Habitat suitability empirical model of albacore tuna in the South Atlantic Ocean

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Abstract

This study developed an empirical habitat suitability model for identifying the optimal habitat of immature albacore tuna in the South Atlantic Ocean (SAO) by using multisatellite remote sensing data and Taiwanese longline fisheries data between 2009 and 2015. A geometric mean model with three environmental variables is suggested to be appropriate for explaining the habitat variance of albacore in the SAO. A monthly albacore mean catch per unit effort (CPUE) of larger than 50 individuals/1,000 hooks occurred from April to August and was distributed over 25–40°S. The optimal range of environmental variables in the sea surface temperature, sea surface salinity, and sea surface chlorophyll-a concentration for the habitat of albacore are suggested to be approximately 17–19℃, 34.6-35 psu, and 0.33–0.41 mg/m^3, respectively. We discovered a significant positive relationship between the suitable habitat area and nominal CPUE of immature albacore in the SAO (r = 0.912). Overall, frontal structures play a major role in the stimulation of potential albacore habitats.

Keywords: albacore, Habitat suitability index, sea surface temperature