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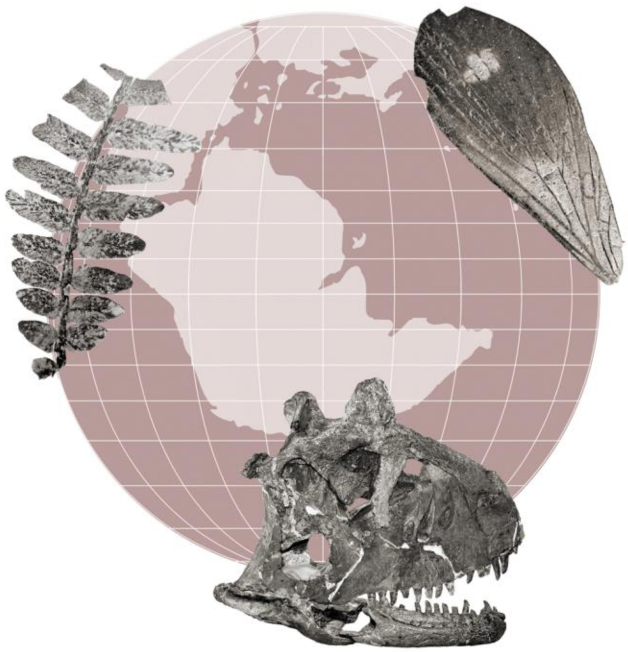

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TROPICAL MARINE MOLLUSK ASSEMBLAGES FROM THE PLEISTOCENE OF OAXACA, SOUTHERN MEXICO

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Brief/short description: Two assemblages of mollusks are reported from two Pleistocene marine deposits on the Oaxaca coast, southern Pacific of Mexico.

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Abstract. The Colotepec Formation crops out along the southern Pacific coast of Oaxaca, Mexico. This unit harbors a notable diversity of mollusks from the Pleistocene, mainly taxa of Bivalvia and Gastropoda. The malacological assemblage of both localities consists of 53 taxa of Bivalvia and 71 of Gastropoda; all of them are currently distributed in the southern part of

Mexico. Also, specimens of rhodoliths, echinoids and crustaceans were identified. All the identified taxa inhabit shallow and warm tropical waters, and some are from coastal lagoons. Both localities share 16 taxa of Bivalvia and 11 of Gastropoda. The assemblages are considered para-autochthonous. Most taxa inhabit subtidal environments, on both hard and soft substrates. Bivalves with thick shells display a variety of associated sclerobionts, including bivalves, gastropods, sponges, serpulids, and bryozoans. The ichnodiversity comprises *Thalassinoides*, *Psilolichnus*, and *Ophiomorpha nodosa*. According to the rate of subsidence, the maximal age of the Pleistocene sequences may range from 248,000 to 112,000 years BP (MIS 8 to MIS 5). The information on the Pleistocene assemblages provides valuable evidence for conservation strategies for modern taxa. Despite their paleontological value, the localities are at risk of natural hazards and anthropogenic pressures.

Keywords: Colotepec Formation. Marine mollusks. Pleistocene mollusks

Resumen. CONJUNTOS TROPICALES MOLUSCOS MARINOS DEL PLEISTOCENO DE OAXACA, SUR DE MÉXICO. La Formación Colotepec aflora a lo largo de la costa de Oaxaca, en el Pacífico sur de México. Esta unidad resguarda una diversidad notable de moluscos del Pleistoceno Tardío, principalmente taxones de Bivalvia y Gastropoda. El conjunto malacológico de ambas localidades consiste en 53 taxones de Bivalvia y 71 de Gastropoda, todos ellos distribuidos actualmente en el Pacífico sur. También se identificaron ejemplares de rodolitos, equinoideos y crustáceos. Ambas localidades comparten 16 taxones de Bivalvia y 11 de Gastropoda. Los conjuntos se consideran parautóctonos. Todas las especies de moluscos viven en aguas tropicales someras y cálidas; algunas son características de lagunas costeras. La mayoría de los taxones habitan en ambientes submareales, tanto en sustrato duro como suave. Los bivalvos con conchas gruesas muestran una variedad de esclerobiontes asociados, incluidos bivalvos, gasterópodos, esponjas, serpúlidos y briozoarios. La icnodiversidad incluye a *Thalassinoides*, *Psilolichnus* y *Ophiomorpha nodosa*. De acuerdo con la tasa de subsidencia, la edad máxima de las secuencias del Pleistoceno puede abarcar desde los 248,000 a 112,000 años AP (MIS 8 a MIS 5). La información de los conjuntos del Pleistoceno ofrece evidencia valiosa para establecer estrategias de conservación de los taxones modernos. A pesar de su valor paleontológico, las localidades se encuentran en riesgo por amenazas naturales y presiones antropogénicas.

Palabras clave: Formación Colotepec. Moluscos marinos. Moluscos pleistocénicos

Late Pleistocene coastal deposits are relatively common worldwide (eg. Cantalamessa & Di Celma, 2004; González-Acebrón *et al.*, 2016; Ninis *et al.*, 2022). They represent a valuable source of information on the evolution of coastal environments and their paleobiotas during the glacial-interglacial episodes of the Pleistocene. In North America, the record comprises several localities along the coast of California (*e.g.* Kern, 1977), Baja California peninsula (*e.g.* Woods, 1980; Ortlieb, 1981; DeDiego-Forbis *et al.*, 2004), and along the Zihuatanejo terrane, including the coastlines of the states of Michoacan and Guerrero (Centeno-García *et al.*, 2003).

The studies concerning Mexican marine Late Pleistocene biotas have more tradition in the northern area of the Mexican Pacific coast (*e.g.* Stump, 1975; Valentine, 1980; Pedrin Aviles *et al.*, 1987; DeDiego-Forbis *et al.*, 2004) than in the southern part of the country. The Colotepec Formation of Late Pleistocene age is the only lithological marine unit recognized in the south of the Mexican Pacific. The formation crops out near Puerto Escondido city, located in the coast of Oaxaca (Palmer 1928a, 1928b; Palmer & Hertlein, 1936). Even though there are reports of a Pliocene-Pleistocene fauna near Salina Cruz city, located in the eastern part of the coastal region (Durham *et al.*, 1981), the only Quaternary formal record is from the Colotepec Formation. Previous paleontological studies of the Colotepec Formation enlisted fossil species of Anthozoa, Echinodermata, Bivalvia and Gastropoda (Palmer, 1928b; Palmer & Hertlein, 1936). Erfa and Geister (1976) reported structures similar to mangrove roots in an undetermined location of the Colotepec Formation, at 30 meters above sea level, outside of Puerto Escondido city.

There are several patches of the Colotepec Formation within the city. Two of the major fossiliferous outcrops are exposed in Punta Colorada and Playa Coral beaches; both stand out for their fossiliferous biota. Preliminary observations noted that both assemblages of both deposits differ in the species composition. Based on the possibility of merging the evidence of fossils and trace fossils to support an integral study of the paleoenvironmental conditions, the aims of this study are 1) to report the taxa of Bivalvia and Gastropoda in the faunal assemblage and the ichnoassemblage from both localities, 2) to infer paleoenvironmental conditions of the deposit, 3) to compare the species diversity between localities, 4) to propose some considerations based on Conservation Paleobiology related to the modern assemblages of molluscan species in the study area, and 5) to discuss considerations regarding the conservation status of the localities to avoid the permanent loss of the fossiliferous deposits.

MATERIAL AND METHODS

Study area

The Pacific coastal region of southern Mexico extends across the tectonic boundary of an active convergent margin, characterized by the subduction of the Cocos and Rivera plates beneath the North American plate (Ramírez-Herrera & Urrutia-Fucugauchi 1999). The state of Oaxaca is in the southeastern part of the Mexican Pacific coast. The coastal region of Oaxaca is a dynamic area because of its position in front of the Middle American Trench (MAT). The MAT is a continuous feature off the southern Pacific margin of Mexico and Central America over a more than 3,000 km (Ramírez-Herrera *et al.*, 2011). It extends from the Tres Marias islands off western Mexico to the Cocos ridge southwest of Costa Rica (Fisher, 1961). The MAT is considered the most important tectonic feature on the Pacific coast of southern Mexico (Yamamoto *et al.*, 2013) because of its significance in the geomorphologic evolution of the area (Figure 1).

