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Recent Mollusks of the 1940 "E. W. Scripps" Cruise to the Gulf of California

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INTRODUCTION

In the fall of 1940, the Geological Society of America and the Scripps Institution of Oceanography jointly sponsored a scientific expedition to the Gulf of California for the purpose of undertaking geologic and oceanographic studies. With the auxiliary schooner "E. W. Scripps" as a base of operations, the work of the expedition was mainly concentrated regionally in four relatively small areas, namely: Tiburon Island and Guaymas, Sonora, and Carmen Island and Concepción Bay, Baja California, Mexico (see location map, fig. 1). The results of the investigations are summarized in a volume pertaining to the geology, paleontology, submarine topography, sedimentation, and oceanography of these general areas (Anderson *et al.*, 1950).

Largely through the efforts of the expedition's paleontologist, J. Wyatt Durham, a sizable collection of Recent metazoan marine invertebrates, mostly mollusks, was obtained. Owing to the necessity of concentrating on geological and paleontological field work, the limitations of time permitted only incidental collecting of modern invertebrates. Nevertheless, significant intertidal and subtidal collections were made. Though the material from the intertidal zone is represented mainly by dead, beach-worn specimens, some of the records indicate extensions of the known geographical ranges for several of the species. The oceanographic stations of the

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"E. W. Scripps" also yielded numerous mollusks from 14 dredge hauls, two snapper samples, and two mushroom-anchor hauls, in depths of from 4 to 1720 meters. In conjunction with the preparation of the report on the megascopic fossils collected by the expedition (Durham, 1950), many of the larger Recent mollusks were provisionally identified by Durham. Much of the submegascopic material was identified by the late A. M. Strong, a specialist of the minute eastern Pacific mollusks. Durham (1942), in a paper describing four new species of gastropods in this collection, listed and briefly discussed the mollusks from two of the dredge hauls. As other duties prevented his completion of this study, Durham suggested that the present writers prepare the following report on the mollusks.

It is a pleasure to acknowledge the considerable assistance given to us by Dr. Leo George Hertlein of the California Academy of Sciences, San Francisco. Dr. Hertlein gave unstintingly of his time in helping with the identification of difficult groups and kindly permitted us to consult his voluminous notes on the Panamic mollusks.

PREVIOUS WORK

Large series of marine mollusks have been assembled by several scientific expeditions to the Gulf of California. Some of these have been described. Notable are the collections made by the California Academy of Sciences expedition in 1921 (Slevin, 1923) and by the Templeton Crocker expedition of the New York Academy of Sciences in 1936 (Beebe, 1937). The mollusks obtained by the 1921 investigation have been partially recorded in several taxonomic papers that describe certain groups, including the Triphoridae by Baker (1926), the Opisthobranchiata by Baker and Hanna (1927), and the genus *Conus* by Hanna and Strong (1949).

The magnificent collection procured by the eastern Pacific expeditions of the New York Zoological Society, including the results of the 1936 cruise to the Gulf of California, form the basis of the excellent reports on the "Mollusks from the west coast of Mexico and Central America" by Hertlein and Strong (1940-1951). Unfortunately, circumstances limited the review of the gastropods to descriptions of the new species, but the treatment of the pelecypods in the collection is complete. Pilsbry and Lowe (1932), and Lowe (1935) described and recorded numerous mollusks taken by Lowe during the period 1929-1934. The intertidal mollusks obtained by the Steinbeck-Ricketts expedition of 1939 were enumerated and annotated with ecological data by Ricketts (1941). Many records for the Gulf of California are cited in papers dealing with the Panamic faunal province. Strong and Hertlein (1939) and Hertlein and

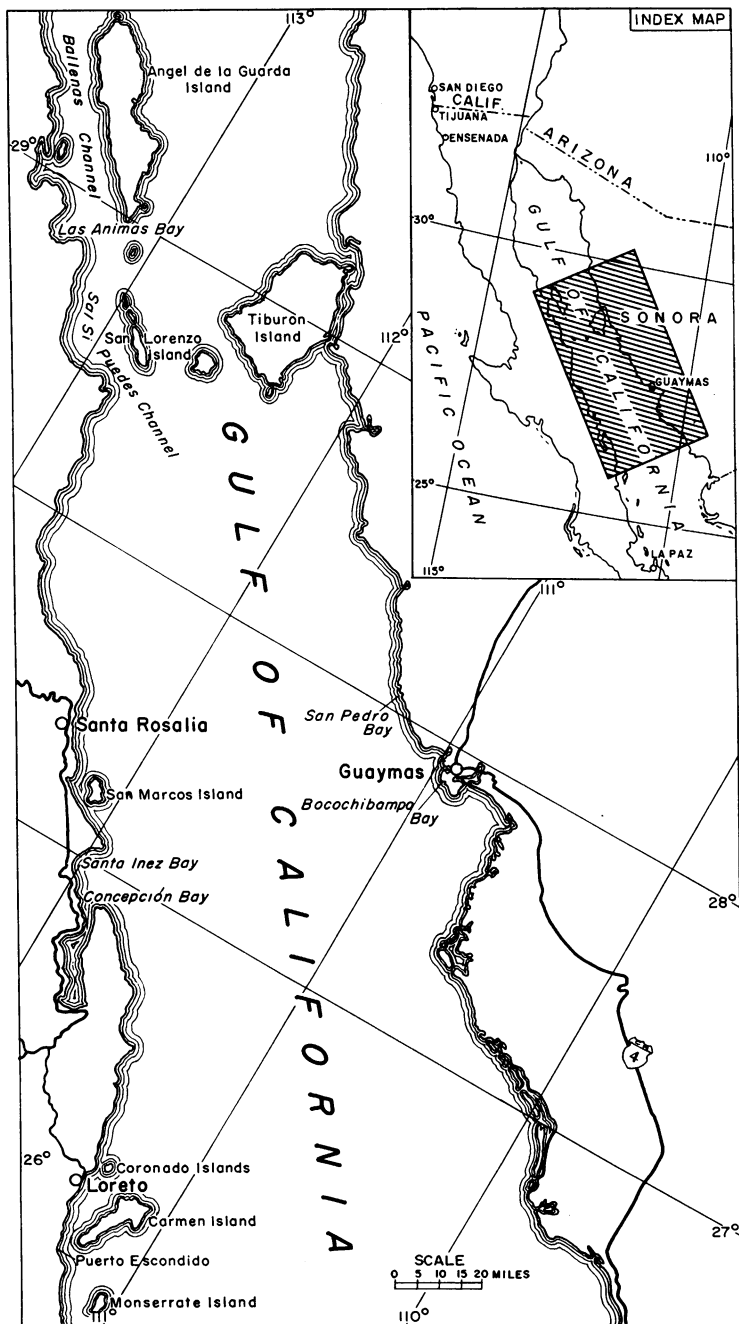


FIG. 1. Map showing the location of the principal collecting areas mentioned in the text.

Strong (1955) have reviewed much of this literature. Students of this rich fauna are handicapped by the lack of a generally available, well-illustrated reference book in which the marine mollusks are described.

It should be noted that two very large, important collections from the Gulf of California remain virtually unrecorded. These are the mollusks taken by the 1911 voyage of the "Albatross" (Townsend, 1916) and the several cruises of the "Velero III" and "Velero IV" (Fraser, 1943). The first is especially rich in tidal, shallow-water samples, and the second is composed largely of dredged material.

REMARKS CONCERNING COMPOSITION AND SIGNIFICANCE OF THE COLLECTION

The present collection represents but a portion of the known molluscan constituents of the Panamic faunal province. It does, however, constitute the largest number of species recorded from a single expedition to the Gulf of California. Attesting to the richness of this fauna, Lowe (1935) reported 270 identified species from the vicinity of Punta Peñasco, Sonora, and Keen (1947) listed from the same locality an additional 56 species collected by the 1941 Stanford University expedition. Berry (1953) found 1476 specimens, representing at least 131 species, in a quart of sand siftings taken at Punta Colorado, Sonora.

A tabulation of the 311 identified species referable to the three classes that comprise the present collection is given below:

	PELECYPODA	SCAPHOPODA	GASTROPODA
Definitely identified	118	2	177
Doubtfully identified			
"cf."	1		6
"aff."	2		5
Total	121	2	188

The specimens of the doubtfully identified species have been referred to species that appear to be their closest allies. Those listed as "cf." (*confer*) probably are referable to the species with which the specimens have been compared, but owing to poor or fragmental preservation cannot be identified with certainty. The number of references to this category is an indication of the large element of dead, beach-worn specimens in the collection. Records cited as "aff." (*affinis*) are questionably referred to species in which they appear to have their closest affinities, but are not necessarily conspecific. These citations largely reflect the presence of only juvenile individuals, or the lack of illustrations and adequate descriptions for some of the recorded species.

Probably the most significant discovery resulting from the study of this collection is the finding of representatives of the genus *Ensitellops*, herein described as *E. hertleini*, new species, living in the eastern Pacific ocean. Congeners are known from the Miocene and Pliocene record of eastern North America, and the related *Sportella* group is recorded from late Tertiary and Pleistocene deposits of western Europe.¹ This is another example of the similarity of elements in the two American tropical faunal sequences, a topic discussed by many authors, most recently by Hertlein and Strong (1955, p. 167).

As mentioned above, Durham (1942) described four new species of gastropods in the collection, namely: *Trophon* (*Boreotrophon*) *diazi*, *Trophon lorenzoensis*, *Vitrinella guaymasensis*, and *Vitrinella tiburonensis*.

The composition of the present collection is characteristically tropical west American in its affinities. All the species that comprise the collection previously were recorded living in the Gulf of California with the exception of the five species cited above and the following:

Verticordia (*Trigonulina*) *ornata* (d'Orbigny), 1846

Petalococonchus anellum (Mörch), 1861

Cerithiopsis halia Bartsch, 1911

Teinostoma gallegosi Jordan, 1936

Pterynotus (*Pteropurpura*) *inezana* (Durham), 1950

The last two species listed were previously known only from the Pleistocene of Baja California. Another record, *Saxicavella pacifica* Dall, 1916, a species described from Point Loma, California, is questionably identified and may prove to be a new species. Extensions of the recorded ranges within the Gulf of California also are indicated for eight additional species.

