



## INTENSE WALKING EVENTS (IWEs) OF *Ucides cordatus* (Linnaeus, 1763) (BRACHYURA, OCYPODIDAE) IN THE MARINE ENVIRONMENTAL PROTECTED AREA OF THE CENTRAL COAST OF SÃO PAULO STATE, BRAZIL

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*Ucides cordatus* is a macrocrustacean with wide distribution in Brazilian mangroves. Its reproductive period (Dec-May) presents associations with rising temperatures, photoperiod, and rainfall, which occur during the highest flood tides (full and new moons). In this period, specimens show greater activity outside their burrows (walking behavior) due to the mating season, sometimes with expressive crab migration towards the sea (IWE, intense walking event), when a considerable density is recorded on some beaches. This study aimed to record the occurrence of IWEs on beaches within the scope of the Marine Environmental Protection Area of the Litoral Centro in the State of São Paulo (APA-MLC), Brazil, evaluating the months, sites, and moon phases involved. Concerns raised by the local community and tourists regarding the IWEs led us to evaluate these migrations in function of some possible causes: 1) environment and crab contamination by metals, assessed by atomic absorption spectrophotometry; 2) crab genetic damage, through the micronucleus test (MN‰); and 3) expressive reductions in pluviosity/salinity in the estuarine system. During ten years (2013-2022), the APA-MLC management team recorded, through photographic and audiovisual records, seven IWEs on two beaches in its coverage area (Guaratuba: 62.5%; Itaguapé: 37.5%) from December to February: Jan (57.1%) > Feb (28.6%) > Dec (14.3%). The Itaguapé and Guaratuba beaches receive the waters from the Itaguapé River estuary, where the biotic and abiotic samples were collected. The IWEs on these beaches occurred lasting 3-13 days ( $7.7 \pm 4.0$  days) after the highest flood tides, promoted by previous new moons (85.7%) or full moons (14.3%). In 2018, the IWE registered in Itaguapé was not associated with contamination by metals (< CONAMA reference values), a fact confirmed by reduced *U. cordatus* genetic damage (<4 MN‰) and normal pluviosity regimen/water salinity. The reproduction of *U. cordatus* is affected by abiotic factors, among which are the synchrony of geophysical cycles (alignment of the Moon, Sun, and Earth), affecting the amplitude of the tides and the intensity of the walking behavior. Therefore, the occurrence of these behavioral events at only two sites of the APA-MLC was confirmed as a natural phenomenon and not induced by anthropic causes, requiring a further evaluation concerning the topography or morphodynamics of these estuarine systems.

**Keywords:** behavior, lunar cycle, migration, reproduction.

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**Area: Reproduction & Development**