Puerto Escondido is a coastal city located in the southern region of the Mexican Pacific region (Chiappa-Carrara *et al.*, 2019). This area has a very narrow continental shelf along the Cocos plate, which slides beneath the North American plate, at a rate of about seven centimeters per year (Chiappa-Carrara *et al.*, 2019). Several marine and fluvial terraces are situated on the Oaxaca coast along ca. 40 km, from Puerto Escondido city eastward. These marine terraces have a well-preserved and steep sea cliff. The active river incision and well-preserved sea cliffs on these terraces suggest active tectonic uplift in this area (Ramírez-Herrera *et al.*, 2011).

The fossiliferous deposits of the Colotepec Formation are settled into two marine terraces. The localities are situated in the Punta Colorada (Figure 2.1) and Playa Coral (Figure 2.2.) beaches. Both sites are notable because of their exposure and accessibility, well known by local people and tourists. The deposits face the menaces of erosion by water and wind, landslides, sporadic hurricanes, pollution, and human building. Also, local artisans and sellers have extracted fossiliferous specimens.

Geologic setting

The geologic features of the study area have been described since the decades of 1920 and 1930. Palmer described several Quaternary outcrops of the coastal region of Oaxaca in two papers (1926, 1928a). He referred to several outcrops as “Upper Pleistocene beds occur in more or less connected patches from the Potrero River west along the coast beyond Puerto Escondido, a distance of nearly 30 miles". Later, Palmer and Hertlein (1936) formally erected the Colotepec Formation as “flat lying or has locally a low dip coastward, and rests on the schists and granodiorite. It has a maximum thickness of about 60 feet, and the highest elevation recorded is 75 feet". Palmer and Hertlein described the Colotepec Formation as “… made up mostly of a soft gray or buff sandstone, although locally it is hard and flinty”; they designated the type locality about 16 km west of the mouth of the Colotepec River (Palmer and Hertlein, 1936).

The outcrops of the Colotepec Formation have been eroded or destroyed over time, mainly due to urban land expansion and hurricanes. A distance of around 2 km separates the fossiliferous deposits in the proximity of Punta Colorada and Playa Coral beaches. Despite this nearness, there is no lateral continuity of the strata. The basal part of both terraces unconformably overlies rocks of the Xolapa Complex, which range in age from the Permian to the Oligocene (Ducea *et al.*, 2004). Close to the fossil localities, a sample of the Xolapa Complex gave a more specific age of 29.6 Ma U-Pb (Figueroa-Guadarrama *et al.*, 2017; Peña-Alonso *et al*., 2021).

The sedimentological sequence in the Punta Colorada locality measures four meters, approximately (Almazán-Vázquez & Briseño-Sotelo, 2013). There are three well-differentiated beds, which discordantly overly the Xolapa Complex. The first bed is a conglomerate constituted by well-rounded clasts derived from the Xolapa Complex, with a diameter from one to 120 mm. In the upper part of the conglomerate there are coarsely cemented mollusk shells, and fragments of them replacing the clasts. The second bed consists of fossiliferous fine-grained sandstone; small- and medium-sized invertebrate fossils (1-3 to 100 mm) have been deposited at this level. The third main bed is mainly composed of beach deposits, with laminated sandstone. In the upper part of the sequence, there is a massive level of sandstone. The contact between the massive bed and the beach sediments is interpreted as a hiatus, because of the drastic change in the conditions of the two levels (Figure 3.1).

The outcrops of the Playa Coral locality are highly eroded by water runoff. Nowadays, many parts of the terrace are covered by vegetation, because the erosion deposited sediment and generated the burial of some levels. The sequence is composed of several layers of sand and gravel, lying discordantly with the rocks of the Xolapa Complex. From the bottom to the top, the sequence comprises nine strata: 1) coarse sand, 2) gravels, 3) medium to coarse sand, 4) coarse sand, 5) gneiss gravel, 6) medium to coarse sand, 7) fine sand, 8) sand with gravel, and 9) coarse sand. The thickness of the sequence is approximately 28 m (Almazán-Vázquez & Briseño-Sotelo, 2013). The fossils and trace fossils appear in the medium to coarse sand levels (Figure 3.2).

Methods

Students and researchers from the Universidad del Mar collected and photographed the fossil material in several field trips (2005 to 2023); the selected specimens were adults, leaving juvenil and sub-adults stages in the strata. Field observations on fossil assemblages consider their distribution in sediment, diversity, and taphonomic features.

In the laboratory, the specimens were cleaned using mechanical procedures. In some cases, the fossils were separated from the rock matrix using dissection needles or air scribes.

The molluscan specimens were identified to the lowest possible taxonomic level based on Keen (1971) and Coan and Valentich-Scott (2012). The scientific names were updated with Molluscabase (2024). The list of the species was organized according to the criteria of

Bouchet *et al.* (2017) at the family level for gastropods and bivalves with Coan and Valentich-Scott (2012).

The information on the habitat and the geographical distribution of the taxa were compiled from several bibliographic references (*e.g.* Keen, 1971; Keen & Coan 1974; Zamorano et al., 2008; Coan & Valentich-Scott, 2012; Molluscabase, 2024). Also, the species distribution was compared with the records in the catalogue of the Colección de Moluscos del Museo de Historia Natural de la Universidad del Mar, housed in the Puerto Angel campus (CMNHNUMAR, by its acronym in Spanish). The collection is registered as OAX-CC-246-2011 in the Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT, by its acronym in Spanish).

Trace fossils were measured and photographed in the localities. Only two specimens were collected. All were identified at a minimum ichnotaxonomical level. The information on the related environments was compiled in bibliographic references.

The Whittaker diversity index was used to calculate the Beta diversity comparison of the two fossil assemblages. The analysis was performed with the Past 4 software (Hammer, 2001).

All the collected specimens were deposited in the Colección de Invertebrados Fósiles, Laboratorio de Paleobiología, Campus Puerto Escondido, Universidad del Mar. Also, the specimens and the fossiliferous localities have been registered in the Dirección de Registro Público de Monumentos y Zonas Arqueológicos e Históricos of Instituto Nacional de Antropología e Historia.

The fossil specimens of mollusks have been registered under the acronym UMLP- (by its acronym in Spanish, Universidad del Mar, Laboratorio de Paleobiología). Also, the ichnological specimens have been registered under the acronym UMPLIC- (by its acronym in Spanish, Universidad del Mar, Laboratorio de Paleobiología, Icnología).

Results

The compilation of the identified taxa of Gastropoda and Bivalvia, their ID, the presence in one or both localities, and their habitat preferences are reported in table 1. Some well-preserved specimens are illustrated in figures 4 and 5.

Species richness

The assemblage comprises 53 taxa of Bivalvia (51 at species level and two at genus level) and 71 of Gastropoda (69 at species level, one at genus level and one at confer species). The assemblage of Punta Colorada locality includes 35 taxa of Bivalvia and 54 of Gastropoda. Meanwhile, the assemblage of Playa Coral locality consists of 34 taxa of bivalves and 29 of gastropods (Table 1). Both localities share 16 taxa of Bivalvia and 11 of Gastropoda.

The Whittaker diversity index between the assemblages of Punta Colorada and Playa Coral is 0.6315.

Also, additional collected taxa in both localities include unidentified rhodoliths and fragments of crustaceans and corals. Specimens of the barnacle *Paraconcavus pacificus* and spines of the echinoderm *Eucidaris thouarsii* were identified.

Taphonomic features

The assemblage is composed of juvenile, sub-adult, and mature specimens in both localities. Their presence in the strata is according to their hydraulic equivalence. The small to medium-sized specimens (including juvenile and sub-adult specimens of mollusks) were deposited in the fine and medium-grained beds in both localities (Figures 6.1 and 6.2). Specimens with thicker shells, like oysters and *Spondylus*, were the predominant species in the conglomerate in Punta Colorada locality (Figure 6.3).