A tabulation of the bathymetric occurrences of the species from the 14 dredge hauls and two snapper samples is presented in table 1.² Although the stations range in depth from 4 to 482 meters, the majority of the records are from less than 200 meters. Our knowledge of the depth

¹ It should be noted that four modern American species, two from the western Atlantic and two from the eastern Pacific, have been assigned to the genus *Sportella* by Dall (1899). Jordan (1936) described *Sportella duhemi* from Pleistocene deposits at Magdalena Bay, Baja California. The validity of these generic allocations has not been verified by the present writers.

² Differentiation is not made between the records of living specimens and those of dead specimens.

TABLE 1
BATHYMETRIC DISTRIBUTION OF SPECIES BY OCEANOGRAPHIC STATIONS, WITH DEPTHS IN METERS

	A-3602	4	A-3603	20	A-3627	26	A-3628	31	A-3625	38	A-3629	61	A-3610	161	A-3604	185	A-3633	200	A-3605	221	A-3634	393	A-3635	431	A-3636	482	A-3601	1043*	A-3599	1720*
PELECYPODA																														
<i>Nucula (Nucula) declivis</i> Hinds																														
<i>Nucula (Nucula) exigua</i> Sowerby																														
<i>Nuculana (Saccella) elenensis</i> (Sowerby)																														
<i>Nuculana (Saccella) laeviradiatus</i> (Pilsbry and Lowe)																														
<i>Nuculana (Saccella) impar</i> (Pilsbry and Lowe)																														
<i>Nuculana (Saccella) panamensis</i> (Dall)																														
<i>Solemya (Petrasma) panamensis</i> (Dall)																														
<i>Arca (Anadara) reinharti</i> Lowe																														
<i>Arca (Scapharca) cf. A. labiosa</i> Sowerby																														
<i>Arca (Cunearca) nux</i> Sowerby																														
<i>Crenella divaricata</i> (d'Orbigny)																														
<i>Brachidontes (Hormomya) multiformis</i> (Carpenter)																														
<i>Propeamussium pernominus</i> (Hertlein)																														
<i>Aequipterus (Plagiotenium) circularis</i> (Sowerby)																														
<i>Pecten (Lyropecten) subnodosus intermedius</i> (Conrad)																														
<i>Anomia peruviana adamas</i> Gray																														
<i>Crassatellites (Hybolophus) aff. C. gibbosus</i> (Sowerby)																														
<i>Crassinella varians</i> (Carpenter)																														
<i>Diplodonta (Diplodonta) subquadrata</i> Carpenter																														
<i>Diplodonta (Phlyctiderma) semirugosa</i> Dall																														
<i>Lucina (Bellucina) cancellaris</i> Philippi																														
<i>Lucina (Parvilucina) approximata</i> (Dall)																														
<i>Lucina (Parvilucina) mazatlanica</i> Carpenter																														
<i>Lucina (Luciniscia) nuttalli centrifugus</i> (Dall)																														

*Specimens from sediment brought up on mushroom anchor.

TABLE 1—(Continued)

<i>Ctena chiquila</i> (Dall)	A-3602	4	A-3603	4	A-3626	20	A-3627	26	A-3628	26	A-3613	31	A-3625	33	A-3608	38	A-3629	61	A-3610	161	A-3604	185	A-3633	200	A-3605	221	A-3634	393	A-3635	431	A-3636	482	A-3601	1043	A-3599	1720
<i>Kellia laperousi</i> (Deshayes)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Aligena nucua</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Cardium</i> (<i>Microcardium</i>) <i>pazianum</i> (Dall)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Cardium</i> (<i>Laevicardium</i>) <i>elenense</i> forma <i>apicinum</i> (Carpenter)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Cardium</i> (<i>Americardia</i>) <i>biangulatum</i> Broderip and Sowerby	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Cardium</i> (<i>Trigoniocardia</i>) <i>graniferum</i> Broderip and Sowerby	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Gouldia californica</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Megapitaria squalida</i> (Sowerby)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Chione</i> (<i>Chione</i>) <i>californiensis</i> (Broderip)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Chione</i> (<i>Chionopsis</i>) <i>gnidia</i> (Broderip and Sowerby)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Chione</i> (<i>Lirophora</i>) <i>kelletii</i> (Hinds)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Protothaca</i> (<i>Callithaca</i>) <i>grata</i> (Say)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Semele guaymasensis</i> Pilsbry and Lowe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Semele pacifica</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Abra palmeri</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Macoma</i> (<i>Psammacoma</i>) <i>panamensis spectri</i> Hertlein and Strong	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Tellina</i> (<i>Moerella</i>) <i>amianta</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Tellina</i> (<i>Moerella</i>) <i>arenica</i> Hertlein and Strong	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
<i>Tellina</i> (<i>Moerella</i>) <i>paziana</i> Dall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	

TABLE 1—(Continued)

<i>Tellina</i> (<i>Moerella</i>) <i>labogensis</i> Salisbury	A-3602	4	A-3603	4	A-3626	20	A-3627	26	A-3628	26	A-3613	31	A-3625	33	A-3608	38	A-3629	61	A-3610	161	A-3604	185	A-3633	200	A-3605	221	A-3634	393	A-3635	431	A-3636	482	A-3601	1043	A-3599	1720	
<i>Tellina</i> (<i>Merisca</i>) <i>proclivis</i> Hertlein and Strong																																					
<i>Hiatella arctica</i> (Linné)																																					
<i>Panope generosa solida</i> Dall																																					
<i>Saxicavella</i> aff. <i>S. pacifica</i> Dall																																					
<i>Corbula</i> (<i>Caryocorbula</i>) <i>nasuta</i> Sowerby																																					
<i>Corbula</i> (<i>Caryocorbula</i>) <i>nuciformis</i> Sowerby																																					
<i>Sphenia</i> aff. <i>S. fragilis</i> Carpenter																																					
<i>Verticordia</i> (<i>Trigonulina</i>) <i>ornata</i> (d'Orbigny)																																					
<i>Cuspidaria</i> (<i>Cardiomya</i>) <i>dulcis</i> Pilsbry and Lowe																																					
SCAPHOPODA																																					
<i>Cadulus perpusillus</i> (Sowerby)																																					
<i>Dentalium numerosum</i> "Dall" Pilsbry and Sharp																																					
GASTROPODA																																					
<i>Hemiloma</i> aff. <i>H. hermosa</i> Lowe																																					
<i>Diodora alta</i> (C. B. Adams)																																					
<i>Acmaea rosacea</i> Carpenter																																					
<i>Skenea</i> cf. <i>S. seminuda</i> (C. B. Adams)																																					
<i>Skenea</i> cf. <i>S. spiritalis</i> (Baker, Hanna, and Strong)																																					
<i>Skenea</i> cf. <i>S. stephensae</i> (Baker, Hanna, and Strong)																																					
<i>Teinostoma amplexans</i> Carpenter																																					

TABLE 1—(Continued)

<i>Teinosoma carinata</i> (Carpenter)	A-3602	4	A-3603	4	A-3626	20	A-3627	26	A-3628	26	A-3613	31	A-3625	33	A-3608	38	A-3629	61	A-3610	161	A-3604	185	A-3633	200	A-3605	221	A-3634	393	A-3635	431	A-3636	482	A-3601	1043	A-3599	1720
<i>Cyclostrema</i> cf. <i>C. madrae</i> Baker, Hanna, and Strong																																				
<i>Cyclostrema</i> cf. <i>C. xantusi</i> Bartsch																																				
<i>Alvania monseratensis</i> Baker, Hanna, and Strong				x																						x										
<i>Vitrinella guaymasensis</i> Durham				x			x		x																	x										
<i>Vitrinella tiburonensis</i> Durham																																				
<i>Circulus cerrosensis</i> Bartsch						x																														
<i>Circulus</i> cf. <i>C. tricarinatus</i> (C. B. Adams)																																				
<i>Circulus liriopae</i> Bartsch																x																				
<i>Rissoella johnstoni</i> Baker, Hanna, and Strong											x																									
<i>Turritella leucostoma</i> Valenciennes						x													x																	
<i>Torinia planispira</i> (Pilsbry and Lowe)												x								x																
<i>Petalonchus anellum</i> (Mörch)																																				
<i>Caecum firmatum</i> C. B. Adams				x																																
<i>Alaba supralirata</i> Carpenter				x								x																								
<i>Alabina diomedae</i> Bartsch						x						x																								
<i>Cerithiopsis halia</i> Bartsch																																				
<i>Melaxia convexa</i> (Carpenter)																			x																	
<i>Seila assimilata</i> (C. B. Adams)																				x																
<i>Triphora chamberlini</i> Baker																																				
<i>Triphora evermanni</i> Baker																																				
<i>Epitonium</i> aff. <i>E. appressicostatum</i> Dall																																				
<i>Epitonium</i> aff. <i>E. diegenis</i> Dall																																				
<i>Epitonium wurtsbaughi</i> Strong and Hertlein																																				

TABLE 1—(Continued)

	A-3602	4	A-3603	4	A-3626	20	A-3627	26	A-3628	26	A-3613	31	A-3625	33	A-3608	38	A-3629	61	A-3610	161	A-3604	185	A-3633	200	A-3605	221	A-3634	393	A-3635	431	A-3636	482	A-3601	1043	A-3599	1720
<i>Eulima burraei</i> (Bartsch)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Balcis abrejosensis</i> (Bartsch)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Balcis mexicana</i> (Bartsch)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Iselica maculosa</i> (Carpenter)	x	—	—	—	—	—	x	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Odostomia convexa</i> (Carpenter)	—	—	—	—	—	—	x	x	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Odostomia dotella</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	x	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Odostomia effusa</i> (Carpenter)	—	—	—	—	—	—	—	—	—	—	x	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Odostomia fasciata</i> (Carpenter)	—	—	—	—	—	—	—	—	—	—	x	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Odostomia telescopium</i> (Carpenter)	—	—	x	—	—	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla c-b-adamsi</i> (Carpenter)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—			
<i>Turbonilla halidoma</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla larunda</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla macbridei</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla muricata</i> (Carpenter)	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla pazana</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla sanctorum</i> Dall and Bartsch	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Turbonilla subangulata</i> (Carpenter)	—	—	—	—	—	—	—	—	x	—	—	x	x	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Pyramidella bicolor</i> Menke	—	—	x	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Pyramidella hermosa</i> Lowe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Cheilea equestris</i> (Linné)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Hipponyx pilosus</i> (Deshayes)	—	—	—	—	—	—	—	—	x	—	—	—	—	x	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	x	—	—	—		
<i>Calyptrea mamillaris</i> Broderip	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Crucibulum imbricatum</i> (Sowerby)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
<i>Crucibulum spinosum</i> (Sowerby)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		

