Taphonomic Expressions of *Thalassinoides* and their Application to Study of Key Stratal Surfaces

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Thalassinoides is a common, widely distributed, trace fossil in Mesozoic-Recent marine strata. This large unlined branching burrow often forms box-works and/or galleries that are conspicuous within the substrate and can form conduits for flow of hydrocarbons. Taphonomic expressions of *Thalassinoides* vary with respect to palaeoenvironmental conditions and changes in those conditions (e.g. Figure 1A, B). Key stratal surfaces with *Thalassinoides* (e.g. surfaces of erosion, deposition, non-deposition or condensation) have different taphonomic expressions, which reveal palaeoenvironmental change associated with relative sea level change(s). *Thalassinoides* was studied in bioturbated deltaic facies of the Lajas Formation (Middle Jurassic), Neuquén Basin, Argentina and shoreface facies of the Ben Nevis Formation (Middle Jurassic), Jeanne d'Arc Basin, Newfoundland. With careful ichnological investigation, realistic palaeoenvironmental interpretations can be made for integration into study of both autocyclic and allocyclic processes.

Figure 1A: Sand-filled Thalassinoides burrows in mudstone matrix in deltaic facies (ruler for scale in 1 cm intervals).

Figure 1B: Mud-filled Thalassinoides galleries within a sandy matrix in deltaic facies (scale bar in 1 cm interval.