

FIGURE 1—Upper Cretaceous stratigraphic column of Santa Ana Mountains with approximate position of fossil localities: 1, NHF-45; 2, CIT 1290; 3, CIT 301; 4, CIT 302; 5, UCLA 2952; 6, CIT 79; 7, CIT 1164; and 8, CIT 1062.

northern and western slopes of the Santa Ana Mountains, and in the foothills to the west. It is divided into a lower Baker Canyon Conglomerate Member and an upper Holz Shale Member. The Baker Canyon Conglomerate Member as defined by Popenoe consists of interbedded conglomerate and sandstone and includes fossiliferous sandstone at the top. The overlying Holz Shale Member consists of shales and silty shales with conglomerate and limestone lenses, and, near the top, sandstone beds that are highly fossiliferous.

The boundary between the two members is gradational, laterally variable, and time transgressive. The fossiliferous sandstone at the boundary was referred to by Popenoe (1942, p. 178, fig. 4) as the Holz-Baker Transition, and as the Baker Canyon Sandstone by Cooper et al. (1982). These boundary definitions are subject to interpretation, and Sundberg (1980, p. 843, fig. 2, p. 855, fig. 22) considered that the lithologic changes reflected

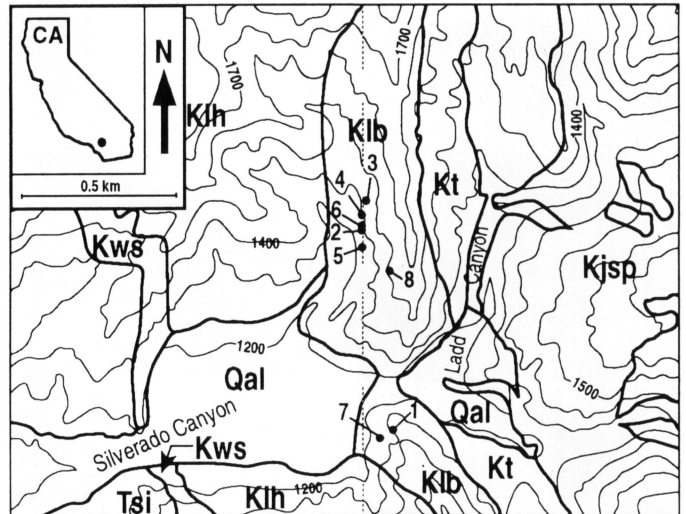


FIGURE 2—Map of fossil localities (numbered as in Figure 1). Sites 1 and 2 are localities yielding clavagellids. Sites 1 and 3-8 contain *Subprionocyclus*. (Map modified from Schoellhamer et al., 1981, sections 7-8, T5S, R7W, El Toro and Black Star Canyon quadrangles.)

fan delta and lagoonal deposits whose outcrops span the time from late Turonian to possibly Santonian.

The presence of the ammonite *Subprionocyclus* spp. at or near the collecting sites (Figure 2) provides a Turonian age for all but one of the specimens. The Natural History Foundation of Orange County clavagellid specimen NHFOC cat. no. 1964 (Figure 3.1, 3.2) has little provenance other than it is from the Holz Shale. The Holz Shale crops out in the Santa Ana Mountains and western foothills. Matrix of specimen NHFOC 1964 and its preservation are similar to that of specimens from the other two sites. NHFOC site NHF-45 yielded seven nearly complete specimens and some fragments. NHF-45 is 18 m up the first draw south of the Silverado Narrows, SW¼, sec. 8, T5S, R7W, El Toro quadrangle, Orange County, California. This collection has not been completely identified and catalogued but does contain *Subprionocyclus* spp. indicative of late Turonian age. California Institute of Technology (CIT) loc. 1290 (=Natural History Museum of Los Angeles County, Invertebrate Paleontology Section (LACMIP) loc. 10135), near the top of the Baker Canyon sandstone on south side of hill west of Mustang Springs, NW¼, sec. 8, T5S, R7W, Black Star Canyon quadrangle, yielded a specimen of *Stirpulina saulae*. The locality, approximately 320 m north of the Holz Ranch house, is probably equivalent to CIT loc. 79 from which Matsumoto (1960, p. 65) listed *Subprionocyclus* sp. Other nearby localities (Matsumoto, 1960; Saul, 1982a, 1982b) reporting *Subprionocyclus* are also shown in Figures 1 and 2. An additional paratype is from University of California, Berkeley, Museum of Paleontology UCMP loc. 2137, 1¾ mi. (2.2 km) N 75°E from B.M. 1271; at the contact between the red (Trubuco) and gray (Baker Canyon) basal conglomerates, between Harding and Williams Canyons, NW¼, sec. 21, T5S, R7W, Santiago Peak quadrangle, Orange County. It is as complete as the holotype (Figure 3.1, 3.2).

MORPHOLOGY AND CLASSIFICATION

The classification used is that of Pojeta and Sohl (1987) in which *Stirpulina* Stoliczka, 1870, is treated as a separate genus rather than as a subgenus of *Clavagella* Lamarck, 1818. These are clavagellids with left valves fused to the crypt, free right valves internal to the adventitious crypt, and anterior branching tubes on a corona.