TABLE 1—(Continued)

<i>Crucibulum umbrellum</i> (Deshayes)																												
<i>Strombus gracilior</i> Sowerby																												
<i>Erato columbella</i> Menke																												
<i>Pusula californica</i> (Gray)																												
<i>Cassia coarctatus</i> Sowerby																												
<i>Trophonopsis (Boreotrophon) diazi</i> (Durham)																												
<i>Trophon lorenzensis</i> Durham																												
<i>Strombina maculosa</i> (Sowerby)																												
<i>Nassarius versicolor</i> (C. B. Adams)																												
<i>Marginella minor</i> C. B. Adams																												
<i>Gibberulina margaritula</i> (Carpenter)																												
<i>Cymatiosyrinx roseola</i> Hertlein and Strong																												
" <i>Cytherea</i> " aff. <i>C. adria</i> (Dall)																												
" <i>Cytherea</i> " aff. <i>C. carissima</i> Pilsbry and Lowe																												
" <i>Cytherea</i> " <i>trichodes</i> (Dall)																												
<i>Kurtzina antiochroa</i> (Pilsbry and Lowe)																												
<i>Retusa laticola</i> (C. B. Adams)																												
<i>Acteocina carinata</i> (Carpenter)																												
<i>Acteocina smirna</i> Dall																												
<i>Acteocina infrequens</i> (C. B. Adams)																												
<i>Volvulella</i> aff. <i>V. cyclindrica</i> (Carpenter)																												
<i>Cylichna defuncta</i> (Baker and Hanna)																												
<i>Acteon traski</i> Stearns																												

ranges of the mollusks in the Gulf of California is very limited. A better understanding of the composition of the critical near-shore communities would not only benefit the neontologist, but would be of considerable aid to the paleontologist for making paleoecological interpretations of the Pacific coast Tertiary fossil record. Congeners or closely related groups of many of the species recorded from the warm-water faunas of the older Tertiary of northwestern North America are present in the modern Panamic fauna.

Sverdrup (1940) has summarized the oceanographic data obtained by the 1939 cruises of the "E. W. Scripps" and the "U.S.S. Bushnell" to the Gulf of California. Basin conditions were found to exist in the inner portion, which is separated by a sill extending approximately south-southeast from Tiburon Island at a maximum depth of 200 to 250 meters. The samples in the present collection from two mushroom-anchor hauls, localities A-3599 and A-3601, appear to be from isolated basins. Durham (1942) reported the first, in Sal Si Puedes Channel between the San Lorenzo Islands and the peninsula of Baja California, to be from a depth of at least 1720 meters with a sill at about 300 meters and to have a bottom temperature 7° C. warmer than the temperature for this depth in the open Gulf. The other anchor sample was taken a few miles to the northwest in Ballenas Channel at a depth of 1043 meters. The mollusks from these samples are listed below:

LOCALITY A-3599

- Solemya (Petrasma) panamensis* (Dall), 1908
- Propeamussium pernomus* (Hertlein), 1935
- Crassinella varians* (Carpenter), 1855
- Tellina (Moerella) paziana* Dall, 1900
- Cadulus perpusillus* (Sowerby), 1832
- Trophon lorenzoensis* Durham, 1942
- Trophonopsis (Boreotrophon) diazi* (Durham), 1942
- Gibberulina margaritula* (Carpenter), 1857

LOCALITY A-3601

- Lucina (Parvilucina) approximata* (Dall), 1901
- Lucina (Parvilucina) mazatlanica* Carpenter, 1855
- Turbonilla c-b-adamsi* (Carpenter), 1856

DESCRIPTION OF COLLECTING STATIONS

The depository of the collection of Recent mollusks taken on the "E. W. Scripps" cruise to the Gulf of California is the Museum of Paleontology, University of California, Berkeley. The locality numbers that the Museum of Paleontology has assigned to the collecting stations are arranged in numerical sequence below, and all the available pertinent

data are given for each locality (see fig. 1 for place names). The "E. W. Scripps" numbers, a combination of Roman and Arabic numerals, are indicated for the oceanographic stations. With the exception of locality A-3602, no information is available concerning the composition of the bottom sediments.

- A-3599, XVI/222A: Sal Si Puedes Channel; between San Lorenzo Islands and Peninsula of Baja California. Latitude $28^{\circ} 39' N.$, longitude $112^{\circ} 59' W.$, depth 1720 meters. Sample from mushroom anchor. Channel is a barred basin with a sill depth of about 300 meters, bottom temperature $12^{\circ} C.$, basin isolated from other similar deep areas. Bottom currents up to 0.5 knot/hour, mainly from north to south.
- A-3601, XVI/218: Location and data as above, but in Ballenas Channel a few miles to the northwest. Latitude $29^{\circ} 05.8' N.$, longitude $113^{\circ} 21.2' W.$, depth 1043 meters.
- A-3603 (Snapper sample = A-3602), XVI/64a: Guaymas Harbor, Sonora, Mexico. Inner anchorage. Depth 4 meters; sediment analysis: 16 per cent sand, 31 per cent silt, and 53 per cent clay.
- A-3604, XVI/81: About 4 miles north of Puerto Escondido, west of Carmen Island. Latitude $25^{\circ} 51.4' N.$, longitude $111^{\circ} 19.2' W.$, depth 185 meters.
- A-3605, XVI/82: Three miles southeast of Loreto, Baja California. Latitude $25^{\circ} 57.35' N.$, longitude $111^{\circ} 18.9' W.$, depth 221 meters.
- A-3608, XVI/91: West of Carmen Island, in basin. Latitude $25^{\circ} 58.1' N.$, longitude $111^{\circ} 20.2' W.$, depth 38 meters.
- A-3610, XVI/95: Basin west of Carmen Island. Latitude $25^{\circ} 54.4' N.$, longitude $111^{\circ} 13.7' W.$, depth 161 meters.
- A-3613, XVI/138: Off shore from Carmen Island. Latitude $25^{\circ} 52.5' N.$, longitude $111^{\circ} 11.8' W.$, depth 31 meters.
- A-3625, XVI/148: Concepción Bay, Baja California. Latitude $26^{\circ} 47.3' N.$, longitude $111^{\circ} 50.8' W.$, depth 33 meters.
- A-3626, XVI/149: Concepción Bay, Baja California. Latitude $26^{\circ} 45.1' N.$, longitude $111^{\circ} 51.5' W.$, depth 20 meters.
- A-3627, XVI/151: Concepción Bay, Baja California. Latitude $26^{\circ} 37.4' N.$, longitude $111^{\circ} 49.9' W.$, depth 26 meters.
- A-3628, XVI/152: Concepción Bay, Baja California. Latitude $26^{\circ} 35.1' N.$, longitude $111^{\circ} 46.25' W.$, depth 26 meters.
- A-3629, XVI/154: Between Concepción Bay and San Marcos Island. Latitude $26^{\circ} 57' N.$, longitude $111^{\circ} 55.3' W.$, depth 61 meters.
- A-3633, XVI/194: South of Tiburon Island. Latitude $28^{\circ} 20.5' N.$, longitude $112^{\circ} 19.7' W.$, depth 200 meters.
- A-3634, XVI/202: West of Tiburon Island. Latitude $28^{\circ} 46.8' N.$, longitude $112^{\circ} 51.3' W.$, depth 393 meters.
- A-3635, XVI/211: West of Tiburon Island. Latitude $29^{\circ} 15.5' N.$, longitude $113^{\circ} 03' W.$, depth 431 meters.
- A-3636, XVI/213: East of Angel de la Guarda Island. Latitude $29^{\circ} 07' N.$, longitude $113^{\circ} 05' W.$, depth 482 meters.
- A-3637: Sandy beach, Salinas Bay, Carmen Island.
- A-3638: Rock-cliffed beach, south side of Monserrate Island.

- A-3639: Protected sandy beach, Las Animas Bay, east side of Peninsula of Baja California.
A-3640: Gravel beach, San Pedro Bay, northwest of Guaymas, Sonora, Mexico.
A-3641: Rocky beach, northwest arm of Bocochibampo Bay, northwest of Guaymas, Sonora, Mexico.
A-3642: Sandy to cobbly beach, northwest arm of Bocochibampo Bay, northwest of Guaymas, Sonora, Mexico.
A-3644: Sandy beach, east shore, outside of inner harbor, Guaymas, Sonora, Mexico.
A-3645: Beach, Salinas Bay, Carmen Island, east shore of bay halfway to Perico Point.
A-3646: Rocky beach, coral reef off shore (?), Marquer Bay, Carmen Island.
A-3647: Beach, Puerto Escondido, east shore of peninsula of Baja California across from Carmen Island.
A-3649: Sandy and cobbly beach, Puerto Escondido, east shore of peninsula of Baja California across from Carmen Island. About 1 1/2 miles south along beach from entrance to lagoon.
A-3650: Sandy and pebbly beach, Loreto, east shore of peninsula of Baja California.
A-3652: Calcareous sandy beach, along shore west side of Coyote Bay, Concepción Bay, east shore of peninsula of Baja California.
A-3654: Rocky beach, Humbug Bay, Angel de la Guarda Island, very deep water off shore.
A-3655: Sandy beach, Santa Inez Bay, east shore of peninsula of Baja California. Bay shallow, with calcareous sand substrate.
A-3657: Pearl oyster dump, south side of Coronado Island.
A-3663: Sandy and pebbly beach, south end of San Marcos Island.
B-864: Beach, Coyote Lagoon, Puerto Escondido, south of Loreto, Baja California.

SYSTEMATIC ACCOUNT

The nomenclature used for the records cited below essentially follows that of Hertlein and Strong (1940-1951) for the Pelecypoda. Owing to the absence of a modern comprehensive report on the Gastropoda of the Panamic faunal province, the nomenclatural treatment of this class is largely one of convenience.

In the following list, records from oceanographic stations and from localities on the islands have been, for expediency, arbitrarily referred to the nearest mainland, i.e., either Baja California or Sonora, Mexico. All the available locality data are included in the Description of Collecting Stations (p. 12).

