

The Bear's Den Granite, Bronx Zoo, NY

Steven J. Jaret^{1,2}, Nicholas Tailby¹, E. DiPadova¹, E. Troy Rasbury², and Kathleen Wooton²

¹American Museum of Natural History, ²Stony Brook University

sjaret@amnh.org

Recent reconnaissance mapping has identified a previously unmapped pegmatite occurring primarily in and adjacent to the bear enclosure at the Bronx Zoo. This unit is a coarse grained, K-spar rich pegmatitic granite occurring over a ~0.25–0.5 square mile area. The unit has an equilibrium mineral assemblage of quartz, k-feldspar, plagioclase, magmatic garnet, muscovite, biotite, and apatite (with minor zircon, and occasional titanite). Other pegmatites associated with partial melting during metamorphism are known to occur throughout NYC and the Manhattan Prong but this new unit is distinct in several ways. Texturally, the granite is extremely coarse, with single feldspar crystal up to 8 inches long. Zircon grains from the pegmatite are characteristically euhedral, and have a long axis that can measure to ≥ 2 mm. Zircons also show very high U, while also displaying an array of U- and Th-rich inclusions, an observation consistent with these magmatic bodies representing late-stage pegmatites. U-Pb dating of these zircons yields an age of 400 +/- 15 Ma, and most importantly this places crystallization during of time that is slightly younger than the Taconic orogeny (i.e., the process of melting that formed the observed pegmatite is younger than the dominant phase of metamorphism observed within Manhattan). Structurally, this pegmatite contains at least one large (1m) block of schist included as either a large xenolith or roof pendant. The contact with the Manhattan schist is exposed in the bear enclosure but is highly variable with several interfingering lenses of pegmatite, similar to the contact of the Sabago Pluton in Maine. Outside the zoo property several dikes of this same pegmatite occur cross-cutting the local Manhattan Schist in some locations showing a 1-inch chilled margin. These cross-cutting relationships are consistent with post-dating the primary regional Taconic foliation and deformation and this pegmatite likely represents an orogenic intrusion similar to what is seen in the Northern Appalachians.