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Vicenç Moltó, Miquel Palmer, Andrés Ospina-Álvarez, Sílvia Pérez-Mayol, Amina Besbes Benseddik, Mark Gatt, Beatriz Morales-Nin, Francisco Alemany and Ignacio A. Catalán, 2021.

[Projected effects of ocean warming on an iconic pelagic fish and its fishery.](#)

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Abstract: Increasing sea temperature is a driver of change for many fish traits, particularly for fast-growing epipelagic species with short life spans. With warming, altered spawning phenology and faster growth may produce substantially larger body sizes of the new cohort, affecting fishery productivity. We present an individual-based model (IBM) that predicts the distribution of fish length at catch under observed and projected thermal scenarios, accounting for mortality, temperature-dependent spawning phenology, temperature- and photoperiod-dependent growth. This IBM was demonstrated with *Coryphaena hippurus* (common dolphinfish), a circumglobally-distributed and highly thermophilic species sustaining commercial and recreational fisheries where it is present. The model projected a 13.2% increase in the average length at catch under marine heatwave conditions compared to the current thermal regime (1995–2005 average). Projections under RCP scenarios 4.5 and 8.5 by the end of the century led to 5.1% and 12.8% increase in average length, respectively. Furthermore, these thermal scenarios affected spawning phenology differently, producing higher variance in body size under RCP 8.5 scenario with respect to marine heatwave conditions. This study highlights how the environmental effects of climate change can alter the distribution of species length at catch.

Keywords: