



Gulliver's Triassic Travels: Body size changes through the end-Triassic mass extinction and recovery

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Populations with small body sizes are widely reported in the aftermath of mass extinction. This is frequently regarded as the Lilliput effect, which is defined as a temporary reduction in body size in surviving species following a biotic crisis. However, there are several other possible causes behind these observations, including preferential loss of large species during the extinction or origination of small species in the immediate post-extinction interval. An organism's environment can impart a control on body size, factors such as temperature and oxygen availability are known to do this, and elevated temperatures and oxygen depletion of marine waters are players in many extinctions. During the subsequent recovery as these stressors ameliorate body size also increases to a pre-extinction norm.

Here we document body size of bivalves across the end-Triassic mass extinction event and ensuing recovery and attempt to relate these to changing environments. In the aftermath of the event marine bivalves are small and increase in size through the first two stages of the Early Jurassic. We assess the role of the Lilliput effect in the creation of these communities of small bivalves and propose a new term for species that originate at small body size and undergo a within-species size increase: the Brobdingnag effect. An effect which may prove to be more pervasive than the Lilliput effect, as a stipulation of a Lilliput is that the size reduction is seen within a surviving species, something that could be comparably rare across an extinction event.