CLASS PELECYPODA

ORDER TAXODONTA

FAMILY NUCULIDAE

Nucula (Nucula) declivis Hinds, 1843

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); between Concepción Bay and San Marcos Island, 61 meters (A-3629);

Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3628).

Nucula (Nucula) exigua Sowerby, 1833

RECORDS: *Baja California*: Off Carmen Island, 31 meters (A-3613).
Sonora: South of Tiburon Island, 200 meters (A-3633).

FAMILY NUCULANIDAE

Nuculana (Saccella) elenensis (Sowerby), 1833

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); west of Carmen Island, 38 meters (A-3608).

Nuculana (Saccella) laeviradius (Pilsbry and Lowe), 1932

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); west of Carmen Island, 38 meters (A-3608).

Nuculana (Saccella) impar (Pilsbry and Lowe), 1932

RECORD: *Sonora*: Guaymas Harbor, 4 meters (A-3602).

FAMILY SOLEMYIDAE

Solemya (Petrasma) panamensis (Dall), 1908

RECORD: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599).

FAMILY ARCIDAE

Arca (Arca) mutabilis (Sowerby), 1833

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647).

Arca (Arca) pacifica (Sowerby), 1833

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Loreto, beach (A-3650). *Sonora*: Bocochibampo Bay, beach (A-3642).

Arca (Anadara) reinharti Lowe, 1935

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3627).

Arca (Barbatia) illota Sowerby, 1833

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Arca (Barbatia) reeveana d'Orbigny, 1846

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Marquer Bay, Carmen Island, beach (A-3646).

Arca (Arcopsis) solida (Sowerby), 1833

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Arca (Larkinia) multicostata Sowerby, 1833

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Arca (Scapharca) cf. A. labiosa Sowerby, 1833

RECORD: *Baja California*: Concepción Bay, 26 meters (A-3628).

REMARKS: The present specimens compare favorably with Reeve's (1843-1878, vol. 2, *Arca*, pl. 10, figs. 67a, b) illustration. This species was not previously known to range north of Acapulco, Mexico.

Arca (Cunearca) nux Sowerby, 1833

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610); off Carmen Island, 31 meters (A-3613).

FAMILY GLYCYMERIDAE

Glycymeris (Glycymeris) gigantea (Reeve), 1843

RECORDS: *Baja California*: Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: Bocochibampo Bay, beach (A-3642).

Glycymeris (Glycymeris) maculata (Broderip), 1832

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); Salinas Bay, Car-

men Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642).

Glycymeris multicostata (Sowerby), 1833

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3649); Salinas Bay, Carmen Island, beach (A-3637).

ORDER ANISOMYARIA

FAMILY MYTILIDAE

Crenella divaricata (d'Orbigny), 1845

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); west of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

REMARKS: Hertlein and Strong (1940-1951, pt. 3, p. 76) record this species, originally described from deep water off Cuba, from the Miocene to Recent of the Caribbean region and the Pliocene to Recent of the Pacific coast.

Modiolus (Modiolus) capax (Conrad), 1837

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Modiolus (Modiolus) guyanensis (Lamarck), 1819

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3641).

Brachidontes (Hormomya) adamsianus (Dunker), 1857

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Brachidontes (Hormomya) multiformis (Carpenter), 1855

RECORDS: *Baja California*: West of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

FAMILY PEDALIONIDAE

Pedalion chemnitzianum (d'Orbigny), 1845

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Pedalion janus (Carpenter), 1856

RECORDS: *Baja California*: Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY PTERIIDAE

Pinctada mazatlanica (Hanley), 1856

RECORDS: *Baja California*: Coronado Island, from oyster dump (A-3657); Loreto, beach (A-3650); Puerto Escondido, beach (A-3647); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: Bocochibampo Bay, beach (A-3642).

Pteria sterna (Gould), 1851

RECORDS: *Baja California*: Coronado Island, from oyster dump (A-3657); Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640).

REMARKS: We follow Hertlein and Strong (1940-1951, pt. 2, p. 164) in considering *P. peruviana* (Reeve), 1857, to be a junior synonym of this species.

FAMILY PINNIDAE

Pinna rugosa Sowerby, 1835

RECORD: *Baja California*: Loreto, beach (A-3650).

Atrina tuberculosa (Sowerby), 1835

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3649).

FAMILY PLICATULIDAE

Plicatula cf. *P. spondyloopsis* Rochebrune, 1895

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638).

FAMILY PECTINIDAE

Propeamussium pernomus (Hertlein), 1935

RECORDS: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

Pecten (*Pecten*) *vogdesi* Arnold, 1906

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649). *Sonora*: Bocochibampo Bay, beach (A-3642).

Aequipecten (Plagiectenium) circularis (Sowerby), 1835

RECORDS: Las Animas Bay, beach, juveniles (A-3639); San Pedro Bay, beach (A-3640); Santa Inez Bay, beach (A-3655); Coyote Bay, beach (A-3652); Concepción Bay, 33 meters, juveniles (A-3625); Concepción Bay, 20 meters, juveniles (A-3626); Concepción Bay, 26 meters, juveniles (A-3627); Concepción Bay, 26 meters (A-3628); Loreto, beach (A-3650); off shore, Carmen Island, 31 meters, juveniles (A-3613.) *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters (A-3603); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Pecten (Lyropecten) subnodosus intermedius (Conrad), 1867

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Concepción Bay, 20 meters (A-3626); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY SPONDYLIDAE

Spondylus princeps Broderip, 1833

RECORDS: *Baja California*: Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642).

REMARKS: This is *Spondylus crassi-squama* Lamarck, 1819, in part, west American records only.

Spondylus calcifer Carpenter, 1856

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

FAMILY LIMIDAE

Lima (Lima) tetrica Gould, 1851

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY ANOMIIDAE

Anomia peruviana adamas Gray, 1850

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); west of Tiburon Island, 393 meters (A-3634); Concepción Bay, 33 meters, juveniles (A-3625); Concepción Bay, 26 meters (A-3628); Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646); Con-

cepción Bay, 26 meters (A-3627). *Sonora*: San Pedro Bay, beach (A-3640); Guaymas, beach (A-3644); Guaymas Harbor, 4 meters (A-3602.)

Placunanomia cumingii Broderip, 1832

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642).

REMARKS: The northern range of this species is here extended from Carmen Island to the Guaymas area.

FAMILY OSTREIDAE

Ostrea angelica Rochebrune, 1895

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Ostrea palmula Carpenter, 1856

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644); Bocochibampo Bay, beach (A-3641).

ORDER ANOMALODESMACEA

SUBORDER HETERODONTA

FAMILY CRASSATELLIDAE

Crassatellites (Hybolophus) digueti (Lamy), 1917

RECORD: *Baja California*: Monserrate Island, beach (A-3638).

Crassatellites (Hybolophus) aff. *C. gibbosus* (Sowerby), 1832

RECORD: *Baja California*: Concepción Bay, 33 meters, juveniles (A-3625).

REMARKS: These immature specimens can be only questionably referred to this species.

Crassinella varians (Carpenter), 1855

RECORDS: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); west of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

REMARKS: Only single valves were taken.

FAMILY CARDITIDAE

Cardita megastropa (Gray), 1825

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Monserrate Island, beach (A-3638).

Cardita tricolor Sowerby, 1833

RECORD: *Sonora*: Guaymas, beach (A-3644).

Glans affinis californica (Deshayes), 1854

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647); Monserrate Island, beach (A-3638). *Sonora*: Bocochibampo Bay, beach (A-3641); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

FAMILY SPORTELLIDAE

***Ensitellops hertleini*, new species**

Figure 2

DIAGNOSIS: Shell very transversely elongate; anterior margin oblique and ventrally rounded; exterior surface ornamented with numerous pustules.

DESCRIPTION: Shell small, thin, elongate, solenoid in outline, inequilateral, small beak in anterior quarter; posterior end rounded, anterior end obliquely truncated, with ventral portion attenuated and terminally rounded. Exterior surface sculptured with irregularly spaced concentric growth lines and scattered spine-like pustules, most commonly on the ventral-posterior portion. Prodissoconch small, unsculptured, prominent, raised, turned obliquely to the transverse axis of mature shell. Hinge typical for genus. Color of shell: exterior dull chalky white; interior glossy white.

MEASUREMENTS (SINGLE VALVES): Holotype (one left valve): Length, 9.5 mm.; height, 3.0 mm. Paratypes (two right valves): Length, 6.3 (incomplete), 4.0; height, 2.3, 1.5 mm.

TYPE LOCALITY: *Sonora*: Guaymas Harbor, 4 meters (A-3603).

TYPE REPOSITORY: University of California Museum of Paleontology Nos. 11243 (holotype), 11325 (paratype), and 11326 (paratype).

REMARKS: This species appears to be closely allied to *Ensitellops elongata* Olsson and Harbison, 1953, from the "Pliocene" of St. Petersburg, Florida, but differs in having the anterior margin of the valves less broadly rounded. In the degree of transverse elongation, the present species approaches *Ensitellops compressa* (H. C. Lea), 1846, a non-



FIG. 2. Holotype of *Ensitellops hertleini*, new species. (Upper) interior view; (lower) exterior view; $\times 9$.

pustulose species from the Miocene of Virginia and the Pliocene of North and South Carolina.

This is the first record of representatives of this group in the eastern Pacific basin. Several species referable to this genus are known from late Tertiary and Pleistocene deposits of the American Atlantic coast (Olsson and Harbison, 1953).

We take pleasure in naming this new species in honor of Dr. Leo George Hertlein, California Academy of Sciences.

FAMILY DIPLDONTIDAE

Diplodonta (*Diplodonta*) *subquadrata* Carpenter, 1856

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Puerto Escondido, beach (A-3647); west of Carmen Island, 38 meters (A-3608).

Diplodonta (Felaniella) scricata (Reeve), 1850

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639). *Sonora*: Bocochibampo Bay, beach (A-3642).

Diplodonta (Phlyctiderma) semirugosa Dall, 1899

RECORD: Concepción Bay, 33 meters (A-3625).

FAMILY LUCINIDAE

Lucina (Bellucina) cancellaris Philippi, 1846

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); between Concepción Bay and San Marcos Island, 61 meters (A-3629); west of Carmen Island, 38 meters (A-3608); off shore, Carmen Island, 31 meters (A-3613).

