



FIGURE 5—*Glycymeris yoloensis* n. sp. Specimens coated with ammonium chloride. All  $\times 1$ , except where otherwise noted. 1, 2, paratype CASG 70694, CASG loc. 31918, right valve: 1, lateral view; 2, radial striae on antero-ventral area,  $\times 5.3$ ; 3–7, holotype LACMIP 13600, LACMIP 28757, right valve: 3, lateral view; 4, postero-dorsal angulation,  $\times 6.3$ ; 5, posterior view; 6, beak view; 7, hinge,  $\times 2.7$ ; 8, paratype LACMIP 13601, LACMIP loc. 28757, right valve,  $\times 3.3$ .

21); lower Tuna Canyon Formation, Garapito Creek, Santa Monica Mountains, Los Angeles County, California (Area 27); Ladd Formation, Baker Canyon Member, Holz-Baker transition, and lower Holz Shale Member, Santa Ana Mountains, Orange County, California (Area 28); Morro Redondo Formation, south tip of Cedros Island, Baja California, Mexico (Area 34).

**Discussion.**—A total of 454 specimens was studied. Most are from the Bellavista Sandstone Member of the Redding Formation (Area 8). Preservation is good. It is very difficult to distinguish left versus right valves of this species, unless the hinge is fully exposed. Based on the original illustration, the holotype is unusual in that the sculpture is entirely covered by the superimposed radial striae. Hypotype LACMIP 10819, illustrated by Jones et al. (1978, pl. 2, figs. 23, 24) and also figured in this present report (Fig. 4.4–4.8), shows on the main part of the disk the radial striae and the underlying flat-topped ribs. All the other observed specimens are weathered, and the radial striae, if present at all, are near the ventral margin.

The earliest record of *Glycymeris pacifica* is at LACMIP loc. 23767 in the Bald Hills Member of the Budden Canyon Formation, Bald Hills, Shasta County, California (Area 11). According to Murphy et al. (1969, p. 22), the age of this member ranges from late Albian through Cenomanian. Murphy and Rodda (1960, text-fig. 1) plotted this locality [=UCLA 3767] in the upper part of the member (i.e., Cenomanian part), and in their text-figure 2, they reported the gastropod *Arrohoges (Latiata) californicus* (Gabb, 1864) from this locality. Popenoe (1983) assigned an age of Cenomanian?–early Turonian for this gastropod and commented that specimens from the Budden Canyon Member generally have somewhat coarser ribbing on the spire than is present on the Turonian ones. In summary, based on stratigraphic position and the co-occurrence of *A. (L.) californicus*, an age of late Cenomanian seems likely for the earliest record of *G. pacifica*.

*Glycymeris pacifica* is most similar to *Glycymeris marullensis* (Leymerie, 1842, p. 7, pl. 9, fig. 2; d'Orbigny, 1843, p. 187–188, pl. 306, figs. 1, 4, 5; Woods, 1899–1903, pl. 13, figs. 9a–c, 10; Nicol, 1950, pl. 22, figs. 4, 5, 8 = copied from d'Orbigny), one of the earliest glycymeridids and of early to late Aptian age from France and England. *Glycymeris pacifica* differs by being larger, more circular (i.e., not longer than high), and having no tendency to have raised, very narrow radial riblets. *Glycymeris pacifica* is also similar to *Glycymeris sublaevis* (Sowerby, 1823, p. 112, pl. 472, fig. 4; Woods, 1899–1903, pl. 14, figs. 1–7; Nicol, 1950, pl. 22, fig. 1), a species known (Casey, 1961, p. 605) from England and of middle late Aptian to early Albian age.

#### GLYCYMERIS YOLOENSIS new species

Figure 5, Table 1

**Diagnosis.**—Shell size small. Subquadrate to somewhat subcircular. Valves moderately inflated. Umbones with posterior side angulate; posterodorsal slope sulcate. Sculpture consisting of mostly flat, narrow radial ribs obscured by radial striae; scattered raised radial ribs on posterior half of valves.

**Description.**—Shell size small, up to height 22.8 mm and length 23.3 mm (same specimen), slightly longer than high, height/length ratio = 0.98. Subquadrate to somewhat subcircular. Equivalved and equilateral. Sculpture consisting of numerous flat radial ribs (approximately eight per 10 mm of distance, measured parallel to length at medial part of adult valve near ventral margin); ribs somewhat obscured by superimposed radial striae. Radial ribs become narrower and more evident on posterior margin, with some specimens having raised radial riblets alternating with wider areas consisting of flat ribs obscured by radial striae. Beaks subcentral, prominent. Umbones moderately inflated (single-valve convexity/height ratio = 0.40 to 0.43), posterior side of umbo with prominent angulation. Posterodorsal margin