

{rokbox title=|Location of samples collection. ATN: Atlantic Northern population. ATS: Atlantic Southern population. MED: Mediterranean population :: Image: Authors|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-genomic-patterns-levels-guijarro-2025-thumb-et-al.jpeg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-genomic-patterns-levels-guijarro-2025-et-al.jpeg{/rokbox}

Natalia Petit-Marty, Laura Casas, Sara Rocha, María Saura, Inés González-Castellano and **Sergio Ramírez-Amaro**

, Erik Eschbach,

Beatriz Guijarro

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[Genomic patterns and levels of genetic diversity reveal recent declines in the effective size of European hake populations](#)

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Abstract: European hake is an economically important fishery resource with known declines in population abundances and biomass in the last decades. However, little is known about the effect of these abundance declines on the genetic diversity levels of the stocks. In this study, we analysed genomic data of Atlantic and Mediterranean European hake populations, representing the main fishery stocks. The results indicate that abundance declines have likely affected the levels and patterns of genetic diversity within and among the three analysed populations. The Mediterranean population shows lower genetic diversity than the Atlantic ones and can be slightly genetically differentiated from them. Results indicate significant deviations from neutral expectations for constant population sizes, and substantial population declines in all three populations. Estimates of recent and ancestral effective population size (N_e) obtained from coalescence, linkage disequilibrium and sibship methods were coherent with each other. Historical N_e estimates suggest drastic declines of more than 90% in all three populations within the last 15 generations (i.e. nearly 50 years). Positive correlations observed between historical N_e and stock parameters indicative of abundances support the historical trends of estimated N_e . Since genetic variation is essential for populations facing anthropogenically induced environmental changes, this study demonstrates the importance of population genetic estimates for planning management strategies targeting the long-term sustainability of European hake fisheries.

Keywords: hake, Genomics, adaptive potential, climate change, fisheries, genetic diversity, sustainability, conservation