THERMAL EXTINCTION SELECTIVITY PATTERNS DURING GLOBAL WARMING EVENTS

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Anthropogenic global warming is expected to raise regional extinction risk following the stress responses of warm-water organisms, especially coral reefs, while cold-water organisms may also suffer from decreases in sea ice. Empirical data on widespread extinctions can only really be sourced from the fossil record, with interpretations of hypothesis support complicated by sampling heterogeneity and timescale mismatches. Previous studies of regional extinction selectivity have used the occurrence paleolatitude of marine genera but trends under global warming events have been inconsistent, potentially because latitude is a complicated proxy for seawater temperature and other abiotic variables. Here we assess marine extinction selectivity of marine animals based directly on regional temperatures sourced from climate models. We assess whether thermal selectivity trends deviate under hyperthermal conditions and how patterns associate with environmental and sampling parameters. Sampling patterns have an important influence on observed extinction selectivity but could not account for some of the trends observed at hyperthermal events, including raised extinction risk cold-water genera. The modern spread of organism thermal preferences makes these findings particularly important.