


# Influence of incubation temperature, maternal effects, and paternity on quality of olive ridley hatchlings (*Lepidochelys olivacea*) from a mass-nesting beach in the Mexican Pacific

Elizabeth Labastida-Estrada, Liliana González-Cortés, Samantha G. Karam-Martínez, José Alberto Montoya-Márquez, Tania Zúñiga-Marroquín, Felipe Becerril-Morales, Valentina Islas-Villanueva 

First published: 12 March 2024

<https://doi.org/10.1002/jez.2804>

 [VIEW METRICS](#)

## Abstract

Future climate change scenarios project that the increase in surface temperatures will affect ocean temperatures, inducing shifts in marine biodiversity. Sea turtles are species that are particularly vulnerable to the effects of climate change because temperature is a factor that influences embryonic development. We collected clutches of olive ridley turtles from a mass-nesting beach in the Mexican Pacific, which were incubated in ex situ conditions. When the hatchlings emerged, we measured the body condition index—which evaluates the weight-length relationship—and swim thrust, both were considered traits associated with fitness, termed “fitness proxies,” and evaluated the effects of incubation temperature, maternal effects, and paternity on these fitness proxies. The body condition index was correlated positively and significantly with the arribada month and temperature during the last third of the incubation period but showed an inverse relationship with the maternal effect. While swim thrust was positively correlated with the maternal effect and the arribada month, there was an inverse relationship with incubation temperature during the first third of the period. Paternity, whether single or multiple, did not have a significant effect on either fitness proxies; however, it may have effects on the average fitness of a population of hatchlings. These results underscore the need to expand research on the sublethal effects of high incubation temperatures on the adaptation and survival of sea turtles, particularly in scenarios of rapid climate change.