Inclined heterolithic stratification (IHS) is developed on a laterally accreting in-channel bar in the tide-influenced (fluvially dominated), brackish-water reach of the Fraser River, British Columbia, Canada. The vertical bar succession is characterized by a fining-upward profile with an increase in mud-bed thickness and content, from the shallow subtidal to the upper intertidal zone. There is an increase in the number of mud beds as well as their lateral continuity from the upstream to the downstream side of the bar. Sediment deposition is seasonally controlled, wherein sand deposition occurs during periods of high discharge (snowmelt-induced freshet), and mud is deposited during low discharge (ambient flow conditions). This seasonal cyclicity is also observed in the ichnological characteristics of the IHS, with bioturbation more common in ambient deposits (mud beds) than freshet deposits (sand beds). In addition, infauna exhibit a lithological preference for colonizing muddy substrates, and burrows in sand beds typically subtend from overlying mud beds. Diminutive, vertical burrows dominate the trace suite, reflecting a very low diversity of infauna. Bioturbation is more common on the downstream side of the bar, associated with the thicker and more laterally contiguous mud beds that are prevalent.

A comparison of the sedimentological and ichnological characteristics of the IHS in the Fraser River to IHS in both river- and tide-dominated settings, yields two criteria for differentiating IHS developed in these various settings. 1) Sand-mud interbeds in tide-influenced IHS have a more predictable distribution, with an overall increase in mud content downstream and towards the top of the bar. This contrasts with the comparatively irregular thicknesses and distributions of mud beds in purely fluvial settings, and contrasts with the rhythmic interbedding reported from tide-dominated systems. 2) Bioturbation in the Fraser River IHS is more prevalent in mud beds, where muds are deposited during ambient flow conditions and brackish-water incursion into the channel. In contrast, burrowing in fluvial systems is absent or rare, and is limited to simple horizontal and vertical tubes with patchy distributions. In tide-dominated settings, the sedimentation rate limits infaunal colonization, such that sediments may or may not be intensely bioturbated.