Moreover, in both localities, the specimens lack a specific spatial orientation. None of the specimens were found in their life position.

Almost all the specimens have been fragmented. The majority of them have a completeness of up to 85%, allowing their taxonomic identification. The unbroken specimens measure less than 15 mm. All the bivalves were disarticulated; however, many thin valves of bivalves (as *Tagelus longisiniatus*) were almost unbroken in some levels of the Punta Colorada locality (Figure 6.2).

In both localities, some thicker specimens (*e.g.* ostreids, *Chama*, *Spondylus*), show signs of abrasion on their surface ornamentation (Figure 6.3). Besides, these shells have several associated bioerosive organisms, including bivalves, sponges, serpulids, bryozoans, and gastropods (Guerrero-Arenas *et al.*, 2021).

Habitat preferences

The molluscan species of the assemblage have been reported from shallow and tropical waters (Table 1). The non-molluscan species (*Paraconcavus pacificus* and *Eucidaris thouarssii*) also inhabit tropical shallow waters nowadays. Their geographic distribution includes the coast of southern Mexico (Barrientos-Luján, oral communication).

The identified taxa have a variety of environmental settings, from coastal lagoons to subtidal areas. Most of the species in both localities inhabit subtidal environments: 81% in Punta Colorada locality and 88% in Playa Coral locality (Table 1). Regarding the preference of subtidal taxa in Punta Colorada locality, 43 taxa dwell in soft substrate, and 34 taxa live on hard substrate. Concerning the subtidal taxa in Playa Coral locality, 24 taxa inhabit in soft substrate, and 30 taxa live on hard substrate (Table 1).

Some taxa from Punta Colorada could be associated with tropical lagoon systems, like the species *Mytella strigata* and *Tagelus longisinuatus* (Zamorano *et al.,* 2010).

In Punta Colorada locality, there are species that inhabit coralline areas, like *Jenneria pustulata*, *Zetecopsis zeteki*, and *Gemophos sanguinolentus* (Zamorano *et al.,* 2006; Barrientos-Luján, 2009 Barrientos-Luján *et al.,* 2017, Barrientos-Luján et al. 2022). In the other hand, *Anachis scalarina* and *Barbatia reeveana* (Zamorano *et al.,* 2006) are reported from Playa Coral locality. However, the shells of these species are not abundant. The specimens do not show evidence of being transported over long distances. So, it is probable that both deposits are in proximity to coralline habitats.

Ichnofossiliferous richness

The diversity of trace fossils in both localities is low. They appear mostly in the sandstone levels in Punta Colorada locality. Most of the specimens were found in fallen blocks. Therefore, their positions along the stratigraphic column are not completely accurate. The identified ichnogenera were *Thalassinoides* and *Psilolichnus* (Figure 7.1), attributable to crustaceans (Nesbitt and Campbell, 2006; Pervesler & Uchman, 2009).

A notable variety of ichnofossils in Punta Colorada locality are recorded in hard substrates. Bivalves are capable to bore lithified sandstones (Kelly & Bromley, 1984; Carmona *et al.* 2013). Several specimens identified as *Gastrochaenolites,* a club-shaped boring in a hard substrate were identified in clasts and fallen blocks (Fig 7.2). A unique specimen from Playa Coral locality is a cast of one *Ophiomorpha nodosa* tunnel burrowed by *Botula cylista* (UMLP-0500) (Fig 7.3). Also, another hard substrate was exploited by different kinds of sclerobionts (see next section).

The ichnofossiliferous richness in Playa Coral locality includes only two ichnotaxa. Five years ago, beneath the fossiliferous deposits, a sand level contained abundant

Ophiomorpha nodosa specimens (Fig. 7.4). The proposed producers of the tunnels are thalassinidean crustaceans (de Gibert et al., 2006), specifically ghost shrimp (Pereyra, 2021). Nowadays, several landslides bury the level. Besides the *Ophiomorpha* tunnels, there were a few specimens of *Psilonichnus* in the lower part of the stratigraphic sequence.

Sclerobionts

Many sclerobionts have been reported previously in specimens from the Playa Coral locality. The diversity comprises serpulids, clionid sponges, bryozoans, and mollusks (Guerrero-Arenas *et al.,* 2021). Several fragments and incomplete thicker shells of Punta Colorada locality show the same reported sclerobionts as in the Playa coral locality: encrusting (bryozoans and serpulids) and borer organisms (clinoid sponges, bivalves, and polychaetes) (Guerrero-Arenas *et al.*, 2021) (Table 2; Figure 8.1). They have been settled in the interior and the exterior sides of the shells. Most of the shells were identified as ostreids.

Additional sclerobionts have been identified in both localities. The boring bivalve *Leisolenus hastasius* (UMLP-0499) was recovered from a *Striostrea prismatica* specimen (UMLP-0498) from Punta Colorada locality, and another individual (UMLP-0284) was recovered inside a *Chama* from Playa Coral locality. Specimens of the attached gastropoda *Dendropoma* sp. were found in the interior and exterior sides of bivalve shells of Playa Coral locality (Figure 8.2). Several individuals of *Chama* sp. were attached to a fragmented Ostreidae (UMLP-0428).

Discussion

Age and correlation of the localities

Punta Colorada and Playa Coral deposits have been considered as not synchronous, given the difference in the lithology, the lack of continuity of the sedimentological strata, and the differences in the richness of the fossil assemblages.

Regarding the species in the localities, all the taxa are registered in recent communities. Some taxa, like *Acar gradata*, *Calloarca alternata*, *Saccostrea palmula* or *Periglypta multicostata* have been recorded since the Pleistocene in the Pacific coastal area. Even some species, such as *Arca pacifica* and *Barbatia reeveana*, have older records dating back to the Pliocene on the Pacific Ocean coast (Table 1). There is no biostratigraphical evidence that could help to limit the temporal range of the sedimentological deposits.

The absolute age of both deposits remains undetermined, as preliminary analyses of C-14 were not successful, since the fossils were older than 40 kyr. However, relative ages were inferred using the uplift rate of the study area. According to information from drill site 493 of Leg 66 of the DSDP (the nearest drill site to the marine terraces, in the continental platform of the Pacific coast), the uplift rate of the continental edge could be estimated as 125 m/my (McMillen & Bachman, 1982). The basis of the Pleistocene sequence in the marine terraces of Punta Colorada locality is the conglomerate level, at 14 meters above sea level (masl). Therefore, the maximum calculated age for the Punta Colorada locality is 112,000 years. Regarding the Playa Coral locality, the basis of the sequence is 31 masl. Therefore, the maximum age of this deposit is around 248,000 years.

Considering the uplift rate, the sediments of the Punta Colorada locality might have been deposited during the Late Pleistocene, specifically during the Marine Isotope Age 5 (MIS 5), which spanned from 130 to 71 ka (Tawil-Morsink *et al.*, 2022). This period corresponds with the most recent Last Glacial-Interglacial (LG-I) cycle, which started at ca.120 kyr BP and culminated at around ca. 20 kyr BP (Helmens, 2014). On the other hand, the proposed age of 248,000 years for the deposit of Playa Coral corresponds to the Middle

Pleistocene. Specifically, the MIS 8 (Middle Saalian), which occurs within a relatively weak larger glacial-interglacial cycle, between 320 to 243 kyr BP, approximately (Hughes *et al.*, 2020). At 243 ka, Termination III occurs (Pillans and Gibbard, 2012).

These relative ages have been proposed, considering the minimal influence of tectonism in the area. The Pacific coastal area is characterized by complex tectonic activity (e.g. Keppie & Morán-Zenteno, 2005; Ramírez-Herrera *et al.*, 2011; Yamamoto *et al.*, 2013). Along the Pacific coast, differential uplift processes have been reported through time (Ramírez-Herrera *et al.*, 2011). Nevertheless, the relative ages should be interpreted with caution until further dating analyses are conducted.