Lucina (Cavilinga) lampra (Dall), 1901

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Lucina (Parvilucina) approximata (Dall), 1901

RECORDS: *Baja California*: Ballenas Channel, 1043 meters (A-3601); east of Angel de la Guarda Island, 482 meters (A-3636); west of Tiburon Island, 393 meters (A-3634).

Lucina (Parvilucina) mazatlanica Carpenter, 1855

RECORDS: *Baja California*: Ballenas Channel, 1043 meters (A-3601); west of Tiburon Island, 393 meters (A-3634); between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); 3 miles southeast of Loreto, 221 meters (A-3605); west of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610). *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters (A-3603).

Lucina (Pleurolucina) undatoides Hertlein and Strong, 1945

RECORD: *Baja California*: Las Animas Bay, beach, juveniles (A-3639).

Lucina (Lucinisca) nuttalli centrifugus (Dall), 1901

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); west of Carmen Island, 38 meters (A-3608).

Codakia distinguenda (Tryon), 1872

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocohibampo Bay, beach (A-3641); Bocohibampo Bay, beach (A-3642).

Ctena chiquita (Dall), 1901

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); off shore, Carmen Island, 31 meters (A-3613); Las Animas Bay, beach (A-3639).

Ctena mexicana (Dall), 1901

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652). *Sonora*: Bocohibampo Bay, beach (A-3642).

Divaricella lucasana Dall and Ochsner, 1928

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Salinas Bay, Carmen Island, beach (A-3637).

REMARKS: This is *D. eburnea* (Reeve), 1850, not Deshayes, 1835.

FAMILY LEPTONIDAE

Kellia laperousi (Deshayes), 1839

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

REMARKS: This is the first record for this species in the Gulf of California.

Aligena nucea Dall, 1913

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

FAMILY CHAMIDAE

Chama frondosa mexicana Carpenter, 1855

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Coyote Bay, beach (A-3652); Loreto, beach (A-3650). *Sonora*: Bocohibampo Bay, beach (A-3642).

Pseudochama corrugata (Broderip), 1835

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Coyote Bay, beach (A-3652); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY CARDIIDAE

Cardium (Microcardium) pazianum (Dall), 1916

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); west of Carmen Island, 38 meters (A-3608).

Cardium (Laevicardium) elenense forma apicinum (Carpenter), 1864

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652); Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochoibampo Bay, beach (A-3642); Guaymas, beach (A-3644); Guaymas Harbor, 4 meters (A-3603).

Cardium (Mexicardia) procerum Sowerby, 1833

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649). *Sonora*: Bocochoibampo Bay, beach (A-3642); Guaymas, beach (A-3644); San Pedro Bay, beach (A-3640).

Cardium (Trachycardium) consors Sowerby, 1833

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: Bocochoibampo Bay, beach (A-3641); Bocochoibampo Bay, beach (A-3642).

Cardium (Papyridea) aspersum Sowerby, 1833

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Puerto Escondido, beach (A-3649).

Cardium (Americardia) biangulatum Broderip and Sowerby, 1829

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613); Marquer Bay, Carmen Island, beach (A-

3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

Cardium (Trigoniocardia) graniferum Broderip and Sowerby, 1829

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3628); Concepción Bay, 26 meters (A-3627). *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters (A-3603).

FAMILY VENERIDAE

Gouldia californica Dall, 1917

RECORDS: *Baja California*: West of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

REMARKS: These records are a northern extension of range from La Paz, Baja California.

Pitar (Hysteroconcha) lupanaria (Lesson), 1830

RECORD: *Sonora*: Guaymas, beach (A-3644).

Pitar (Pitar) newcombianus (Gabb), 1865

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Pitar (Tinctora) vulnerata (Broderip), 1835

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638).

Megapitaria aurantiaca (Sowerby), 1831

RECORDS: *Baja California*: Las Animas Bay, beach, juveniles (A-3639); San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3647); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

Megapitaria squalida (Sowerby), 1835

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); between Concepción Bay and San Marcos Island, 61 meters, juveniles (A-3629);

Coyote Bay, beach (A-3652) ; Concepción Bay, 33 meters, juveniles (A-3625) ; Loreto, beach (A-3650) ; Puerto Escondido, beach (A-3649) ; west of Carmen Island, 161 meters, juveniles (A-3610) ; off shore, Carmen Island, 31 meters, juveniles (A-3613) ; Marquer Bay, Carmen Island, beach (A-3646) ; Salinas Bay, Carmen Island, beach (A-3637) ; Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640) ; Bocochibampo Bay, beach (A-3642).

Tivela byronensis (Gray), 1835

RECORDS: *Baja California*: Loreto, beach (A-3650) ; Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642).

Dosinia (*Dosinia*) *ponderosa* (Gray), 1838

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639) ; Coyote Bay, beach (A-3652) ; Loreto, beach (A-3650) ; Salinas Bay, Carmen Island, beach (A-3637) ; Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640) ; Bocochibampo Bay, beach (A-3642).

REMARKS: Hertlein and Strong (1955, p. 188) have recently referred this species to *Dosinia* (*sensu stricto*).

Antigona (*Ventricolaria*) *isocardia* Verrill, 1870

RECORDS: *Baja California*: San Marcos Island, beach (A-3663) ; Marquer Bay, Carmen Island, beach (A-3646).

Antigona (*Periglypta*) *multicostata* Sowerby, 1835

RECORDS: *Baja California*: Puerto Escondido, beach (A-3649) ; Marquer Bay, Carmen Island, beach (A-3646).

Chione (*Chione*) *californiensis* (Broderip), 1835

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639) ; San Marcos Island, beach (A-3663) ; Coyote Bay, beach (A-3652) ; Loreto, beach (A-3650) ; Puerto Escondido, beach (A-3649) ; Salinas Bay, Carmen Island, beach (A-3637) ; Monserrate Island, beach (A-3638) ; Humbug Bay, Angel de la Guarda Island, beach (A-3654). *Sonora*: Bocochibampo Bay, beach (A-3642) ; Bocochibampo Bay, beach (A-3641) ; San Pedro Bay, beach (A-3640) ; Guaymas, beach (A-3644) ; Guaymas Harbor, 4 meters (A-3603).

Chione (*Chione*) *undatella* (Sowerby), 1835

RECORDS: *Baja California*: Coyote Bay, beach (A-3652) ; Marquer

Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637).

Chione (Chionopsis) gnidia (Broderip and Sowerby), 1829

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas Harbor, 4 meters (A-3603); Guaymas Harbor, 4 meters (A-3602).

REMARKS: All specimens are juveniles.

Chione (Lirophora) kelletti (Hinds), 1844

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629).

REMARKS: These juvenile specimens are apparently referable to this species.

Chione (Nioche) picta "Dall" Willett, 1944

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Chione (Austrovensus) fluctifraga (Sowerby), 1853

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639). *Sonora*: Bocochibampo Bay, beach (A-3642).

Anomalocardia subimbricata tumens (Verrill), 1870

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640).

Anomalocardia subrugosa (Wood), 1828

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Protothaca (Callithaca) grata (Say), 1830

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); west of Tiburon Island, 393 meters (A-3634); Loreto, beach (A-3650); Puerto Escondido, beach (A-3647); Puerto Escondido near lagoon, beach (A-3649). *Sonora*: Bocochibampo Bay, beach (A-3641); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644);

FAMILY MACTRIDAE

Labiosa (Raëta) undulata (Gould), 1851

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

FAMILY DONACIDAE

Donax gracilis Hanley, 1845

RECORD: *Sonora*: Boco-chibampo Bay, beach (A-3642).

Donax navicula Hanley, 1845

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

FAMILY PSAMMOBIIDAE

Heterodonax bimaculata (Linné), 1758

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

FAMILY SANGUINOLARIIDAE

Tagelus (Tagelus) californianus (Conrad), 1837

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Puerto Escondido, beach (A-3649).

Tagelus (Tagelus) violascens (Carpenter), 1855

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

FAMILY SEMELIDAE

Semele corrugata californica (Reeve), 1853

RECORDS: *Baja California*: Marquer Bay, Carmen Island, beach (A-3646); Coyote Bay, beach (A-3652).

Semele guaymasensis Pilsbry and Lowe, 1932

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625). *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters, juveniles (A-3603).

Semele pacifica Dall, 1915

RECORD: *Sonora*: Off shore, Carmen Island, 31 meters (A-3613).

Abra palmeri Dall, 1915

RECORD: *Sonora*: West of Carmen Island, 161 meters (A-3610).

FAMILY TELLINIDAE

Apolymetis cognata (Pilsbry and Vanatta), 1902

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-

3637). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

REMARKS: *Apolymetis clarki* Durham (1950, p. 90) from the Pliocene and Pleistocene of eastern Baja California appears to be this species.

Macoma (Psammacoma) panamensis spectri Hertlein and Strong, 1949

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); west of Carmen Island, 38 meters (A-3608).

Tellina (Tellinella) cumingii Hanley, 1844

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Tellina (Moerella) amianta Dall, 1900

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Concepción Bay, 20 meters (A-3626).

Tellina (Moerella) arenica Hertlein and Strong, 1949

RECORD: *Baja California*: West of Triburon Island, 393 meters (A-3634).

REMARKS: This is the most northern record in the Gulf of California.

Tellina (Moerella) paziana Dall, 1900

RECORDS: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599); west of Carmen Island, 38 meters (A-3608). *Sonora*: Guaymas Harbor, 4 meters, juveniles (A-3603).

Tellina (Moerella) tabogensis Salisbury, 1934

RECORDS: *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters (A-3603).

Tellina (Eurytellina) simulans C. B. Adams, 1852

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Tellina (Merisca) proclivis Hertlein and Strong, 1949

RECORD: *Baja California*: west of Carmen Island, 38 meters (A-3608).

REMARKS: This is *Tellina declivis* Sowerby, 1868, not Conrad, 1834 (see Hertlein and Strong, 1940-1951, pt. 7, p. 83).

SUBORDER ADAPEDONTA

FAMILY HIATELLIDAE

Hiatella arctica (Linné), 1758

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); west of Tiburon Island, 393 meters (A-3634).

Panope generosa solida Dall, 1898

RECORD: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629).

