-flexion larvae of bluefin have high  $^{15}\text{N}$  and  $^{13}\text{C}$  signature as a result of their maternal transference. A similar decreasing pattern was also observed in field-based research on bluefin larvae which justified the need to carry out this rearing experiment. The data acquired in this experiment allows to formulate an estimate of the maternal  $^{15}\text{N}$  and  $^{13}\text{C}$  signatures from larvae between 3-6mm SL which opens research horizons in the estimation of maternal trophic qualities that may relate to larval growth and condition potentials. This work was financed by the project ATAME CTM2011-29525-C04-02.

Key words: bluefin larvae, trophic ecology, stable isotopes, maternal transference.

Palabras clave: larva atún rojo, ecología trófica, isótopos estables, transferencia materna.

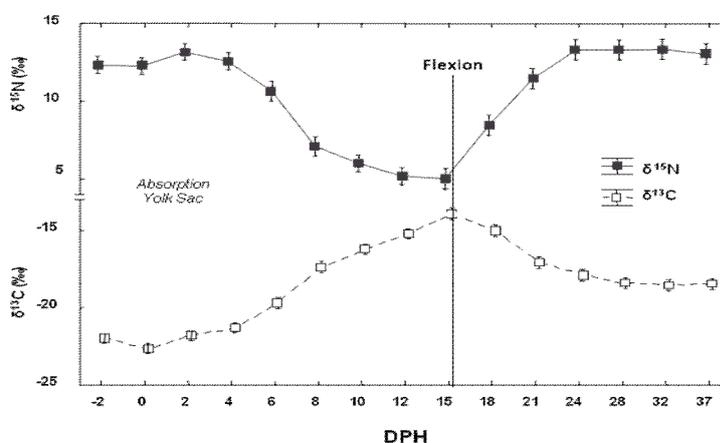


Fig1. Variation of Isotopic signature  $^{15}\text{N}$ ,  $^{13}\text{C}$  (mean  $\pm$ SE) in bluefin tuna from egg till 37 days post hatch. Variación de la huella isotópica del  $^{15}\text{N}$ ,  $^{13}\text{C}$  (mean  $\pm$ SE) en atún rojo, desde el huevo hasta 37 días de vida