assigned to the genus *Ostrea*. Chomata have not been found on either *O. eldridgei or O. eldridgei ynezana* and the assignment to the genus *Ostrea* is based only on the apparent evolutionary relationship with *O. howelli*.

Ostrea howelli Wiedey
Pl. 2, figs. 1-6; Pl. 3, figs. 3, 4

Ostrea Veatchii Gabb. Yates, 1903, p. 87-88, pl. 7, fig. 6; p. 89-90, pl. 8, figs. 18-20.

(non) *Ostrea Veatchii* Gabb, 1866, p. 34-35, pl. 11, fig. 59. (=*Ostrea vespertina, fide* Arnold, 1910, p. 77.)

Ostrea howelli Wiedey, 1928, p. 135-136, pl. 15, figs. 1, 2.

Ostrea loeli Hertlein, 1928, p. 144-146, pl. 22, figs. 2, 3.

Ostrea wiedeyi Hertlein, 1928, p. 147-148, pl. 23, fig. 1, 10.

Ostrea vespertina (Conrad) *loeli* (Hertlein). Loel and Corey, 1932, p. 193-194, pl. 16, figs. 1a, 1b, 2; pl. 17, figs. 1a, 1b, 2a, 2b, 3.

Loel and Corey (1932) synonymized *Ostrea wiedeyi* with *O. loeli*, but did not note their similarity with *O. howelli*. *O. loeli* was distinguished by a few, low, broadly rounded ribs, *O. wiedeyi* by many, prominent, elevated ribs, and *O. howelli* by a few, prominent, elevated ribs. At localities where specimens are abundant, however, all three forms occur together and are clearly variants of a single species. Plate 2 illustrates individuals collected from the oyster bed near the bottom of the middle member. The name *O. howelli* has priority over the other two names because it was published two months earlier.

Ostrea howelli is found only in lower Miocene rocks, whereas *O. vespertina* occurs in rocks from Pliocene to Holocene, and questionably in the upper Miocene. The shell of *O. howelli* is thicker, the hinge is thicker and stronger, and the ligament area longer than in *O. vespertina*. Because no continuous chronological or morphological gradation exists between the two species and because *O. howelli* in this area seems to have evolved into *O. eldridgei*, *O. howelli* is retained at full specific rank.

Ostrea howelli is the most abundant fossil in the lower member of the Vaqueros Formation. It occurs commonly in the form of well-preserved, paired valves in nonresistant siltstone beds that are 0.5 to 1.0 m thick. Growth series are not evident. Average height of the shells is 8 to 10 cm.

Ostrea eldridgei Arnold
Pl. 4, fig. 1

Ostrea eldridgei Arnold, 1907a, p. 528, pl. 42, figs. 2, 2a.

Ostrea eldridgei most commonly occurs in distinct lenses near the base of the upper member of the Vaqueros Formation, but scattered valves also occur in the remainder of the member. Most specimens are moderately preserved, unbroken, single valves which show some wear. Articulated specimens occur, but not as commonly as with the other two oyster species. The species is differentiated from *O. eldridgei ynezana* by its lack of sculpture.

Plate 3. Fossils from the middle member of the Vaqueros Formation. (Figures are natural size except where noted.)

Figure 1--*Anadara santana* Loel and Corey, exterior of right valve, hypotype UCLA 58225, UCLA loc. 4268; 2--*Anadara* cf. *A. microdonta* (Conrad), exterior of left valve, hypotype UCLA 58207, CSUN loc. 148; 3--*Ostrea howelli* Wiedey, dorso-posterior interior ligament margin of left (lower) valve showing chomata, hypotype UCLA 58190, CSUN loc. 8; 4--*O. howelli* Wiedey, dorso-posterior interior ligament margin of right valve showing anachomata, hypotype UCLA 58209 = CSUN loc. 162; 5--*Ostrea eldridgei ynezana* Loel and Corey, exterior of left valve, hypotype UCLA 58203, = CSUN loc. 53; 6--*Spondylus perrini* Wiedey, exterior of right valve, hypotype UCLA 58205, CSUN loc. 125; 7--*Chione* cf. *C. richthofeni* Hertlein and Jordan, exterior of right valve, hypotype UCLA 58208, CSUN loc. 150; 8--*Macoma arctata* (Conrad), exterior of left valve, hypotype UCLA 58214, CSUN loc. 338; 9--*Panopea ramonensis* Clark, exterior of left valve, hypotype UCLA 58215, CSUN loc. 338.

Ostrea eldridgei ynezana Loel and Corey
Pl. 3, fig. 5

Ostrea eldridgei ynezana Loel and Corey, 1932, p. 189-190, pl. 11, fig. 3; pl. 12, figs. 1a-1c; pl. 13, figs. 1, 2a, 2b.

Ostrea eldridgei ynezana, like *O. howelli*, occurs in nonresistant siltstone beds in which the valves are commonly articulated and moderately to well preserved. Beds of *O. eldridgei ynezana* occur in the upper part of the middle member of the Vaqueros Formation, well above the beds of *O. howelli*, although individual specimens referable to *O. eldridgei ynezana* occur in a few places in the lower *O. howelli* beds. The species is differentiated from *O. howelli* by the presence of low, fluted corrugations on the shell, in place of the larger, higher, more angular ribs of *O. howelli*.

Ostreid coquina

At locality 307, and commonly near the top of Thor's (this guidebook) facies C of the Santa Margarita Formation, is an ostreid coquina that consists of fragments of oysters other than *Crassostrea titan*. The fragments are 0.5 to 2 cm long, very thin, and make up over 95 percent of the coquina.

Family Pectinidae

Unidentified pectinid

All unidentified pectinids from the Vaqueros Formation are poorly preserved, broken valves. Specimens from the Santa Margarita Formation are internal molds of incomplete valves.

Genus *Chlamys* Röding, 1798

Chlamys sespeensis Arnold
Pl. 4, fig. 2

Pecten (Chlamys) sespeensis Arnold, 1906, p. 69, pl. 8, figs. 2, 2a, 3.

All specimens of *Chlamys sespeensis* are single valves with only parts of the auricles present. Preservation of the surface sculpture generally is fair.