MORPHOLOGICAL VARIATION IN *TEREDOLITES*: IMPLICATIONS FOR WOOD-BORING BIVALVE BEHAVIOR

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Teredolites, clavate borings produced in xylic substrates primarily by wood-boring bivalves, are a common component of post-Paleozoic marine woodgrounds. Morphological variability between and within ichnospecies of *Teredolites* can be attributed to paleobiologic differences between families of endoxylic bivalves and the behavioral responses of these borers to changes in substrate conditions.

Principle ichnotaxobases used for the discrimination of the two ichnospecies of *Teredolites* are length-to-width (L/W) ratios and axial orientation. *T. clavatus* is generally oriented perpendicular to substrate grain, is characterized by relatively straight axes, and typically has L/W ratios less than 5. *T. longissimus* is primarily parallel to the grain of the substrate, has L/W ratios typically greater than 5, is typically sinuous and contorted, and is commonly partly or wholly lined by calcite. *T. clavatus* and *T. longissimus* are generally attributable to wood-boring pholadids and teredinids, respectively. Pholadids generally lack intratunnel mobility (owing to shell elongation) and are incapable of digesting cellulose. Hence, their borings, produced primarily as protective domiciles from which to filter feed, are relatively straight and short. Teredinids, the valves of which are small and virtually equidimensional, have greater shape plasticity and, with cellulose as their preferred nutrition source, continue to bore for most of their life span. Consequently, their tunnels are relative long and may exhibit significant axial distortion.

Three general, intergradational morphotypes of *T. longissimus* are recognized: (1) relatively straight idiomorphic tunnels; (2) stenomorphic borings with highly sinuous contorted axes; and (3) stenomorphic tunnels characterized by abandoned branches. The gradation from morphotype (1) to morphotype (3), which may be observed between and within individual borings, reflects changes in the behavior of teredinids as they attempt to maintain endoxylic deposit-feeding activity in increasingly crowded substrates. The previously undescribed branching morphotype, which reflects extreme substrate fractionation, is often associated with a reduction or temporary cessation of diametric growth. Differences in the axial extent of calcite tunnel linings, and the presence or absence of associated anterior and retrusive calcite caps, also reflect varying behavior among the producers of *T. longissimus*. The presence of anterior or retrusive caps reflects a switch from cellulose digestion to filter feeding by teredinids, presumably in response to diminished substrate space.

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