Paleoenvironmental conditions

The faunal assemblage represents a metacommunity, since the time averaging of intertidal and nearshore environments is established in the order of 10^1 to 10^3 years (Flessa, 2001). The assemblage is classified as parautochthonous, consisting of autochthonous specimens that have undergone some degree of reworking but have not been transported out of their original life habitat (Kidwell et al., 1986). The variety of habitat preferences reinforces the condition of parautochthony of the assemblage (Table 1).

The conditions of the environmental energy were variable in both deposits. The shells of bivalves and gastropods show a variety of different taphonomic signals. In Punta Colorada locality, levels where thin shells are almost unbroken could reveal low-energy conditions (like the lagoonal systems). The conglomerate levels, characterized by clasts were associated with high-energy conditions (Selley, 2000). Along the stratigraphic sequence, the sediment grain size ranges from fine to medium, evinced the low- to medium-energy conditions.

In Playa Coral, the sequence has predominantly fine- to medium-grained sand. The energy conditions were similar to some levels of the Punta Colorada locality, where the sediment grain size ranges from fine to medium, evincing the low- to medium-energy conditions (Selley, 2000).

Both localities have a low diversity of marine trace fossils. The ichnotaxa of Punta Colorada locality have been associated with transitional marine/terrestrial environments (Knaust *et al.,* 2012), while the ichnotaxa of Playa Coral are common in sedimentary rocks deposited in shallow and marginal marine environments (Frey *et al.,* 1978; de Gibert *et al.*, 2006). Because of their wider record in several environments, the ichnotaxa do not indicate a specific environment.

Colonization of opportunistic sclerobionts

The presence and variety of sclerobionts are probably linked to the predominance of soft substrates, as evidenced by the dominance of sandy levels along the stratigraphic sequence. In environments with soft, muddy, or sandy seafloors, the availability of hard substrates may be crucial for the survival of boring and encrusting organisms (Belaústegui *et al*., 2017).

Sclerobionts are found on both the interior and exterior sides of the shells. When sclerobionts are present on the interior side, it indicates a post-mortem colonization (Rodland *et al.,* 2004). Sclerobionts on the exterior side could settle either while the host organisms were alive or after their death.

The hard substrates such as shells, fallen blocks of sandstone, and consolidated cast of *Ophiomorpha nodosa* provide microhabitats for sclerobionts, functioning as benthic island (*sensu* Tapanila & Ebbestad, 2008). The presence of these “benthic islands” reinforces the hypothesis that sessile invertebrates utilized any available hard substrates in conditions where soft substrates were more abundant (Kauffman, 1978, 1982; Tapanila & Ebbestad, 2008) in both localities.

Apparently, the sclerobiont assemblages in both deposits appear to show a preference for thicker bivalve shells, since they are more abundant and diverse in this type of shell. In modern sclerobiont studies, preferences have been linked to shell size, external ornamentation, calcitic mineralogy, and bacterial biofilms (Ochi Agostini *et al.*, 2017). Additional studies on Pleistocene sclerobionts could help determine whether these factors played a relevant role in the colonization patterns of the preference for thicker shells.

Geographic Distribution

In general, all the identified species of fossil assemblages currently inhabit the southern Pacific cast of Oaxaca (Table 1). The distribution of the taxa is within the Panamic Province (Coan & Valentich-Scott, 2012), which extends from the Cedros Island -Punta Eugenia area on the Pacific coast of the Baja California Peninsula to Punta Aguja, Piura, Peru. This region is also known as the Tropical Eastern Pacific Ocean (Coan & Valentich-Scott, 2012).

Eleven species are considered endemic to Mexico: *Carditamera affinis Chione tumens, Epicodakia clarionensis, Calliostoma aequisculptum, Conus scalaris, Crucibulum monticulus*, *Fissurella decemcostata*, *F. nigrocincta*, *F. rubropicta, F. spongiosa*, and *Thylaeodus indentatus* (González, 1993). The species could be considered paleoendemic (Noguera-Urbano, 2017) due to its fossil record and appears to be geographically restricted to the Mexican Pacific coastal area.

Turnover of communities

Fossils can provide data on locality and community composition through geologic time (Ludt and Rocha, 2014). So, it is possible to establish the species turnover to measure the difference in species composition between assemblages (Koleff *et al.*, 2003).

The beta diversity between the assemblages of Punta Colorada and Playa Coral is moderate (0.6315), meaning they are not so similar, suggesting that the studied fossil assemblages differ in species composition. All the species identified from the Pleistocene still inhabit the Oaxacan coast habitats today (Table 1). The difference in species composition could be related to the diachrony of both fossil assemblages, given that climatic conditions varied along the Pleistocene, as the species identified in the studied localities inhabit similar coastal environments.

Considerations for the conservation of modern malacological assemblages

The potential of the marine fossil record in the study of the dynamics and history of modern marine assemblages has been discussed by several authors (e.g. Kowalewsli *et al.,* 2023, Tomašových *et al.,* 2023, and the references therein). Information from geohistorical records could contribute to tracking climate change from the Pleistocene to the present, and its impact on modern communities and ecosystems. The use of geohistorical records in conservation strategies is addressed by Conservation Paleobiology. This discipline applies the theories and analytical tools of paleontology to the solution of problems concerning the conservation of biodiversity (Dietl *et al.,* 2015).

The fossil record of Punta Colorada and Playa Coral localities may contribute to proposing effective strategies of conservation and management of the extant marine fauna along the coast of Oaxaca. The fossil assemblages of Punta Colorada and Playa Coral localities may provide insight into the young fossil record of some modern species. For example, the gastropods *Plicopurpura columellaris* and *Nerita scabricosta* inhabit the modern rocky intertidal zone from the study area (Keen, 1971). They are appreciated for their beauty and used by artisans and local people. Neither species has been recorded in the fossiliferous deposits, suggesting that they may have a young fossil record. This information highlights the importance of conservation efforts, particularly for *P. columellaris*, which is exploited as a producer of an appreciated purple textile dye (López-Chávez *et al*., 2016; Barrientos-Luján *et al.*, 2022).

Only one gastropod recorded in the fossil assemblage faces a critical conservation status, according to the Mexican Official Norm NOM-059-SEMARNAT-2010 (NOM-059). *Cruciculum scutellatum* is subject to special protection (SEMARNAT, 2010). This category refers to species that could be threatened by factors that negatively affect their viability. So, there is a need to promote their recovery and conservation, or the recovery and conservation of populations of their associated species.

Regarding the geographic distribution of the recorded species, they have been inhabiting the coastal area of Oaxaca from the Pleistocene to the present. No local extinctions of species were recorded in the Pleistocene, since the species have persisted through time in the study area. The molluscan species persist over time, even in the Pleistocene periods of climatic change, suggesting resilience to disturbances (Cant *et al.*, 2023). This resilience is a critical factor for modern biotas, which face anthropogenic and climatic threats. However, it is unknown if the recent molluscan assemblages could be resilient to the rise in temperature. Since they are ectotherm organisms, global warming is a real menace with several possible consequences in the communities, as it has been reported in numerous parts of the world (Assan *et al.*, 2020, Albano *et al.*, 2021). The other possibility is that they may be able to develop the adaptive capacity to tolerate climate change (Ross *et al.*, 2023).

Considerations for the conservation of the marine terraces and their fossil biota

As mentioned earlier, marine terraces are vulnerable to various natural and anthropogenic hazards. In Puerto Escondido area, the main factors include natural events such as earthquakes, hurricanes, and storms, as well as the degree of vulnerability of the local settlements (Lavell, 2006; Narváez *et al.*, 2009).

One significant threat to these terraces is the heavy rainfall caused by storms and hurricanes. Puerto Escondido has experienced several events, with recorded rainfall reaching up to 1160.65 mm, like the one in August 2010 (Morales-Barrera *et al.*, 2021). The water saturated the rocks and soils, triggering gravitational processes that resulted in landslides.

