

A New Sepiamorph Sepiid (Mollusca: Cephalopoda) from the Eocene of California

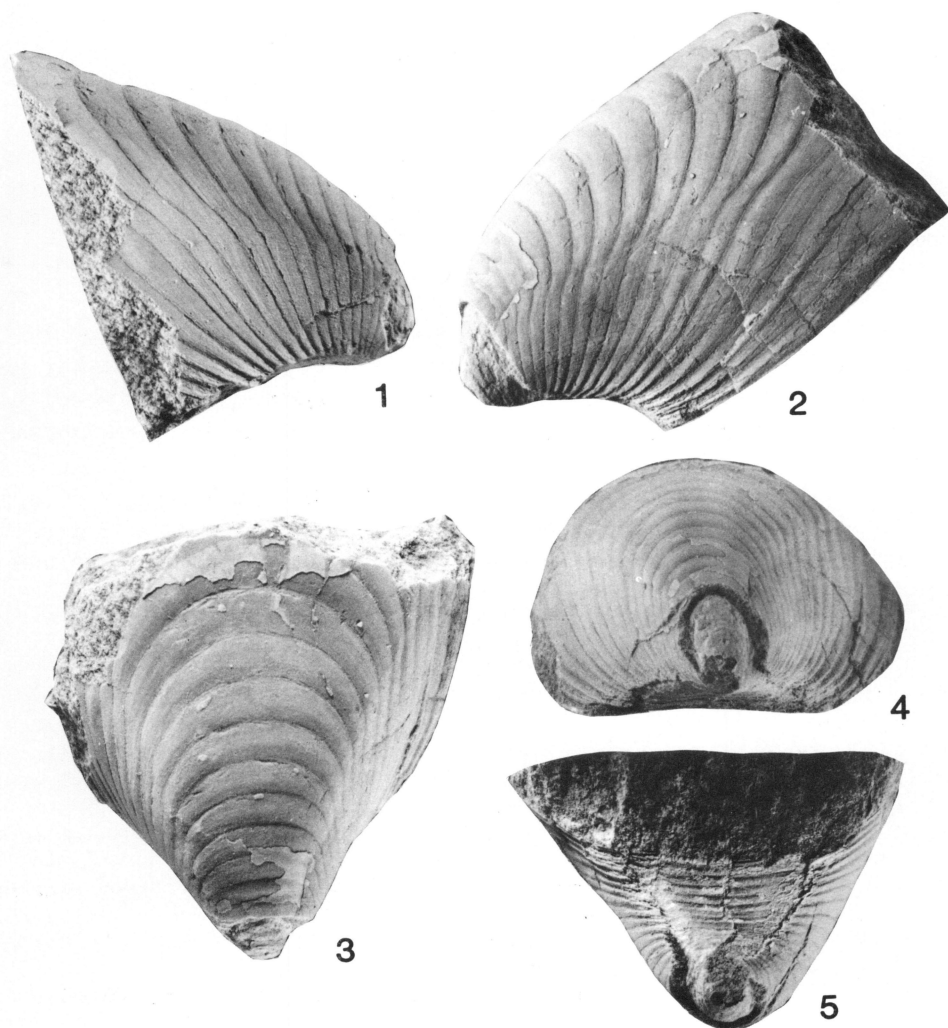
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Sepiids are extremely rare in the Paleogene fossil record of the Pacific coast of North America, and only three specimens have been previously reported. One is a partial phragmocone of an unidentifiable spirulimorph sepiid from the "Stewart bed" in the lower middle part of the Lajas Formation, Ventura County, southern California (Squires 1983, figs. 2J-K; 1984, fig. 13b). The other two are partial phragmocones of an unidentifiable sepiamorph sepiid from the upper Eocene Hoko River Formation, Olympic Peninsula, northwestern Washington (Squires 1988, figs. 2.3, 3.9-3.14).

