

{rokbox title=| (A) Relationship between larval length (mm) and prey length (mm) from gut content analysis of 255 individuals collected in the GoM (Shiroza et al., this issue) :: Image: Authors|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-trade-offs-between-reglero-2022-thumb-et-al.jpeg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-trade-offs-between-reglero-2022-et-al.jpeg{/rokbox}

Taylor A Shropshire , Steven L Morey , Eric P Chassignet , Mandy Karnauskas , Victoria J Coles , Estrella Malca , Raúl Laiz-Carrión , Øyvind Fiksen , **Patricia Reglero** , Akihiro Shiroza , José M Quintanilla Hervas , Trika Gerard , John T Lamkin , Michael R Stukel, 2022.

[Trade-offs between risks of predation and starvation in larvae make the shelf break an optimal spawning location for Atlantic bluefin tuna.](#)

Journal of Plankton Research. Volume 44. Issue 5. September/October 2022. Pages 782–798. <https://doi.org/10.1093/plankt/fbab041>

Abstract: Atlantic bluefin tuna (ABT) (*Thunnus thynnus*) travel long distances to spawn in oligotrophic regions of the Gulf of Mexico (GoM) which suggests these regions offer some unique benefit to offspring survival. To better understand how larval survival varies within the GoM a spatially explicit, Lagrangian, individual-based model was developed that simulates dispersal and mortality of ABT early life stages within realistic predator and prey fields during the spawning periods from 1993 to 2012. The model estimates that starvation is the largest cumulative source of mortality associated with an early critical period. However, elevated predation on older larvae is identified as the main factor limiting survival to late postflexion. As a result, first-feeding larvae have higher survival on the shelf where food is abundant, whereas older larvae have higher survival in the open ocean with fewer predators, making the shelf break an optimal spawning area. The modeling framework developed in this study explicitly simulates both physical and biological factors that impact larval survival and hence could be used to support ecosystem based management efforts for ABT under current and future climate conditions.

Keywords: