

{rokbox title=| Illustrative map showing the distribution area of *M. dypterygia* (symbol: striped fish) and *M. macrophthalma* :: Image:
 Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-can-life-history-serrat-2022-thumb-et-al.jpg|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-can-life-history-serrat-2022-et-al.jpg{/rokbox}

Alba Serrat and Marta Muñoz, 2022. [Can the Life History Trait Divergence of Two Extremes of a Cold-Water Genus Distribution Offer Evidence for Their Vulnerability to Sea Warming?](#) *Fishes* 2022.7(4).143.

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Abstract: Cold- and deep-water species such as *Molva* species show low resilience to anthropogenic pressures, and they become particularly vulnerable at the warm edges of their distribution. In this study, the poorly documented Mediterranean ling (*Molva macrophthalma*) population from the northwestern Mediterranean Sea was analysed. This area is considered a cul-de-sac in a sea-warming hotspot, where *M. macrophthalma* shows a low population health status and is experiencing a climate-related reduction in abundance. Several life-history traits (length at maturity, reproductive cycle, fecundity style, oocyte recruitment pattern, and breeding strategy) are here described for the first time to evaluate the reproductive performance (oocyte diameter and production) in relation to the fish condition status (the HSI and relative condition index). Additionally, the results are compared with those of a population of a similar species, the blue ling (*Molva dypterygia*), inhabiting the cool edge of its distribution, hypothesised to have a higher condition status. Our results indicate that *M. macrophthalma* is a capital breeder with restricted secondary growth recruitment and group-synchronous oocyte development. In relative terms, the stressed southern *M. macrophthalma* exhibited a worse condition, a lower investment in reproduction, a smaller size at maturity, larger but fewer primary growth oocytes, and a smaller size-standardized production of secondary growth oocytes than the northern *M. dypterygia* . Significant differences in the secondary growth oocyte recruitment were also found. These findings reinforce the environment's role in shaping the reproductive potential and condition status. Altogether, this study suggests high sensitivity to anthropogenic pressures for both species, and, especially for Mediterranean ling, it shows the importance of introducing

monitoring and conservation measures to ensure the sustainability of its populations.

Keywords:reproduction,Mediterranean,oocyte recruitment,condition,deep-water fish,climate vulnerability.