

Ichnological Taxonomy and Sedimentology of the Middle Stephen formation from Nordegg, Alberta

S. Kolenosky, M. Gingras, J.P. Zonneveld, G. Pemberton, D. Herbers, N. Khan, R. Meyers

An outcrop of the Stephen formation was investigated outside Nordegg, AB and the ichnological taxa and sedimentological relationships described herein. Located 70 km from the hamlet, a measured section totalling 9.7 m in length was recorded. Amongst the sedimentological features observed a considerable amount of biota is present. The moderate diversity assemblage consists of 15 ichnogenera, including ichnotaxa *Arenicolites*, *Asterosoma*, *Bergaueria*, *Gyrolithes*, *Helminthopsis*, *Palaeodictyon*, *Palaeophycus*, *Phycosiphon*, *Planolites*, *Protichnites*, *Schaubcylindricrchnus*, *Scolicia*, *Skolithos*, *Thallasinoides* and *Treptichnus*. These ichnogenera belong to the *Cruziana* and *Nereites* ichnofacies placing them primarily within grazing and feeding ethologies. The 'thin' Stephen formation was deposited below storm weather wave base atop the upper shelf of the considerable Cathedral escarpment. The lower sedimentation rate and decreased reworking in this area provided an optimal environment for the preservation of geometrically complex trace fossils including *Helminthopsis*, *Palaeodictyon*, *Protichnites* and *Treptichnus*. This lack of interference provided an environment that allowed specialized feeding methods such as farming (*Palaeodictyon*) to develop. With the cryptalgal limestones of the Cathedral formation below the Stephen formation is overlain by the wackestones of the Eldon formation. Characterization of ethology and sedimentation within the Stephen formation will provide a further understanding of biology in the middle Cambrian as well as the role ichnofauna play in describing depositional settings.