REMARKS: Within the Gulf of California, this record extends the southern known range from the mouth of the Gulf.

Saxicavella aff. *S. pacifica* Dall, 1916

RECORD: *Baja California*: North of Puerto Escondido, 185 meters (A-3604).

REMARKS: Dr. Myra Keen kindly examined this specimen and found it to compare favorably with a camera-lucida drawing of the holotype of *Saxicavella pacifica* Dall, with the exception of a less sinuate pallial line. This species was previously known only from the type locality, Point Loma, California.

FAMILY CORBULIDAE

Corbula (*Caryocorbula*) *marmorata* Hinds, 1843

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Corbula (*Caryocorbula*) *nasuta* Sowerby, 1833

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 26 meters (A-3628). *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters, juveniles (A-3603).

Corbula (*Caryocorbula*) *bicarinata* Sowerby, 1833

RECORD: *Sonora*: Guaymas, beach (A-3644).

Corbula (*Caryocorbula*) *nuciformis* Sowerby, 1833

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3626); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

FAMILY MYACIDAE

Sphenia aff. *S. fragilis* Carpenter, 1855

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

REMARKS: The specimens resemble this species, but do not appear to be specifically referable to this species.

SUBORDER ANOMALODESMATA

FAMILY THRACIIDAE

Cyathodonta undulata Conrad, 1849

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

FAMILY VERTICORDIIDAE

Verticordia (Trigonulina) ornata (d'Orbigny), 1846

RECORDS: *Baja California*: West of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610).

REMARKS: Recorded for the first time in the Gulf of California.

FAMILY CUSPIDARIIDAE

Cuspidaria (Cardiomya) dulcis Pilsbry and Lowe, 1932

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3627); west of Carmen Island, 38 meters (A-3608).

CLASS SCAPHOPODA

FAMILY SIPHONODONTALIIDAE

Cadulus perpusillus (Sowerby), 1832

RECORDS: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 38 meters (A-3608).

FAMILY DENTALIIDAE

Dentalium numerosum "Dall" Pilsbry and Sharp, 1897

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

CLASS GASTROPODA

SUBCLASS PROSOBRANCHIA

ORDER ARCHAEOGASTROPODA

FAMILY FISSURELLIDAE

Hemitoma aff. *H. hermosa* Lowe, 1935

RECORD: *Baja California*: Off Carmen Island, 31 meters, juvenile (A-3613).

REMARKS: This immature specimen can be only questionably referred to this species.

Diodora alta (C. B. Adams), 1852

RECORD: *Baja California*: Concepción Bay, 33 meters, juvenile (A-3625).

Diodora inaequalis (Sowerby), 1835

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocohibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

FAMILY ACMAEIDAE

Acmaea atrata Carpenter, 1864

RECORD: *Baja California*: Monserrate Island, beach (A-3638).

Acmaea dalliana Pilsbry, 1891

RECORD: *Sonora*: Guaymas, beach (A-3644).

REMARKS: Only one badly worn juvenile specimen was taken. This species was originally described from Angel de la Guarda Island.

Acmaea fascicularis Menke, 1851

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Acmaea rosacea Carpenter, 1866

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639). *Sonora*: Bocohibampo Bay, beach (A-3642); Guaymas Harbor, 4 meters (A-3603); Guaymas Harbor, 4 meters, juvenile (A-3642).

Acmaea strigatella Carpenter, 1864

RECORDS: *Baja California*: Puerto Escondido, beach (A-3647). *Sonora*: Guaymas, beach (A-3644).

Acmaea turveri Hertlein and Strong, 1951

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

FAMILY TROCHIDAE

Calliostoma eximium (Reeve), 1842

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Tegula globula (Carpenter), 1856

RECORDS: *Baja California*: Coyote Lagoon, Puerto Escondido, beach

(B-864). *Sonora*: Bocochibampo Bay, beach (A-3642); San Pedro Bay, beach (A-3640).

Tegula mariana (Dall), 1919

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Tegula rugosa (A. Adams), 1853

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: Bocochibampo Bay, beach (A-3642).

Skenea cf. *S. seminuda* (C. B. Adams), 1852

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

Skenea cf. *S. spiritualis* (Baker, Hanna, and Strong), 1938

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

Skenea cf. *S. stephensae* (Baker, Hanna, and Strong), 1938

RECORD: *Baja California*: Off Carmen Island, 31 meters (A-3613).

Teinostoma amplexans Carpenter, 1856

RECORDS: *Baja California*: South of Tiburon Island, 200 meters (A-3633); between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 20 meters (A-3626).

Teinostoma carinata (Carpenter), 1856

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

Teinostoma gallegosi Jordan, 1936

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

REMARKS: This species, originally described from the Pleistocene of Magdalena Bay, Baja California, and also known from the Pleistocene of Coronado Island, Gulf of California, is here recorded for the first time in the Recent fauna. One hermit crab specimen was taken.

FAMILY TURBINIDAE

Cyclostrema cf. *C. madriæ* Baker, Hanna, and Strong, 1938

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

Cyclostrema cf. *C. xantusi* Bartsch, 1907

RECORD: *Sonora*: Guaymas Harbor, 4 meters, juvenile (A-3603).

Turbo fluctuosus Wood, 1828

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

Turbo squamiger Reeve, 1843

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

Astraea unguis (Wood), 1828

RECORDS: *Baja California*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

FAMILY NERITIDAE

Nerita funicula Menke, 1851

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

REMARKS: This is often cited as *Nerita bernhardi* Recluz, 1850, a *nomen nudum*.

Nerita scabricosta Lamarck, 1822

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3647); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Neritina luteofasciatus Miller, 1879

RECORDS: *Baja California*: Coyote Bay, beach (A-3652). *Sonora*: Boco-chibampo Bay, beach (A-3641); Guaymas, beach (A-3644).

REMARKS: This is *Neritina picta* Sowerby, 1832, not Férussac, 1823.

ORDER MESOGASTROPODA

FAMILY RISSOIDAE

Alvania monserratensis Baker, Hanna, and Strong, 1930

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

FAMILY VITRINELLIDAE

Vitrinella guaymasensis Durham, 1942

RECORDS: *Baja California*: Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628). *Sonora*: Guaymas Harbor, 4 meters (A-3603); Guaymas Harbor, 4 meters (A-3602).

Vitrinella tiburonensis Durham, 1942

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

Circulus cerrosensis Bartsch, 1907

RECORDS: *Baja California*: Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3627).

Circulus cf. *C. tricarinatus* (C. B. Adams), 1852

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

Circulus liriopae Bartsch, 1911

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); west of Carmen Island, 38 meters (A-3608).

FAMILY RISSOELLIDAE

Rissoella johnstoni Baker, Hanna, and Strong, 1930

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters (A-3613).

FAMILY TURRITELLIDAE

Turritella broderipiana d'Orbigny, 1840

RECORDS: *Baja California*: Santa Inez Bay, beach (A-3655); Coyote Bay, beach (A-3652). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Turritella gonostoma Valenciennes, 1832

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); Loreto, beach (A-3650); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638).

Turritella leucostoma Valenciennes, 1832

RECORDS: *Baja California*: Concepción Bay, 20 meters (A-3626); west of Carmen Island, 38 meters (A-3608); Loreto, beach (A-3650).

FAMILY ARCHITECTONICIDAE

Torinia planispira (Pilsbry and Lowe), 1932

RECORDS: *Baja California*: West of Carmen Island, 161 meters (A-3610); off Carmen Island, 31 meters (A-3613).

Torinia radiata (Menke), 1850

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642).

Architectonica nobilis "Bolten" Röding, 1798

RECORDS: *Baja California*: Loreto, beach (A-3650); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

FAMILY VERMETIDAE

Serpulorbis margaritarum (Valenciennes), 1846

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Vermetus tripsycha Pilsbry and Lowe, 1932

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Petalococonchus anellum (Mörch), 1861

RECORD: *Baja California*: West of Carmen Island, 161 meters (A-3610).

REMARKS: This species, previously known to range from Monterey Bay, California, to San Hipolito Point (latitude 26° 58' N.) on the west side of Baja California, is here recorded for the first time in the Gulf of California.

FAMILY CAECIDAE

Caecum firmatum C. B. Adams, 1852

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3628); Concepción Bay, beach (A-3652). *Sonora*: Guaymas Harbor, 4 meters (A-3603).

REMARKS: This species was not previously recorded to range north of Mazatlán, Mexico.

Elephantanellum heptagonum Carpenter, 1856

RECORD: *Baja California*: Concepción Bay, beach (A-3652).

FAMILY MODULIDAE

Modulus cerodes A. Adams, 1851

RECORDS: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY CERITHIIDAE

Alaba supralirata Carpenter, 1856

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters (A-3613).

Alabina diomedae Bartsch, 1911

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 38 meters (A-3608); off shore, Carmen Island, 31 meters (A-3613). *Sonora*: Guaymas Harbor, 4 meters (A-3603).

Cerithium maculosum Kiener, 1841

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocoibampo Bay, beach (A-3642).

Cerithium stercus-muscarum Valenciennes, 1832

RECORD: *Sonora*: Guaymas, beach (A-3644).

Potamides incisum Sowerby, 1855

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3647); Salinas Bay, Carmen Island, (A-3637); Monserrate Island, beach (A-3638); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640).

REMARKS: *Potamides sculpta* (Sowerby), 1855, and *Potamides curta* (Sowerby), 1855, are also this species.

Clava gemmata (Hinds), 1844

RECORDS: *Baja California*: Salinas Bay, Carmen Island (A-3637); Monserrate Island, beach (A-3638).

Cerithidea albonodosa Carpenter, 1856

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3641).

Cerithiopsis halia Bartsch, 1911

RECORD: *Baja California*: Off Carmen Island, 31 meters (A-3613).

REMARKS: This species was previously known from the west side of Baja California, Todos Santos Bay to Cape San Lucas, and has been reported from San Diego, California (Burch, 1945). This is the first record for the Gulf of California.

Metaxia convexa (Carpenter), 1856

RECORD: *Baja California*: West of Carmen Island, 161 meters, juveniles (A-3610).

Scila assimilata (C. B. Adams), 1852

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); off shore, Carmen Island, 31 meters (A-3613).

FAMILY TRIPHORIDAE

Triphora chamberlini Baker, 1926

RECORD: *Baja California*: West of Carmen Island, 161 meters (A-3610).

