Are Fiddler Crabs Potentially Useful Ecosystem Engineers in Mangrove Wastewater Wetlands?

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Abstract
The effect of different organic-rich sewage concentration (0%, 20% and 60% diluted in seawater) and absence or presence of mangrove trees on the survival, bioturbation activities and burrow morphology of fiddler crabs species was assessed. After 6 months, males of both species always showed higher survival (approximately 80%) when compared to females (approximately 20%). Crabs inhabiting pristine conditions achieved higher survival (67-87%) than those living in sewage-exposed mesocosms (40-71%). At 60% sewage loading, fiddler crabs processed less sediment (34-46%) during feeding and excavated slightly more sediment (45-80%) than at pristine conditions. While percent volume of the burrow chambers increased (13-66%) at contaminated mesocosms for both vegetation conditions, burrows were shallower (approximately 33%) in bare cells loaded with sewage. The results show that fiddler crabs presented moderate mortality levels in these artificial mangrove wetlands, but mainly in sewage impacted cells. However, they still function as ecosystem engineers through bioturbation activities and burrow construction.

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