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Refugia of Marine Fish in the Northeast Atlantic During the Last Glacial Maximum

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Archaeozoological finds of the remains of marine and amphihaline fish from the Last Glacial Maximum (LGM) ca. 21 ka ago show evidence of very different species ranges compared to the present. Recent genetic results of some marine species also indicate the presence of a local population structure that further suggests a dramatic southward displacement of species ranges during the LGM. There are very few studies that have attempted to delimit the glacial refugia of marine fish from our present understanding of LGM climate conditions. The few studies that exist make predictions that may not agree with the data from archaeozoology and genetics. In this contribution, we show how an ecological niche model based on sea surface temperature and bathymetry can be used to effectively predict the spatial range of marine fish during the LGM. The results are startling especially for the northern species because the glacial refugia are almost completely displaced from the modern distribution. The results are important for understanding the present spatial genetic structure of marine populations that arose during the Pleistocene glaciations, and they present a challenge for future archaeozoological work to test the model predictions and delimit the glacial refugia.