Another risk factor is the seismic activity, driven by the subduction of the Cocos Plate beneath the North American Plate. Historically, numerous earthquakes have affected the coastal region, with cities such Puerto Escondido, Pochutla, Puerto Angel, Huatulco and Loxicha among the most affected (Morales-Barrera *et al.*, 2021).

Marine terraces with fossiliferous outcrops experience significant landslides along their steep slopes. These landslides have partially destroyed Playa Coral strata, and nowadays, the outcrops remain buried under vegetation (Figure 9.1). Additionally, several constructions have been developed on the terrace edges, despite recommendations against building in such areas (Morales-Barrera *et al.*, 2021).

Currently, there are no constructions on the Punta Colorada locality terrace, but the area is unsuitable for buildings or civil works due to several fallen blocks, highlighting its susceptibility to natural hazards (Figure 9.2). The future permanence of the marine terraces in Punta Colorada is at risk due to the ongoing construction of a massive urban complex on the terrace (Pérez-Alfonso, 2024), although it is neither practical nor safe to build in the terraces.

Preserving fossiliferous localities requires the adoption of several approaches to protect, manage, and document these sites. In this regard, some authors have advocated the use of digital tools for documentation (Bratton *et al.*, 2013), or promoting societal values related to geomorphological structures (Zgłobicki *et al.*, 2015). The potential loss of paleontological heritage in Punta Colorada and Playa Coral localities means the loss of information about Pleistocene marine populations in southern Mexico, as well as the opportunity to understand their dynamics.

Conclusions

The Pleistocene Colotepec Formation crops out on the outskirts of Puerto Escondido City. It consists of a basal conglomerate overlain by sandstone and bears a diverse marine fauna. The invertebrate assemblage of the Pleistocene Punta Colorada locality comprises 35 taxa of Bivalvia and 54 taxa of Gastropoda. The assemblage from the Pleistocene Playa Coral locality consists of 34 taxa of Bivalvia and 29 taxa of Gastropoda.

The identified species of fossil assemblages currently inhabit the southern Pacific Ocean and are part of the Panamic Province.

The habitat preferences of the identified taxa suggest a tropical shallow subtidal environment. Sedimentology suggests that water energy varies in both deposits along the stratigraphic sequence. The presence of sclerobionts on various shells suggests that soft substrates predominate in the studied localities.

Based on the uplift rate of the study area, the maximum calculated age for the Punta Colorada deposit is 112,000 years (Late Pleistocene), and that of Playa Coral locality is around 248,000 years (Middle Pleistocene).

The species turnover between the Punta Colorada locality and Playa Coral locality is moderate (0.6315), which could be related to the diachrony of both fossil assemblages and the variety of climatic conditions along the Pleistocene, since the identified species inhabit similar coastal environments.

The marine terraces of Puerto Escondido are vulnerable to diverse natural and anthropogenic hazards; thus, the fossiliferous strata in Playa Coral and Punta Colorada are at risk.

The deposits of the Colotepec Formation represent one of the few records of the marine faunas in the southern Pacific during a period of climatic changes. Its conservation in the long term is crucial to understanding the ecological and environmental dynamics of this unique region.

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Credit authorship contribution statement

RGA: writing, validation, supervision, methodology, investigation, formal analysis, data curation, conceptualization. NABL: writing, supervision, methodology, investigation, formal analysis, data curation. EJH: writing, methodology, investigation, formal analysis. JAG: methodology, investigation, formal analysis, and data curation, FBV: formal analysis and data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Figure captions

Figure 1. Main morphotectonic features of the Mexican coastal region of the Pacific Ocean. MAT, Middle American Trench; Fz, fault zone. Only the locality of Punta Colorada is marked because of the scale and the nearness of the Playa Coral locality (Modified from Ramírez-Herrera and Urrutia-Fucugauchi, 1999).

Figure 2. General views of the studied outcrops in the southern Pacific of Mexico. **1,** View of the Punta Colorada locality; **2,** view of the Playa Coral locality.

Figure 3. 1, Lithologic composition of Punta Colorada locality; **2,** Lithologic composition of Playa Coral locality (Modified from Almazán Vázquez and Briseño Sotelo, 2013).

Figure 4. Some specimens of Bivalvia and their ID in the Laboratorio de Paleobiología, Universidad del Mar. **1**, *Arca pacifica* (UMLP-0066), **2**, *Acar rostae* (UMLP-0063), **3,** *Calloarca alternata* (UMLP-0128), **4**, *Ostrea* sp., internal valve with a serpulid tube

(UMLP-0432), **5**, *Ostrea* sp., external valve with *Entobia* and *Gastrochaenolites* isp. (UMLP-464), **6**, *Striostrea* sp. external valve with *Entobia* isp. and *Gastrochaenolites* isp. (UMLP-0445), **7**, *Striostrea* sp., external valve with serpulid tubes (UMLP-0453), **8**, *Lima tetrica* (UMLP-0087), **9**, *Codakia distinguenda* (UMLP-0490), **10**, *Carditamera affinis* (UMLP-0069), **11**, *Cardites laticostatus* (UMLP-0288), **12**, *Americardia planicostata* (UMLP-0066), **13,** *Donax gracilis* (UMLP-0081), **14**, *Tivela delessertii* (UMLP-0186), **15**, *Chione subimbricata* (UMLP-0076), **16,** *Chione tumens* (UMLP-0077). Scale bar 10 mm.

Figure 5. Some specimens of Gastropoda and their ID in the Laboratorio de Paleobiología, Universidad del Mar. **1,** *Diodora inaequalis* (UMLP-0027), **2,** *Fissurella decemcostata* (UMLP-0029), **3,** *Caviturritela leucostoma* (UMLP-0053), **4,** *Natica caneloensis* (UMLP-0040), **5,** *Bostrycapulus aculeatus* (UMLP-0021), **6,** *Crucibullum scutellatum* (UMLP-0023), **7,** *Crucibulum spinosum* (UMLP-0024), **8,** *Pseudozonaria arabicula* (UMLP-0035), **9,** *Pusula radians* (UMLP-0052), **10,** *Bursa rugosa* (UMLP-008), **11,** *Monoplex keenae* (UMLP-0025), **12,** *Distorsio constricta constricta* (UMLP-0028), **13,** *Morum tuberculosum* (UMLP-0038), **14,** *Strombina bonita* (UMLP-0048), **15,** *Gemophos sanguinolentus* (UMLP-0013), **16,** *Neorapana muricata* (UMLP-0061), **17,** *Stramonita biserialis* (UMLP-0062), **18,** *Agaronia propatula* (UMLP-001), **19,** *Agaronia testacea* (UMLP-0002), **20,** *Oliva incrassata* (UMLP-0044). **21,** *Connus brunneus* (UMLP-0017), **22,** *Bulla gouldiana* (UMLP-007), **23,** *Architectonica nobilis* (UMLP-0006). Scale bar 10 mm.

