{rokbox title=|Boxplot of hatching success of leatherback turtle clutches :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-thermal-tolerance-clutches-adaptation-climate-warming-sea-turtles-kynoch-et-al-2024-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-thermal-tolerance-clutches-adaptation-climate-warming-sea-turtles-kynoch-et-al-2024.jpg{/rokbox}

Camille Kynoch, Frank V. Paladino, James R. Spotila, **Pilar Santidrián Tomillo**, 2024.
Variability in thermal tolerance of clutches from different mothers indicates adaptation potential to climate warming in sea turtles.
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Abstract: The current climate warming is a challenge to biodiversity that could surpass the adaptation capacity of some species. Hence, understanding the means by which populations undergo an increase in their thermal tolerance is critical to assess how they could adapt to climate warming. Specifically, sea turtle populations could respond to increasing temperatures by (1) colonizing new nesting areas, (2) nesting during cooler times of the year, and/or (3) by increasing their thermal tolerance. Differences in thermal tolerance of clutches laid by different females would indicate that populations have the potential to adapt by natural selection. Here, we used exhaustive information on nest temperatures and hatching success of leatherback turtle (*Dermochelys coriacea*) clutches over 14 years to assess the occurrence of individual variability in thermal tolerance among females. We found an effect of temperature, year, and the interaction between female identity and nest temperature on hatching success, indicating that clutches laid by different females exhibited different levels of vulnerability to high temperatures. If thermal tolerance is a heritable trait, individuals with higher thermal tolerances could have greater chances of passing their genes to following generations, increasing their frequency in the population. However, the high rate of failure of clutches at temperatures above 32°C suggests that leatherback turtles are already experiencing extreme heat stress. A proper understanding of mechanisms of adaptation in populations to counteract changes in climate could greatly contribute to future conservation of endangered populations in a rapidly changing world.

Keywords: adaptation, climate warming, sea turtle, thermal adaptation, thermal tolerance variation