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Intracolony variation in Bryozoan Skeletal Index (BSI) through reconstructed and serially sectioned Devonian ramose trepostome bryozoans

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In the fields of functional morphology, paleoecology, and taxonomy, the Bryozoan Skeletal Index (BSI) is an increasingly useful metric for the degree of calcification in bryozoan colonies. The goal of this study is to quantify how it varies from proximal to distal through a colony's growth transect. Colony fragments of the stenolaemate trepostome bryozoan *Leptotrypella asterica* from New York State, USA were reassembled into three large colonies. They are from the Kashong Shale Member of the Moscow Formation of the Hamilton Group deposited during the Givetian, Middle Devonian. Colonies were serially sectioned transversely from proximal to distal along the growth axis of the longest branches. To calculate BSI, three characters were measured: exozone width, zooecial wall thickness, and maximum autozooecial apertural diameter at the branch surface. Exozone width decreased significantly from proximal to distal through each colony's growth transect. Zooecial wall thickness did not vary significantly. Maximum autozooecial apertural diameter decreased significantly in some of the colonies. BSI decreased significantly distally from their bases. We interpreted the distal colony branch tips with lower BSI values as being weaker and more susceptible to breakage. They could more easily break off and regrow without jeopardizing the success of the entire colony had the stronger proximal base with its higher BSI values broken.

Key words: Bryozoa, intracolony variation, Bryozoan Skeletal Index (BSI), Devonian, USA.

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