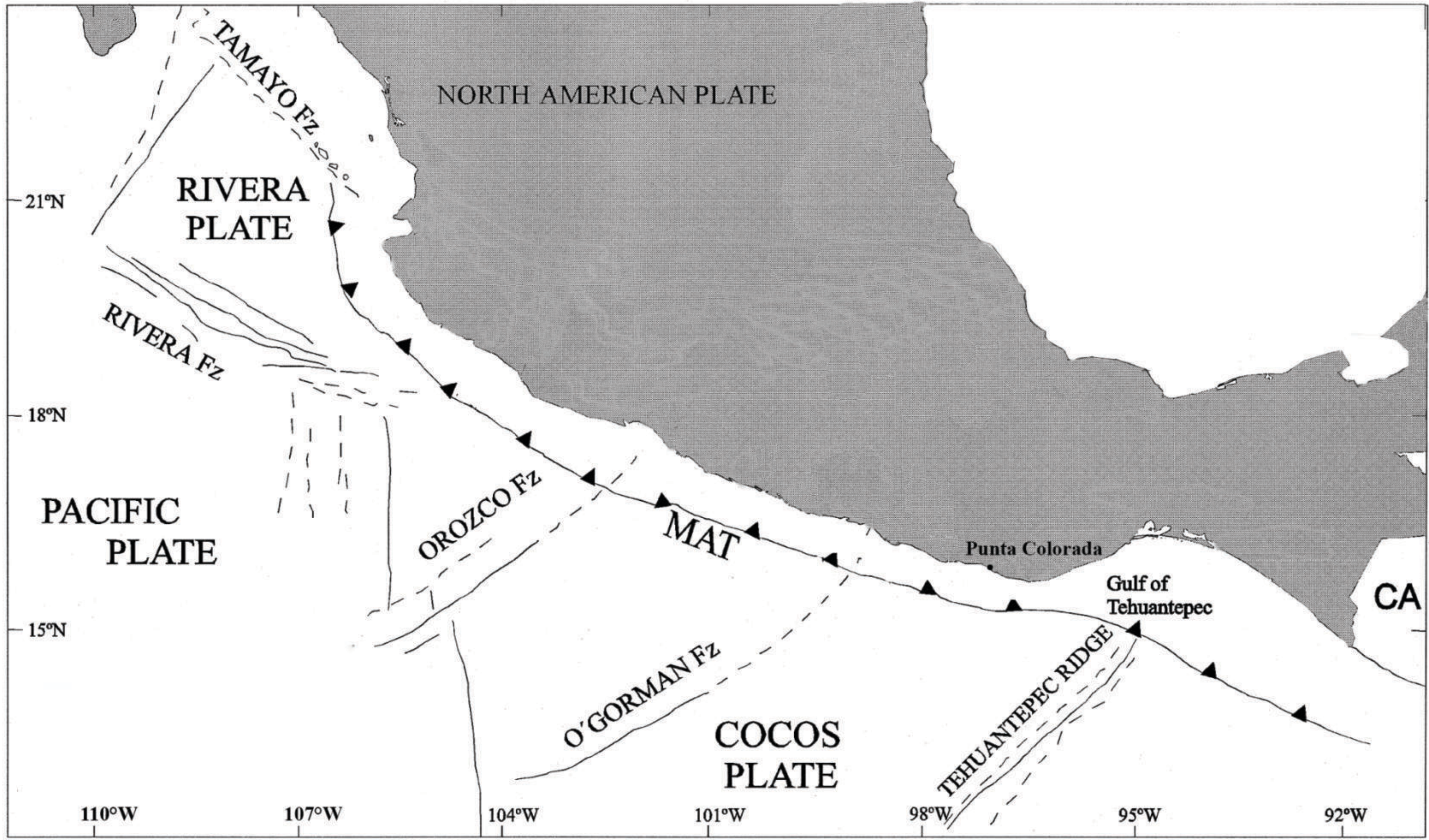
Figure 6. 1, Small and medium sized fossils in sandstone level; **2,** *Tagelus longisinuatus*; **3,** Ostreids in conglomerate and sandstone level. Diameter of the coin equals 25.5 mm

Figure 7. 1, *Psilolichnus* isp. cast in the upper level of Punta Colorada locality; **2**, *Gastrochaenolites* isp. in a fallen block of sandstone in Punta Colorada locality, **3,** A

cast of *Ophiomorpha nodosa* (UMPLIC-1153) buried by *Botula cylista*, from Playa Coral locality, **4,** Casts of *Ophiomorpha nodosa* in situ, in Playa Coral locality.

Figure 8.1., Borings produced by bivalves in the exterior side of an ostreid specimen, **8.2.** Several individuals of the gastropod *Dendropoma* sp. attached to the internal side of the valve of a *Codakia distinguenda* specimen (UMLP-490).

Figure 9.1, The strata from the Playa Coral locality are currently buried by landslide processes and covered by local vegetation. **9.2,** Several fallen blocks characterize the Punta Colorada locality and are constantly eroded by wave action.