Triphora evermanni Baker, 1926

RECORD: *Baja California*: Off Carmen Island, 31 meters (A-3613).

FAMILY EPITONIIDAE

Epitonium aff. *E. appressicostatum* Dall, 1917

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

Epitonium aff. *E. diegensis* Dall, 1917

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

REMARKS: This species was originally described as ranging from San Diego, California, to La Paz, Baja California.

Epitonium wurtsbaughi Strong and Hertlein, 1939

RECORDS: *Baja California*: West of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610).

REMARKS: As this species was previously known from Nicaragua and Panama, this is a significant northern extension of range.

FAMILY EULIMIDAE

Eulima burragei (Bartsch), 1917

RECORDS: *Baja California*: West of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

Balcis abreojosensis (Bartsch), 1917

RECORD: *Baja California*: Concepción Bay, 26 meters, juveniles (A-3627).

Balcis mexicana (Bartsch), 1917

RECORD: *Sonora*: Guaymas Harbor, 4 meters (A-3602).

FAMILY PYRAMIDELLIDAE

Iselica maculosa (Carpenter), 1856

RECORDS: *Baja California*: Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628).

Odostomia convexa (Carpenter), 1856

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628).

Odostomia dotella Dall and Bartsch, 1909

RECORDS: *Baja California*: West of Carmen Island, 38 meters (A-3608); off shore, Carmen Island, 31 meters (A-3613).

Odostomia effusa (Carpenter), 1856

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); off shore, Carmen Island, 31 meters (A-3613).

Odostomia fasciata (Carpenter), 1856

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters (A-3613).

Odostomia telescopium (Carpenter), 1856

RECORDS: *Baja California*: Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628). *Sonora*: Guaymas Harbor, 4 meters (A-3603).

Turbonilla c-b-adamsi (Carpenter), 1856

RECORD: *Baja California*: Ballenas Channel, 1043 meters (A-3601).

Turbonilla halidoma Dall and Bartsch, 1909

RECORDS: *Baja California*: West of Carmen Island, 161 meters (A-3610) ; off shore, Carmen Island, 31 meters (A-3613).

Turbonilla larunda Dall and Bartsch, 1909

RECORD: *Baja California*: Concepción Bay, 33 meters (A-3625).

Turbonilla macbridei Dall and Bartsch, 1909

RECORD: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629).

Turbonilla muricata (Carpenter), 1856

RECORD: *Sonora*: Guaymas Harbor, 4 meters (A-3603).

Turbonilla pazana Dall and Bartsch, 1909

RECORDS: *Baja California*: Between Concepción Bay and San Marcos Island, 61 meters (A-3629) ; Concepción Bay, 33 meters (A-3625).

Turbonilla sanctorum Dall and Bartsch, 1909

RECORD: *Baja California*: Concepción Bay, 33 meters, juvenile (A-3625).

Turbonilla subangulata (Carpenter), 1856

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625) ; Concepción Bay, 26 meters (A-3628).

Pyramidella bicolor Menke, 1854

RECORDS: *Baja California*: Concepción Bay, 20 meters (A-3626) ; west of Carmen Island, 38 meters (A-3608).

Pyramidella hermosa Lowe, 1935

RECORD: *Sonora*: Guaymas Harbor, 4 meters, juvenile (A-3603).

REMARKS: This species was previously known only from the type locality, San Felipe, Baja California.

FAMILY HIPPONICIDAE

Cheilea equestris (Linné), 1758

RECORD: *Baja California*: West of Carmen Island, 161 meters, juvenile (A-3610).

Hipponyx antiquatus (Linné), 1767

RECORD: *Baja California*: Coyote Bay, beach (A-3652).

Hipponyx pilosus (Deshayes), 1831

RECORDS: *Baja California*: East of Angel de la Guarda Island, 482 meters (A-3636); Coyote Bay, beach (A-3652); Puerto Escondido, beach (A-3647); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

REMARKS: This is *Hipponyx barbatus* Sowerby, 1846.

FAMILY CALYPTRAEIDAE

Calyptraea mamillaris Broderip, 1834

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3628).

Calyptraea mamillaris conica Broderip, 1834

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

REMARKS: *Calyptraea aspera* C. B. Adams, 1852 is a later name for this subspecies.

Crucibulum imbricatum (Sowerby), 1824

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); west of Carmen Island, 38 meters (A-3608); west of Carmen Island, 161 meters (A-3610). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Crucibulum spinosum (Sowerby), 1824

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Concepción Bay, 33 meters (A-3625); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Crucibulum umbrellum (Deshayes), 1830

RECORDS: *Baja California*: Concepción Bay, 26 meters (A-3628); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: Guaymas, beach (A-3644).

Crepidula aculeata (Gmelin), 1790

RECORD: *Baja California*: Puerto Escondido, beach (A-3647).

Crepidula arenata (Broderip), 1834

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Salinas Bay, Carmen Island, beach, juvenile (A-3637).

Crepidula incurva (Broderip), 1834

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Crepidula onyx Sowerby, 1824

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Loreto, beach (A-3650); Humbug Bay, Angel de la Guarda Island, beach (A-3654). *Sonora*: Bocochibampo Bay, beach (A-3642); San Pedro Bay, beach (A-3640); Guaymas, beach (A-3644).

FAMILY STROMBIDAE

Strombus galeatus Swainson, 1823

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3649). *Sonora*: Bocochibampo Bay, beach (A-3642).

Strombus gracilior Sowerby, 1824

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); between Concepción Bay and San Marcos Island, 61 meters (A-3629); Puerto Escondido, beach (A-3649); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Strombus granulatus Swainson, 1822

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642); San Pedro Bay, beach (A-3640).

FAMILY NATICIDAE

Polinices bifasciata (Gray), 1834

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Polinices glabella (Reeve), 1855

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Polinices reclusianus (Deshayes), 1839

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639). *Sonora*: Bocochibampo Bay, beach (A-3642).

Polinices uber (Valenciennes), 1832

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Natica broderipiana Recluz, 1844

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Natica chemnitzii Pfeiffer, 1840

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Guaymas Harbor, beach (A-3644).

FAMILY CYPRAEIDAE

Erato columbella Menke, 1847

RECORDS: *Baja California*: West of Carmen Island, 161 meters (A-3610); off shore, Carmen Island, 31 meters (A-3613).

Pusula californica (Gray), 1827

RECORDS: *Baja California*: West of Tiburon Island, 431 meters (A-3635). *Sonora*: Bocochibampo Bay, beach (A-3642).

Pusula solandri (Gray), 1832

RECORDS: *Baja California*: Santa Inez Bay, beach (A-3655); Puerto Escondido, beach (A-3647); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642); Guaymas Harbor, beach (A-3644).

Jenneria pustulata (Lamarek), 1810

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Zonaria annettae (Dall), 1909

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San

Marcos Island, beach (A-3663); Santa Inez Bay, beach (A-3655); Loreto, beach (A-3650); Coyote Lagoon, Puerto Escondido, beach (B-864); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Zonaria arabicula (Lamarck), 1810

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY CASSIDIDAE

Morum tuberculosum (Sowerby), 1842

RECORDS: *Baja California*: Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638).

REMARKS: This is *Morum tuberculosum* (Sowerby, 1825), a *nomen nudum*.

Cassis centiquadrata Valenciennes, 1832

RECORDS: *Baja California*: Loreto, beach (A-3650); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640).

REMARKS: This is *Cassis abbreviata* "Lamarck" Reeve, 1848, not Lamarck, 1822.

Cassis coarctatus Sowerby, 1825

RECORDS: *Baja California*: East of Angel de la Guarda Island, 482 meters (A-3636); San Marcos Island, beach (A-3663); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY CYMATIIDAE

Cymatium adairense Dall, 1910

RECORDS: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640).

Cymatium gibbosum (Broderip), 1833

RECORD: *Baja California*: Marquer Bay, Carmen Island, beach (A-3646).

FAMILY DOLIIDAE

Malea ringens (Swainson), 1822

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY FICIDAE

Ficus ventricosa Sowerby, 1825

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

REMARKS: This is *Ficus decussatus* (Wood), 1828.

FAMILY MURICIDAE

Murex (*Murex*) *elenensis* Dall, 1909

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Loreto, beach (A-3650). *Sonora*: Bocochibampo Bay, beach (A-3642).

Murex (*Hexaplex*) *erythrostomus* (Swainson), 1831

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Coyote Bay, beach (A-3652); Loreto, beach (A-3650). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3652).

Murex (*Muricanthus*) *radix nigrinus* (Philippi), 1845

RECORDS: *Baja California*: Puerto Escondido, beach (A-3647). *Sonora*: Bocochibampo Bay, beach (A-3642); San Pedro Bay, beach (A-3640).

Pterynotus (*Pteropurpura*) *inezana* (Durham), 1950

RECORD: *Baja California*: San Marcos Island, beach (A-3663).

REMARKS: *Pterynotus* (*Pteropurpura*) *swansoni* Hertlein and Strong, 1951, a Recent form described from the Gulf of California, may be this species. Durham's (1950) type specimen is recorded from terrace deposits of Pleistocene age in the vicinity of Santa Inez Bay, Baja California.

Trophonopsis (*Boreotrophon*) *diasi* (Durham), 1942

RECORD: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599).

Trophon *lorenzoensis* Durham, 1942

RECORD: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599).

Muricopsis squamulatus (Carpenter), 1865

RECORD: *Baja California*: Puerto Escondido, beach (A-3647).

Morula ferruginosa (Reeve), 1856

RECORDS: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640).

Thais haemastoma biserialis (de Blainville), 1832

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646). *Sonora*: San Pedro Bay, beach (A-3640); Bocochoibampo Bay, beach (A-3642).

Thais triangularis (de Blainville), 1832

RECORD: *Sonora*: Bocochoibampo Bay, beach (A-3642).

Thais speciosa (Valenciennes), 1832

RECORD: *Sonora*: Bocochoibampo Bay, beach (A-3642).

REMARKS: This is *Thais triserialis* (de Blainville), 1832, a junior synonym.

Acanthina brevidentata (Mawe), 1828

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Acanthina muricata (Broderip), 1832

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Coyote Bay, beach (A-3652); Loreto, beach (A-3650); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochoibampo Bay, beach (A-3642).

