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WATER TEMPERATURE AND THE DISTRIBUTION OF THE COMMON DOLPHIN (*DELPHINUS DELPHIS*) IN BRITISH SHELF WATERS: A POTENTIAL INDICATOR OF CLIMATE CHANGE IMPACTS

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Climate change is predicted to result in a poleward expansion in the range of species limited to warmer waters. Here, we assess whether the occurrence of one warm water species, the common dolphin (*Delphinus delphis*), is expanding in British shelf waters as water temperatures increase. Based on a meta-analysis of trends from six separate studies, we present evidence that in recent years common dolphin occurrence has expanded from a core area to the south and west of the British Isles (occupied during the 1970s-1990s) into northwest Scotland, the northern North Sea and, most recently, the coastal Moray Firth, in northeast Scotland. In addition, in the British North Sea, the presence of common dolphin strandings is related to water temperature, indicating a greater occurrence at higher temperatures. This has resulted in two main peaks in common dolphin occurrence in the British North Sea, during the 1930s-1950s and since the 1980s. During both periods, summer water temperatures were consistently high. Based on estimates of the lower critical limit to the thermal neutral zone of common dolphin, this relationship between common dolphin occurrence and water temperature is likely to be directly related to the thermal niche occupied by the species. From this, we produced a model of the thermal niche common dolphin which captured the changing distribution in relation to water temperature and used it to predict what is likely to happen under various climate change scenarios between 2010 and 2099. This model suggests that the distribution of common dolphin is likely to continue to expand in the foreseeable future throughout the northeast Atlantic. Based on this study, we suggest that the common dolphin has the potential to act as a good indicator of the effects of climate change in cetaceans both in the northeast Atlantic and throughout the world.

