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Repeated vertical movements of mature anguillid eels in a lake (Article)

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Abstract

Reproductive migration is a critical phase in the life history of anguillid eels. Nevertheless, fine-scale behaviours of migrating eels remain unknown, primarily due to the difficulty in attaching high-resolution recording devices to, and recovering them from, these small-sized teleosts. We attached a small accelerometer with time-scheduled release system to mature *Anguilla celebesensis* and *A. marmorata* in Lake Poso, Indonesia, during the pre-migration period. The eels repeated up-and-down movements in the water column (maximum depth, 77m), with slower, less active descents at shallower pitch angles, followed by faster, more active ascents at steeper pitch angles. The asymmetric diving pattern indicates negative buoyancy of the eels, which was confirmed by the measurements of body densities. The repeated diving is unlikely to represent foraging or thermoregulation because mature eels are thought to fast and water temperature changed little with depth. We suggest that the repeated diving is a result of the eels' internal motivation for continuous swimming in preparation for oceanic migration, and is possibly energetically more efficient than if they keep swimming at a certain depth. The swimming energetics of eels in nature might be more complicated than previously thought because of the effect of vertical movements and non-neutral buoyancy. © CSIRO 2016.

Author keywords

accelerometer; *Anguilla*; buoyancy; swimming behaviour.

Indexed keywords

Species Index: *Anguilla celebesensis*; *Anguilla marmorata*; Anguillidae; Teleostei