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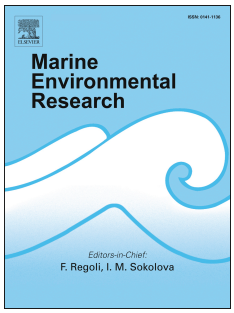

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Moderate hypoxia but not warming conditions at larval stage induces adverse carry-over effects on hypoxia tolerance of European sea bass (*Dicentrarchus labrax*) juveniles

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Abstract

Environmental conditions, to which organisms are exposed during all their life, may cause possible adaptive responses with consequences in their subsequent life-history trajectory. The objective of this study was to investigate whether ecologically relevant combinations of hypoxia (40% and 100% air saturation) and temperature (15° and 20°C), occurring during the larval period of European sea bass larvae (*Dicentrarchus labrax*), could have long-lasting impacts on the physiology of resulting juveniles. Hypoxic challenge tests were performed over one year to give an integrative evaluation of physiological performance. We revealed that juvenile performance was negatively impacted by hypoxia but not by the thermal conditions experienced at larval stage. This impact was related to the prevalence of opercular abnormalities. The present study indicates that exposure to a moderate hypoxia event during larval stage may have adverse carry-over effects, which could compromise fitness and population recruitment success.

Key words: hypoxia, temperature, developmental plasticity, carry-over effects, opercular malformation, European sea bass

Abbreviations: days post hatching (dph); loss of equilibrium (LOE)