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11th Global Summit on

Aquaculture & Fisheries

May 24-25, 2018   Osaka, Japan

Modeling distributions of pelagic fishes based on MaxEnt

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There are many fishery resources with high economic and ecological values in the epipelagic and mesopelagic zone of the ocean. Researchers have paid much attention to the relationships between the spatial distribution of pelagic fishes and the marine environment, but few made comparisons among different fishes habitat in oceans all over the world. In this study, we chose 6 species of fishes: *Clupea pallasii* Valenciennes, *Scomber japonicus*, *Thunnus obesus*, *Thunnus albacares*, *Isurus oxyrinchus* and *Alopias vulpinus*, which used to live in the epipelagic and mesopelagic zone of the ocean, to make comparative analysis on how marine environmental factors influence their spatial distributions. The marine environmental factors included: sea surface temperature (SST), photosynthetic radiation (PAR), chlorophyll-a concentration (Chl-a), sea surface salinity (SSS) and sea surface wind speed (MAG). We used the maximum entropy ecological niche model (MaxEnt) to predict the potential distribution of the six species of fishes combined with the environmental factors. The accuracy of the model was evaluated with the receiver operating characteristic (ROC) curve and the results showed that the AUC (area under the ROC curve) values of six MaxEnt models were all greater than 0.8, which indicated that the models had high precision. Based on the influence ranking of the marine environment factors, SST, PAR and Chl-a showed the most importance on the potential distribution of all the six species of fishes. However, there were large differences among the suitable range of each environmental factor for each fish. The results of this study could provide references for marine fishery.

Biography

Tianjiao Zhang has completed his PhD from China Agricultural University. She has studied in Oklahoma State University as an Exchange student from 2013 to 2015 and was involved in a NOAA project: "Biotic and abiotic factors related to persistence of a federally-threatened cyprinid". She is currently the Senior Lecturer of Shanghai Ocean University in Shanghai, China. She has published 14 papers in reputed journals.

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