

Aeration rate adjustment at night to prevent sinking syndrome-related death in the tiger grouper *Epinephelus fuscoguttatus* (Perciformes:Serranidae) larvae

ABSTRACT

The effects of different aeration rates at night to prevent sinking syndrome-related death (SSRD) of the tiger grouper, *Epinephelus fuscoguttatus* were examined. The aeration rates were fixed at 300 mL min⁻¹ at daytime (07:00–19:00 hours) and regulated to 0, 300 and 900 mL min⁻¹ at night (19:00–07:00 hours). Larval survival, growth, feeding intake, sinking velocity, distribution and behaviour, stress level, surface tension-related death (STRD) and flow velocity distribution were assessed. The occurrence of SSRD in the tiger grouper was observed through the accelerated sinking velocity (VI) (from 0.15 ± 0.09 cm s⁻¹ at 4 days AH to 0.41 ± 0.09 cm s⁻¹ at 12 days AH) coupled with larval passive swimming behaviour at night-time. On the final day of experiment (15 days AH), larvae reared in 900 mL min⁻¹ at night had attained significantly higher ($P < 0.05$) survival (34.4 ± 5.5%), growth (5.8 ± 0.5 mm) and feeding intake (60.46 ± 6.98 ind. larva⁻¹). A favourable flow field for the tiger grouper was produced in 900 mL min⁻¹ at night-time, in which larvae were transported 15–25 cm above the tank bottom and 1.0 cm beneath the water surface. Under these night-time rearing conditions, larval stress level and number of STRD reared in 900 mL min⁻¹ compared with those observed in 300 mL min⁻¹ remained insignificant, indicating that strong turbulence of flow velocity was not detrimental for larvae. Our findings recommend aeration at 900 mL min⁻¹ at night as this could improve larval survival by reducing SSRD.