



Climate induced temperature effects on growth performance and fecundity of *Hippocampus guttulatus*

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This experiment aimed to determine the temperature boundaries outside which seahorse growth and reproduction become sub-optimal. Temperature effects were tested in juvenile seahorses (0-56 days post-parturition (DPP)), and in adults prior and during breeding season (seven month period). Four different temperatures (16, 20, 24 and 28°C) were tested. A second experiment determined the oxygen consumption (MO₂) and ammonia excretion (AE) (same age groups were tested). Significantly higher growth rates ($p < 0.05$) were observed in adult fish reared at 20 and 24°C compared to those reared at 16 and 28°C. Adult mortality was respectively, 0, 0, 6.2 and 62.5% at the four tested temperatures. Juvenile growth performance at 56 DPP was higher in fish raised at 20°C and 24°C, but significantly lower ($p < 0.05$) in fish raised at 16°C. Juvenile survival was respectively, 8, 62, 10 and 0% at the four tested temperatures. The respirometry results suggest an influence of temperature cycles in routine metabolism. It was observed that oxygen consumption increased with increasing temperature in both age classes. The results from this study highlight the fact that both juvenile and adult *H. guttulatus* have narrow thermal boundaries, outside which reproduction, growth and survival are seriously affected. Under a climate change scenario of extended heat exposure, the species seems unable to cope with the situation, resulting in their disappearance within a short period of time.

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