

**Experimental taphonomy of *Callinectes sapidus* and cuticular controls on  
preservation**

Matthew H.E. Mutel,<sup>1†</sup> David A. Waugh,<sup>2</sup> Rodney M. Feldmann,<sup>2\*</sup> and Karla M. Parsons-  
Hubbard<sup>1</sup>

<sup>1</sup>*Oberlin College, Department of Geology, Oberlin, Ohio 44074, USA;* <sup>2</sup>*Kent State  
University, Department of Geology, Kent, Ohio 44242, USA*  
*e-mail: rfeldman@kent.edu*

*\*Corresponding author.*

<sup>†</sup>Current address: 2345 Sugar Bottom Road, Solon, Iowa 52333, USA.  
Keywords: decapod, SSETI, Portunidae, cuticle, biomineralization

**ABSTRACT**

Examination of remains of *Callinectes sapidus* deployed in several depth and environmental settings in the Bahamas and Gulf of Mexico as part of the Shelf and Slope Experimental Taphonomy Initiative project revealed that all specimens were uniformly and strongly degraded except those in brine-seep settings. Fragmentation and loss of cuticular material at all sites was correlated to the degree of calcification within the cuticle of different skeletal elements as observed in the undeployed specimens. Claws, tips of the last anterolateral spine, and mandibles were the most durable remains. In brine-seep areas, extraordinary preservation yielded articulated skeletal elements and some soft tissue. Examination of the cuticle in control specimens with cross-polarized light and computed tomographic scanning documents the correspondence of high degrees of calcification with portions of the exoskeleton remaining after deployment.