NORTH AMERICAN PLATE
TAMAYO Fz
RIVERA PLATE
RIVERA Fz
PACIFIC PLATE
OROZCO Fz
MAT
Punta Colorada
Gulf of Tehuantepec
CA
O'GORMAN Fz
COCOS PLATE
TEHUANTEPEC RIDGE
21ºN
18ºN
15ºN
110°W
107°W
104ºW
101ºW
98ºW
95ºW
92ºW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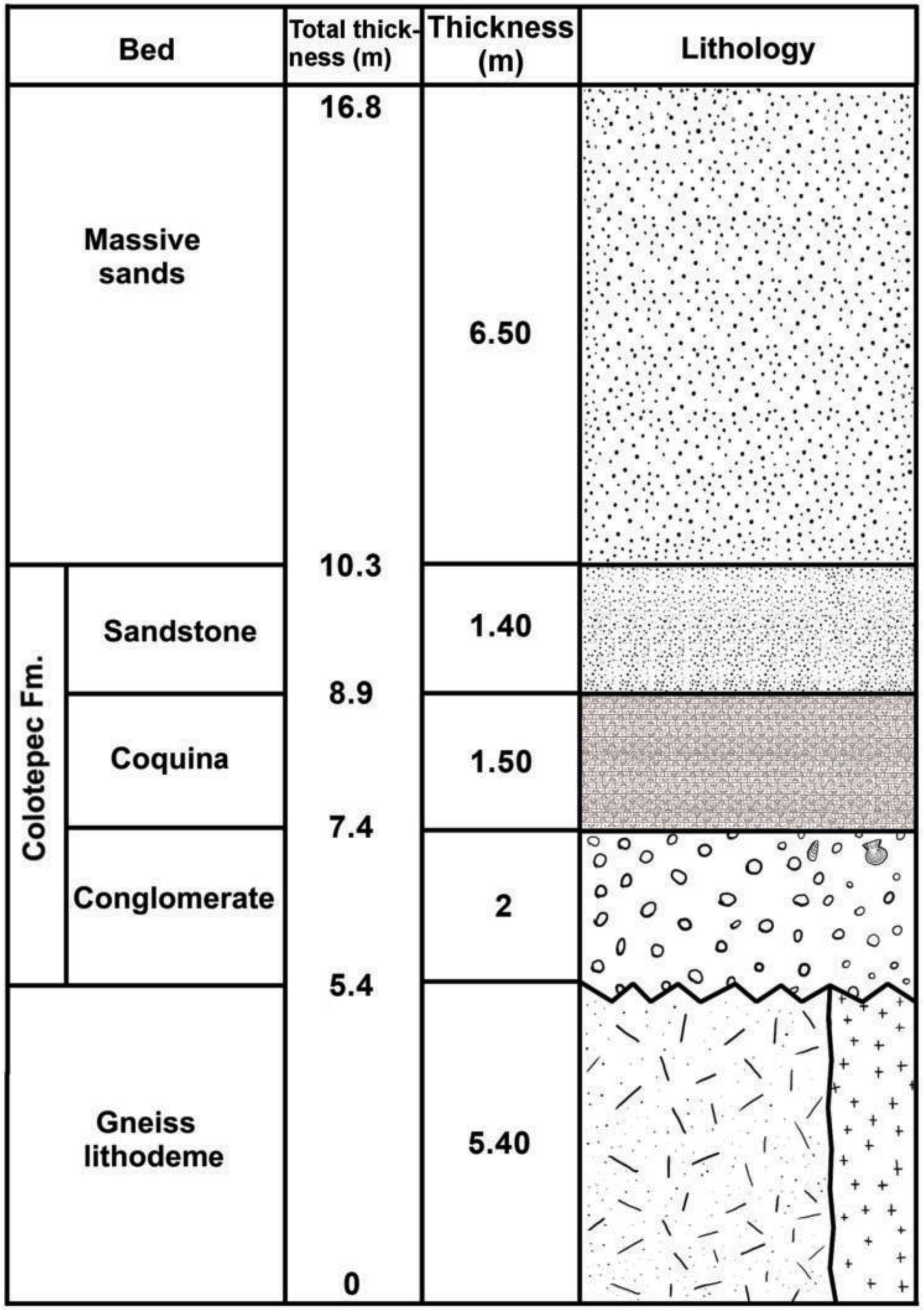
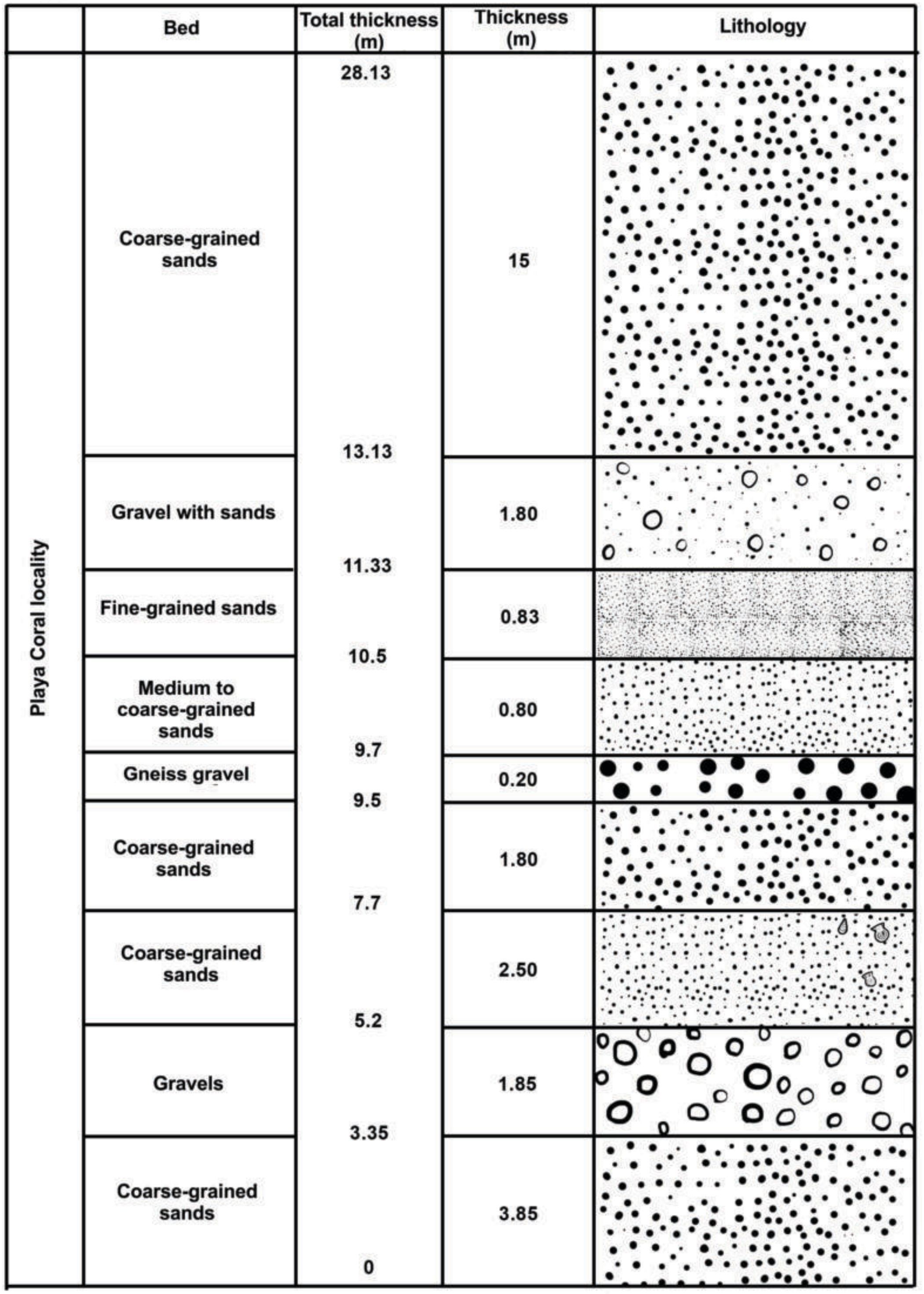
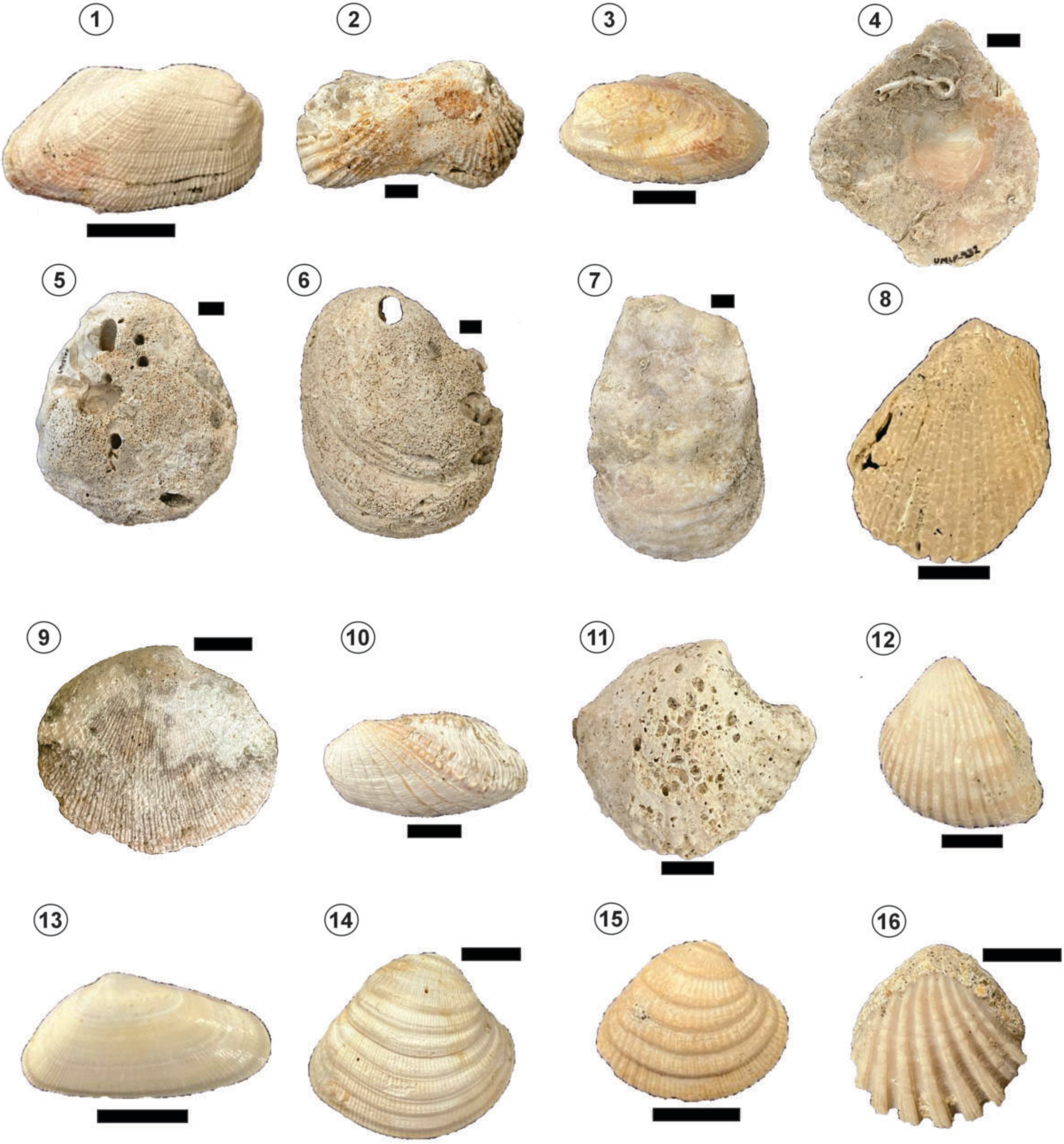


Bed
Total thick-ness (m)
Thickness (m)
Lithology
Massive sands
16.8
6.50
Colotepec Fm.
Sandstone
10.3
1.40
Coquina
8.9
1.50
Conglomerate
7.4
2
Gneiss lithodeme
5.4
5.40
0

