

Merguerian, Charles, 1985c, Tectonic significance of mylonitic Paleozoic gneissic granitoids in the Shoo Fly Complex, Tuolumne County, California.

Paleozoic gneissic granitoids are an important lithologic component of the Shoo Fly Complex of the central Sierra Nevada, California. Field relations, petrographic, and geochemical studies indicate that the gneisses were originally intruded as a series of plutons ranging from gabbro (oldest) to granite and granodiorite (median age) to syenite (youngest) with the granitoid types predominating. Compositionally they express a calc-alkalic to alkalic rock suite. The plutons and related smaller injections truncate an early S_1 metamorphic foliation in the Shoo Fly and were isoclinally folded and foliated under peak epidote-amphibolite grade conditions during regional D_2 and D_3 events.

During D_2 and D_3 , the gneissic granitoids were penetratively deformed into augen gneiss, blastomylonite, and ultramylonite. Gneisses have porphyroclasts of feldspar, quartz, mica and amphibole, and granitic aggregates surrounded by an anastomosing foliation of quartzose ribbons and recrystallized quartz, feldspar, amphibole, mica, and stilpnomelane. Later deformations (D_4 - D_7) typically involved open folding with the development of a spaced biotite schistosity (S_4) and non-penetrative cleavage (S_5 , S_6 , S_7) with retrograde metamorphic recrystallization of older fabric elements.

Available geochronologic data (Sharp et al. 1982) suggests that the protoliths of the gneissic granitoids were intruded between middle Ordovician and late Devonian time, thus clearly establishing a pre-late Devonian depositional age for quartzite, gneiss, schist, marble, and amphibolite of the Shoo Fly Complex. D_1 and intrusion of the orthogneiss protoliths in the Shoo Fly may have been precursors of the Late Devonian to Early Mississippian Antler orogeny or, alternatively, may have occurred significantly earlier than the Antler orogeny. Collectively, the gneisses may mark the remnants of a Paleozoic plutonic belt as their protoliths consisted of I-type, rather than S-type granitoids.

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