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James Brandon Shope April 19, 2011

Ichnology and Composition of the Pinelog Formation Quartzite, Jasper, Georgia: Situating the Formation in the Geologic Record.

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Abstract

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By James Brandon Shope

The Pinelog Formation Quartzite is a low-grade metamorphosed quartz arenite that crops out near Jasper, Georgia. Its lithology, physical sedimentary structures, and trace fossils indicate that its sediments were initially deposited in a shallow, near-shore marine environment. The presence of trace fossils (Palaeophycus) has been previously documented; however, this discovery was not examined in detail and the full implications of these fossils remained unresolved. Furthermore, despite this information about the original depositional environment of the Pinelog Formation, its age and occurrence have not been clearly defined. Previous work has placed the Pinelog in the Ediacaran Period; however, examples of Palaeophycus and trace fossils indicate the Pinelog is at least of Cambrian age. Samples of bedding and fossil burrows were collected from two different outcrops and burrow dimensions measured. These burrows are compared with descriptions of the identified trace fossils in the literature to determine if their classifications were appropriate. The mineral composition of each sample was analyzed through thin-section point counts, and mineral proportions were compared with the Snowbird Group (Ocoee Supergroup) and the Chilhowee Group to better determine the lithologic affinity of the Pinelog Formation. Locations of samples and associated features were mapped using ESRI’s ArcGISTM software, which was used to show the distribution of physical and chemical features. Burrow samples collected by Martin and Crawford (1996) were then re-measured and in one instance reclassified as Taenidium. The presence of Taenidium indicates that the Pinelog Formation is at least Cambrian in age and most probably belongs to the Chilhowee Group based on that age.

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