

{rokbox title=|Conceptual scheme of the model proposed :: Image: Authors|
thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-predicting-fish-spawning-phenology-adaptive-management-integrating-thermal-drivers-fishery-constraints-molto-et-al-2024-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-predicting-fish-spawning-phenology-adaptive-management-integrating-thermal-drivers-fishery-constraints-molto-et-al-2024.jpg{/rokbox}

Vicenç Moltó, Miquel Palmer, Marco Polin, Andrés Ospina-Álvarez, Ignacio A. Catalán, 2024.

[Predicting fish spawning phenology for adaptive management: Integrating thermal drivers and fishery constraints.](#)

Marine Environmental Research. Volume 202, November 2024, 106713.

<https://doi.org/10.1016/j.marenvres.2024.106713>

Abstract: Climate warming is causing shifts in reproductive phenology, a crucial life history trait determining offspring survival and population productivity. Evaluating these impacts on exploited marine resources is essential for implementing adaptive measures from an ecosystemic approach. This study introduces a statistical model designed to predict fish spawning phenology from sea surface temperature profiles, integrating mortality-corrected hatch-date distributions inferred from fishery-dependent samplings, along with the gonadosomatic index of adult individuals. When applied to different dolphinfish (*Coryphaena hippurus*)

) populations across a broad latitudinal range, the model reasonably predicts the spawning phenology across its extensive thermal ranges, elucidating a direct relationship between mean annual temperature and the breadth of the spawning season. Despite the varying thermal profiles, results show a consistent timing of spawning peaks approximately 49 days before the peak in temperature. Importantly, these findings account for the impact of fishery constraints, such as seasonal closures or different sampling schedules, offering a robust tool for adjusting management practices in response to inter-annual temperature variations. These insights are critical for both short-term fishery management, including the strategic planning of seasonal closures, and long-term projections of spawning phenology shifts under changing thermal regimes. By enhancing our ability to predict spawning times, this research contributes significantly to the sustainable management of fish populations and the adaptive response to environmental changes.

Keywords: Spawning phenology, Hatch-date distributions, Otolith, Gonadosomatic index, Mortality rate, *Coryphaena hippurus*