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Citizen science frontiers horseshoe crab population regain at their spawning beach in East Peninsular Malaysia (Article)

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Abstract

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Carcinoscorpius rotundicauda and Tachypleus gigas may co-exist and share common spawning grounds elsewhere but at Balok (East Coast of Peninsular Malaysia), C. rotundicauda is an understudied species. Neglected as research candidate because of inaccessible spawning grounds, smaller size and less commercial value than T. gigas and also, difficulty to attain from the wild has made C. rotundicauda population status remaining unidentified at Balok. This standpoint drove the present attempt because anthropic activities like structure placement and mining are point-source for runoffs that load sediments into Balok River. While erosion-accretion events have altered Balok River width, the shore sediments in Balok Beach were transitioned between medium-fine and fine sand between years 2012 and 2016. Eventually by year 2016, the C. rotundicauda were depositing 5117 eggs in 91 nests from 200 to 1000 m range along this corridor facing South China Sea. From this yield, C. rotundicauda released 2880 eggs in 56 nests during the Southwest monsoon, 1254 eggs in 19 nests during the Northeast monsoon and 983 eggs in 16 nests during the Inter-monsoon seasons. Though female C. rotundicauda opted to lay their eggs in shallow burrows at lower shorelines, the absence of erosion and substantial silt and clay (>20%) deposition facilitates C. rotundicauda embryogenesis with brief periods of temperature and salinity shocks during day-time falling tides. This encourages C. rotundicauda to emerge with increasing abundance and carry out bi-monthly spawning at Balok Beach. In short, shore restoration initiatives like systematic boat docking, proper disposal of nets and waste and, periodic fish-catching operations were effectively led by the Balok fisher citizen scientist. This successful community joint-cooperation proves that citizen-led caretaking of degraded beaches offers marine life protection and are practical for coastal area management especially at areas where other oviparous animals such as turtles and crocodiles are harboured. © 2018 Elsevier Ltd

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