The Response of Sandfish *Holothuria scabra* (Jaeger) Juveniles to Salinity and Temperature Changes

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ABSTRACT

Caber, Dieyna B. University of the Philippines Visayas, February 2016. **The response of *Holothuria scabra* (Jaeger) juveniles to salinity and temperature changes.**

Thesis Adviser: Dr. Gerald F. Quinitio

Sandfish *Holothuria scabra* is one of the most economically valuable species of sea cucumbers. Despite being the subject of many research projects and is currently cultured commercially, many of its basic physiological aspects are not yet known or established. This study was conducted to determine the effect of salinity and temperature on the oxygen consumption rate (OCR) of sandfish juveniles. Initially, acclimation to lower salinity was compared to direct transfer. ANOVA showed that the OCR of sandfish juveniles acclimated for 30 and 120 min to 30 and 25 ppt from ambient salinity (35 ppt) were not significantly different ($P>0.05$) to that of sandfish directly transferred. At 8 h, the OCR values at 30 min acclimation were 0.012 ± 0.002 $mgO_2/L/h/g$ at 35 ppt, 0.019 ± 0.004 $mgO_2/L/h/g$ at 30 ppt (direct transfer), 0.015 ± 0.001 $mgO_2/L/h/g$ at 30 ppt (acclimated), 0.019 ± 0.002 $mgO_2/L/h/g$ at 25 ppt (direct transfer) and 0.013 ± 0.002 $mgO_2/L/h/g$ at 25 ppt (acclimated). At 120 min acclimation, the OCR were 0.012 ± 0.002, 0.019 ± 0.004, 0.015 ± 0.000, 0.019 ± 0.002, and 0.013 ± 0.001 $mgO_2/L/h/g$, respectively. In the second part of the study, when sandfish juveniles were exposed to salinities of 35 (ambient salinity) 30 and 25 ppt and temperatures of 34, 29 (ambient temperature) and 24 °C over 8 h, their OCR values fluctuated at the highest temperature and even more so at the lowest temperature. Because the experiments at different

temperatures were conducted separately, the results could not be compared statistically. However, due to the degree of OCR fluctuation it appears that the sandfish juveniles were stressed at 34 °C and more stressed at 24 °C. This is supported by stress indicators observed visually during the experiment. The absence of OCR fluctuation at ambient temperature (29 °C) indicates that this is the more appropriate temperature for sandfish culture. Based on the results of the study, salinity has no effect on sandfish OCR up to 10 ppt below ambient. These results may be useful for selecting optimal conditions for growth and survival, as well as selecting optimal locations for stock enhancement purposes.

Key words: *Holothuria scabra* juveniles, oxygen consumption rate, salinity acclimation, temperature, direct transfer

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