Ocenebra parva (E. A. Smith), 1877

RECORD: *Sonora*: Bocochoibampo Bay, beach (A-3642).

Ocenebra erinaceoides (Valenciennes), 1832

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY PYRENIDAE

Pyrene fuscata (Sowerby), 1832

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); San Marcos Island, beach (A-3663); Loreto, beach

(A-3650); Puerto Escondido, beach (A-3647); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, Carmen Island, beach (A-3637); Salinas Bay, Carmen Island, beach (A-3645); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644).

Pyrene haemastoma (Sowerby), 1832

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Pyrene strombiformis (Lamarck), 1822

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Loreto, beach (A-3650).

Mitrella ocellata (Gmelin), 1790

RECORD: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864).

Parametaria duponti (Kiener), 1846

RECORDS: *Baja California*: Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-3649). *Sonora*: Guaymas, beach (A-3644).

REMARKS: This is *Parametaria cedo-nulli* (Reeve), 1859, a junior synonym.

Strombina maculosa (Sowerby), 1832

RECORDS: *Baja California*: East of Angel de la Guarda Island, 482 meters (A-3636); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Anachis coronata (Sowerby), 1832

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Anachis pygmae (Sowerby), 1832

RECORD: *Sonora*: Guaymas Harbor, beach (A-3602).

Anachis varia (Sowerby), 1832

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY BUCCINIDAE

Engina senacmulta Pilsbry and Lowe, 1932

RECORD: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864).

Cantharus elegans (Gray), 1834

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Cantharus sanguinolentus (Duclos), 1833

RECORD: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864).

Hanetia anomala (Reeve), 1847

RECORDS: *Baja California*: Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3631).

REMARKS: Hertlein and Strong (1955, p. 244) consider this to be a subspecies of *Hanetia pallida* (Reeve), 1847.

FAMILY MELONGENIDAE

Melongena patula (Broderip and Sowerby), 1829

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY NASSARIIDAE

Nassarius iodes (Dall), 1917

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639). *Sonora*: Guaymas Harbor, beach (A-3602).

Nassarius tegulus tiarulus (Kiener), 1841

RECORDS: *Baja California*: Coyote Bay, beach (A-3652); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: Bocochibampo Bay, beach (A-3642); Guaymas, beach (A-3644); Bocochibampo Bay, beach (A-3641).

Nassarius versicolor (C. B. Adams), 1852

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); Concepción Bay, 26 meters (A-3627); Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY FASCIOLARIIDAE

Fusinus dupetit-thouarsi (Kiener), 1840

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Coyote Lagoon, Puerto

Escondido, beach (B-864) ; Puerto Escondido, beach (A-3649) ; Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640).

Fusinus cinereus (Reeve), 1847

RECORD: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864).

FAMILY OLIVIDAE

Agaronia testacea (Lamarck), 1810

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640) ; Bocochibampo Bay, beach (A-3642).

Oliva spicata araneosa (Lamarck), 1810

RECORDS: *Baja California*: San Marcos Island, beach (A-3663). Loreto, beach (A-3650) ; Puerto Escondido, beach (A-3649) ; Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640) ; Bocochibampo Bay, beach (A-3642).

Olivella anazora (Duclos), 1835

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach, juvenile (A-3637).

Olivella dama (Wood), 1828

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654) ; Loreto, beach (A-3650) ; Salinas Bay, Carmen Island, beach (A-3637) ; Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640) ; Bocochibampo Bay, beach (A-3642).

Olivella versicolor (Marrat), 1871

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

FAMILY MITRIDAE

Mitra funiculata Reeve, 1844

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Mitra tristis Swainson, 1836

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Mitra dolorosa Dall, 1903

RECORD: *Baja California*: Coyote Lagoon, beach (B-864).

FAMILY CANCELLARIDAE

Cancellaria cassidiformis Sowerby, 1832

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

Cancellaria goniostoma Sowerby, 1832

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

Cancellaria obesa Sowerby, 1832

RECORDS: *Baja California*: Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY MARGINELLIDAE

Marginella minor C. B. Adams, 1852

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters (A-3613).

Gibberulina margaritula (Carpenter), 1857

RECORDS: *Baja California*: Sal Si Puedes Channel, 1720 meters (A-3599); west of Carmen Island, 161 meters (A-3610).

FAMILY TURRIDAE

Cymatosyrinx roseola Hertlein and Strong, 1955

RECORDS: *Baja California*: West of Carmen Island, 161 meters, juvenile (A-3610); off shore, Carmen Island, 31 meters, juveniles (A-3613).

REMARKS: This is *Pleurotoma rosea* Sowerby, 1834, not Quoy and Gaimard, 1833 (see Hertlein and Strong, 1955, p. 221).

Knefastia olivaceus (Sowerby), 1834

RECORDS: *Baja California*: Humbug Bay, Angel de la Guarda Island, beach (A-3654); Salinas Bay, Carmen Island, beach (A-3645). *Sonora*: San Pedro Bay, beach (A-3640); Bocochibampo Bay, beach (A-3642).

Crassispira nymphia Pilsbry and Lowe, 1932

RECORDS: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: Bocochibampo Bay, beach (A-3642).

Crassispira pluto Pilsbry and Lowe, 1932

RECORDS: *Baja California*: Coyote Lagoon, Puerto Escondido, beach (B-864). *Sonora*: Guaymas Harbor, beach (A-3603).

"Cytharella" aff. C. adria (Dall), 1919

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); off shore Carmen Island, 31 meters (A-3613).

"Cytharella" aff. C. carissima Pilsbry and Lowe, 1932

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); west of Carmen Island, 38 meters (A-3608).

REMARKS: This species was originally described from Manzanillo, Mexico, and has not been recorded subsequently.

"Cytharella" trichodes (Dall), 1919

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters (A-3613).

Kurtzina antiochroa (Pilsbry and Lowe), 1932

RECORD: *Baja California*: Concepción Bay, 20 meters, juvenile (A-3626).

FAMILY CONIDAE

Conus brunneus Wood, 1828

RECORD: *Baja California*: Monserrate Island, beach (A-3638).

Conus fergusonii Sowerby, 1873

RECORDS: *Sonora*: Boco-chibampo Bay, beach (A-3642); San Pedro Bay, beach (A-3640).

Conus princeps Linné, 1758

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Marquer Bay, Carmen Island, beach (A-3646); Salinas Bay, beach (A-3637); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

Conus perplexus Sowerby, 1857

RECORDS: *Sonora*: San Pedro Bay, beach (A-3640); Boco-chibampo Bay, beach (A-3642).

REMARKS: This is *Conus puncticulatus* Hwass, 1792, not Bruguière, 1792 (see Hanna and Strong, 1949, p. 289).

Conus purpurascens Broderip, 1833

RECORDS: *Baja California*: San Marcos Island, beach (A-3663); Puerto Escondido, beach (A-3647); Puerto Escondido, beach (A-

3649); Marquer Bay, Carmen Island, beach (A-3646); Monserrate Island, beach (A-3638). *Sonora*: San Pedro Bay, beach (A-3640); Bocochoibampo Bay, beach (A-3642).

Conus regularis Sowerby, 1833

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650); Humbug Bay, Angel de la Guarda Island, beach (A-3654). *Sonora*: Bocochoibampo Bay, beach (A-3642).

Conus ximenes Gray, 1839

RECORD: *Sonora*: Bocochoibampo Bay, beach (A-3642).

Conus gladiator Broderip, 1833

RECORD: *Sonora*: San Pedro Bay, beach (A-3640).

FAMILY TEREBRIDAE

Terebra hindsii (Carpenter), 1856

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Terebra luctuosa Hinds, 1843

RECORD: *Baja California*: Salinas Bay, Carmen Island, beach (A-3637).

Terebra ornata Gray, 1834

RECORD: *Sonora*: Bocochoibampo Bay, beach (A-3642).

Terebra variegata Gray, 1834

RECORDS: *Baja California*: Loreto, beach (A-3650); Salinas Bay, Carmen Island, beach (A-3637). *Sonora*: San Pedro Bay, beach (A-3640); Bocochoibampo Bay, beach (A-3642).

SUBCLASS OPISTHOBRANCHIA

ORDER TECTIBRANCHIA

FAMILY BULLIDAE

Bulla gouldiana Pilsbry, 1895

RECORDS: *Baja California*: Las Animas Bay, beach (A-3639); San Marcos Island, beach (A-3663); Loreto, beach (A-3650).

Bulla punctulata A. Adams, 1850

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

FAMILY ATYIDAE

Haminoea virescens Sowerby, 1833

RECORD: *Sonora*: Bocochibampo Bay, beach (A-3642).

FAMILY RETUSIDAE

Retusa luticola (C. B. Adams), 1852

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 38 meters (A-3608).

FAMILY ACTEOCINIDAE

Acteocina carinata (Carpenter), 1856

RECORDS: *Baja California*: Guaymas Harbor, 4 meters (A-3603); Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628); off shore, Carmen Island, 31 meters (A-3613).

Acteocina smirna Dall, 1919

RECORD: *Baja California*: West of Tiburon Island, 393 meters (A-3634).

Acteocina infrequens (C. B. Adams), 1852

RECORDS: *Sonora*: Guaymas Harbor, 4 meters (A-3602); Guaymas Harbor, 4 meters (A-3603).

Volvulella aff. *V. cylindrica* (Carpenter), 1864

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 26 meters (A-3628); west of Carmen Island, 161 meters (A-3610).

Cylichna defuncta (Baker and Hanna), 1927

RECORDS: *Baja California*: Concepción Bay, 33 meters (A-3625); Concepción Bay, 20 meters (A-3626); Concepción Bay, 26 meters (A-3627); Concepción Bay, 26 meters (A-3628); off shore, Carmen Island, 31 meters (A-3613).

FAMILY ACTEONIDAE

Acteon traski Stearns, 1897

RECORD: *Baja California*: Off shore, Carmen Island, 31 meters, juveniles, (A-3613).

CLASS PULMONATA
ORDER BASOMMATOPHORA
FAMILY ELLOBIIDAE

Pedipes unisulcatus Cooper, 1867

RECORD: *Baja California*: Las Animas Bay, beach (A-3639).

Melampus olivaceus Carpenter, 1856

RECORDS: *Baja California*: Loreto, beach (A-3650). *Sonora*: San Pedro Bay, beach (A-3640).

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