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## **Traits of Ferruginous gravel and Laterite deposit and stratigraphic correlation with red earth in northern Sri Lanka**

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Iron-cemented clastic sedimentary deposits cover most parts of Northern Sri Lanka, correlating with laterite and red earth deposits. The detailed study of the formation processes of ferruginous gravel and laterite deposits and the stratigraphic correlation of ferruginous gravel, laterite, and quaternary red earth deposits remains unexplored in the northern part of Sri Lanka. The study addresses the formation processes and stratigraphic sequences among ferruginous gravel, laterite, and red earth deposits by studying two detailed profiles in the Mullaitivu District of Sri Lanka. Field observations of the study area and the collected samples were subjected to profile analysis and petrographic studies. The stratigraphy of the iron-cemented nodules laid down in the middle of laterite and red earth deposits, dark brown to reddish brown colored angular gravels, provide two depositional ages of ferruginous gravel and red earth deposits. Ferruginous boulders were formed by the chemical precipitation of the iron-rich gravels during post-deposition. Petrographic studies and field observations have unveiled the transport mechanisms and diagenetic transformations undergone by the ferruginous gravel. Further, the characteristics of ferruginous gravels and laterites, along with the processes involved in the formation of nodules by the accumulation of post-iron fluid in the pre-deposited sediments and the leaching process effected by the formation of laterite by groundwater fluctuations in arid to humid conditions.

**Keywords:** Ferruginous Gravel, Laterite, Red Earth, Stratigraphic Correlation, Iron-Cemented

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