Recently, G. L. Kennedy of the Natural History Museum of Los Angeles County Invertebrate Paleontology Section (LACMIP) brought to my attention that the museum has a sepiid specimen from Eocene strata in Rose Canyon just southeast of the intersection of Interstate Highway 5 and highway 52 in the northern part of San Diego, San Diego County, southern California. No precise locality information is known for this specimen, but the only Eocene strata that crop out in Rose Canyon are the middle Eocene Ardath Shale and the overlying middle Eocene Scripps Formation (Givens and Kennedy 1979, figs. 1, 3, 6). The grayish green rock matrix surrounding the very slightly crushed specimen is a well indurated, very fine-grained sandstone that is similar to rocks found in both the Ardath Shale and the Scripps Formation.

The Rose Canyon sepiid specimen is an internal mold with remnants of a thin nacreous layer on one side (Figs. 1-5). The specimen, which is missing the rostrum and the living chamber, consists of a partial phragmocone 22 mm in length with a maximum height of 18 mm. The apical angle is 60°. At a distance of about one-third the length of the phragmocone from the apical region, there is a slight constriction of the lateral walls of the phragmocone. The dorsal surface of the phragmocone is broadly rounded, but the ventral surface is only half as long and, although flattened relative to the overall phragmocone, is distinctly arched. There are 17 closely spaced chambers that are very narrow near the ventral surface but much wider dorsally. The height to maximum diameter ratio of the chambers is approximately 1.36, and the maximum diameter of each chamber increases in size by 11 percent relative to the preceding younger chamber. The septa of the chambers meet the ventral surface at an angle of about 80° near the apical region, but the angle decreases to about 50° at the oral end of the ventral surface. The septal suture has a very slight ventral lobe and a distinct lateral lobe that raises addorsally into a broad and rounded dorsal saddle (Fig. 6). The siphuncle, which is broken and poorly exposed in the apical region, is large and seems to have an endogastric curvature and rapidly expands adorally. It is on the ventral side of



Figs. 1-5. Sepiamorph sepiid, hypotype, LACMIP 8407, middle Eocene strata, Rose Canyon, San Diego County, southern California, $\times 2.8$ unless otherwise noted; 1, left lateral view; 2, right lateral view; 3, dorsal view; 4, apical view, $\times 2.4$; 5, ventral view, $\times 2.4$.

the phragmocone. The cross-sectional shape of the phragmocone is elliptical and hoof-like.

The Rose Canyon sepiid belongs to *Sepia*-like sepiids with strongly oblique (slanting) sutures. These sepiamorphs include *Belosepia*, *Sepia* (Jeletzky 1969, p. 107) and the Hoko River sepiid (Squires 1988). The Rose Canyon sepiamorph most closely resembles *Belosepia* Voltz, 1830, even more than does the Hoko River sepiid. The ventral flattening of the phragmocone, the hoof-like cross section, the lateral lobe, and the rapidly expanding siphuncle of the Rose Canyon specimen also are present in *Belosepia*, and these features help characterize this genus (Edwards 1849, Pl. 1, figs. 1h, 5, 6; Jeletzky 1969, pp. 26-27). The Rose Canyon specimen differs from *Belosepia*, however, in having only a very slight



Fig. 6. Septal suture of the Rose Canyon sepiamorph sepiid, hypotype, LACMIP 8407, at chamber height of 15 mm along left-lateral side of phragmocone, $\times 2.8$. The septal suture was drawn from photographs.

ventral lobe. *Belosepia* normally has a well developed ventral lobe (Jeletzky 1969, p. 26). The Rose Canyon sepiid is at least specifically distinct and possibly generically distinct, but it is doubtful that one should erect any new taxa for the Rose Canyon specimen because of the fragmentary and otherwise poor preservation.

Jeletzky (1969) mentioned that *Sepia* (family Sepiidae Keferstein) separated from *Belosepia* (family Belosepiidae Naef) during the middle Eocene. The Rose Canyon sepiid probably belongs in family Belosepiidae, but is nearer the separation of this family into Sepiidae, than any previously known sepiid.

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