

Supplementary Information (SI) for
Forecasting size-at-maturity shifts under global warming: A case study on European hake, a widely distributed species

Reviews in Fish Biology and Fisheries

David José Nachón*, E. Ramírez-Romero, A. Paz, M. Cousido-Rocha, F. Izquierdo, M^a. G. Pennino, & S. Cerviño

***Corresponding author:** Instituto Español de Oceanografía (IEO-CSIC), Centro Oceanográfico de Vigo, Subida a Radio Faro, 50–52, 36390 Vigo, Pontevedra, Spain.

davidjose.nachon@gmail.com

This pdf file includes:

- **Online Resource 9** Figure displaying projections of SBT (°C) and female European hake, *Merluccius merluccius* (Linnaeus, 1758) size-at-maturity changes over the period 2022–2100 for the representative areas of each geographic-thermal area: ICES 4 and ICES 7 for the North European Atlantic Ocean, ICES8c9a for the South European Atlantic Ocean and GSA5&6 for the Mediterranean Sea. Projections are derived from the final GAM ($\text{Size-at-maturity} \sim \text{te}(\text{lat}, \text{long}) + \text{Sex} + \text{SBT}_{y-2}$), but are displayed against contemporaneous (non-lagged) SBT to illustrate year-by-year changes in temperature and size-at-maturity. The solid black line represents the historical data (1990–2021), while the blue and pink lines represent the future projections under the low (RCP 4.5) and high (RCP 8.5) emission scenarios respectively. The shaded areas indicate the standard deviation of the estimates. The dashed vertical line sets the start of the future projections

Online Resource 9 Projections of SBT ($^{\circ}\text{C}$) and female European hake, *Merluccius merluccius* (Linnaeus, 1758) size-at-maturity changes over the period 2022-2100 for the representative areas of each geographic-thermal area: ICES 4 and ICES 7 for the North European Atlantic Ocean, ICES8c9a for the South European Atlantic Ocean and GSA5&6 for the Mediterranean Sea. Projections are derived from the final GAM (Size-at-maturity $\sim$ te (lat, long) + Sex + SBT_{y-2}), but are displayed against contemporaneous (non-lagged) SBT to illustrate year-by-year changes in temperature and size-at-maturity. The solid black line represents the historical data (1990-2021), while the blue and pink lines represent the future projections under the low (RCP 4.5) and high (RCP 8.5) emission scenarios respectively. The shaded areas indicate the standard deviation of the estimates. The dashed vertical line sets the start of the future projections