2



Bed
Total thickness (m)
Thickness (m)
Lithology
Playa Coral locality
Coarse-grained sands
28.13
15
Gravel with sands
13.13
1.80
Fine-grained sands
11.33
0.83
Medium to coarse-grained sands
10.5
0.80
Gneiss gravel
9.7
0.20
Coarse-grained sands
9.5
1.80
Coarse-grained sands
7.7
2.50
Gravels
5.2
1.85
Coarse-grained sands
3.35
3.85
0



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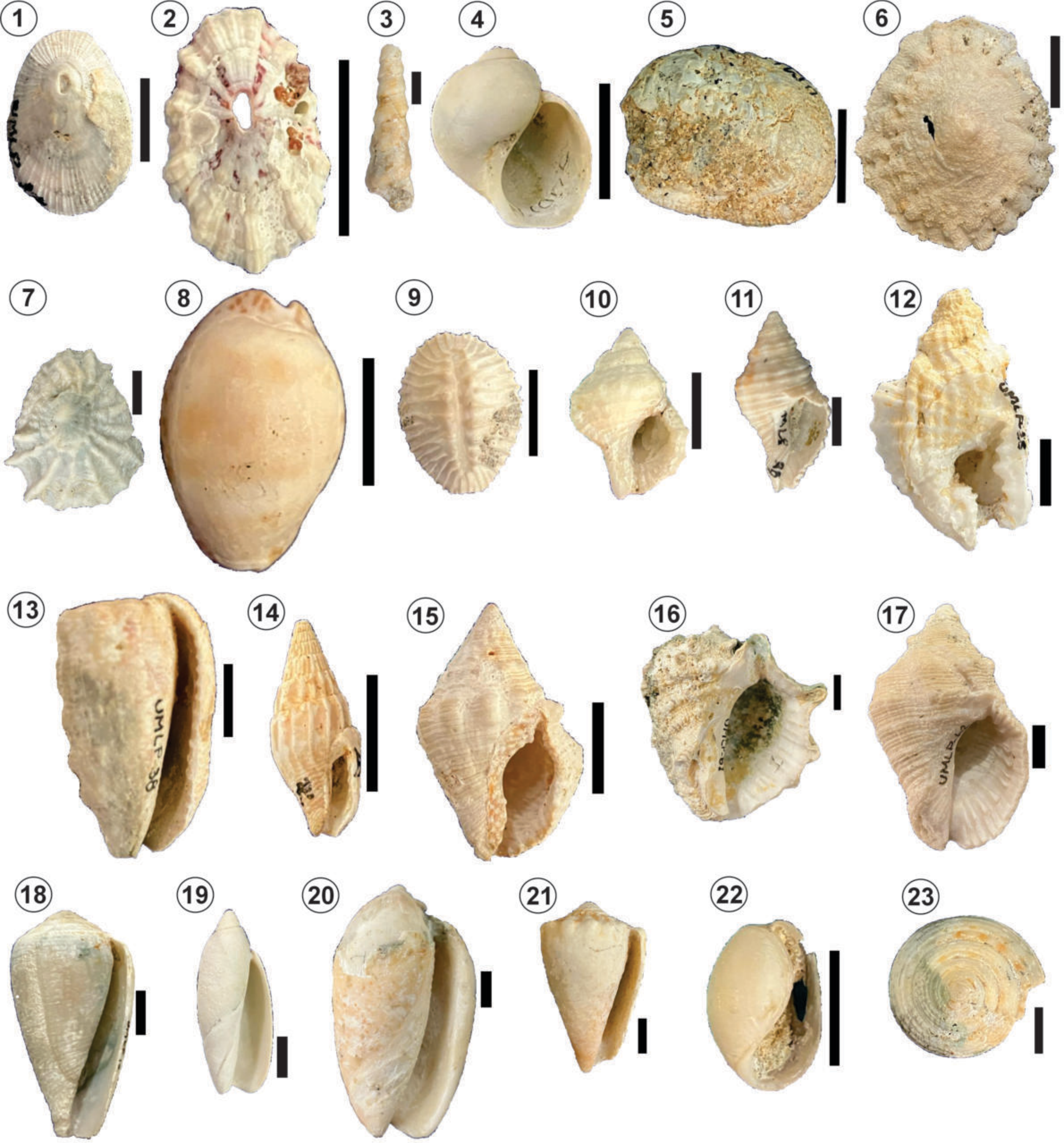
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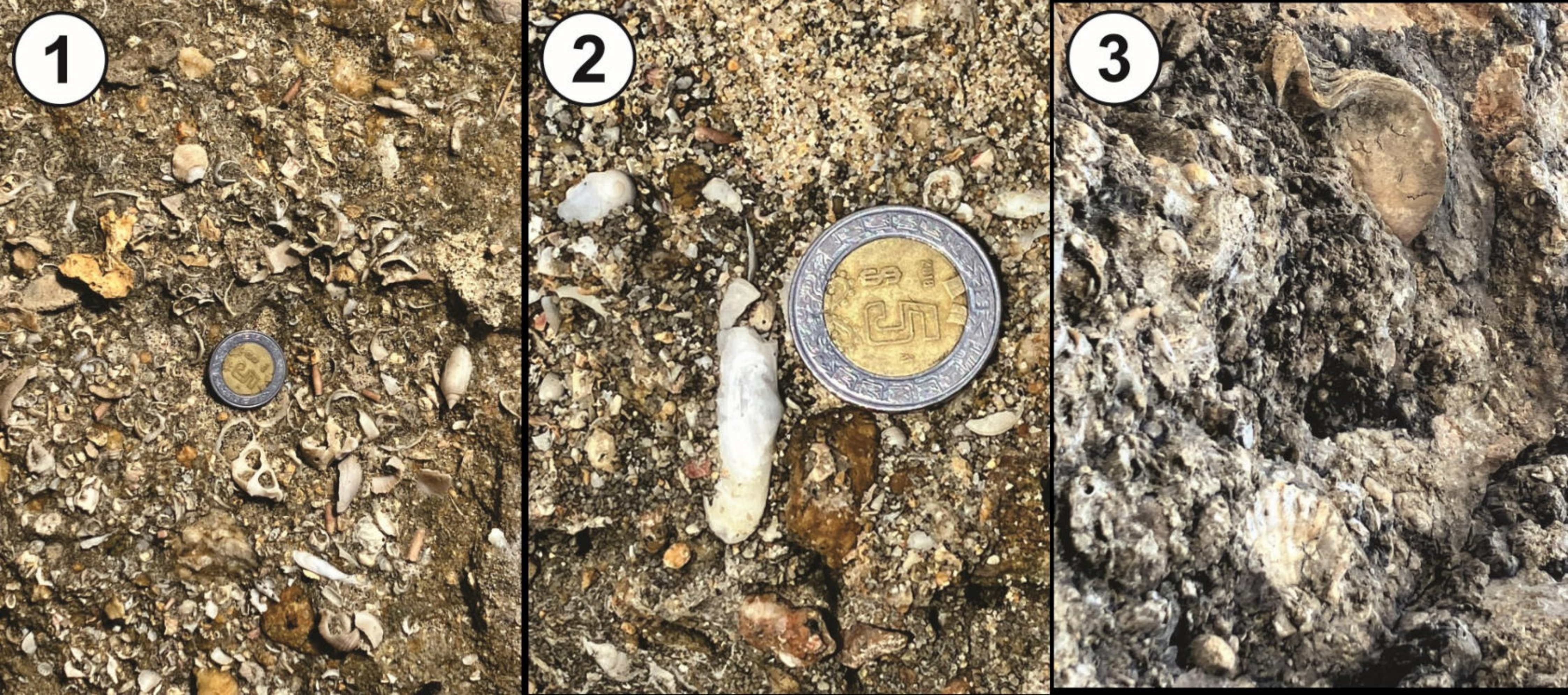
UMLP 38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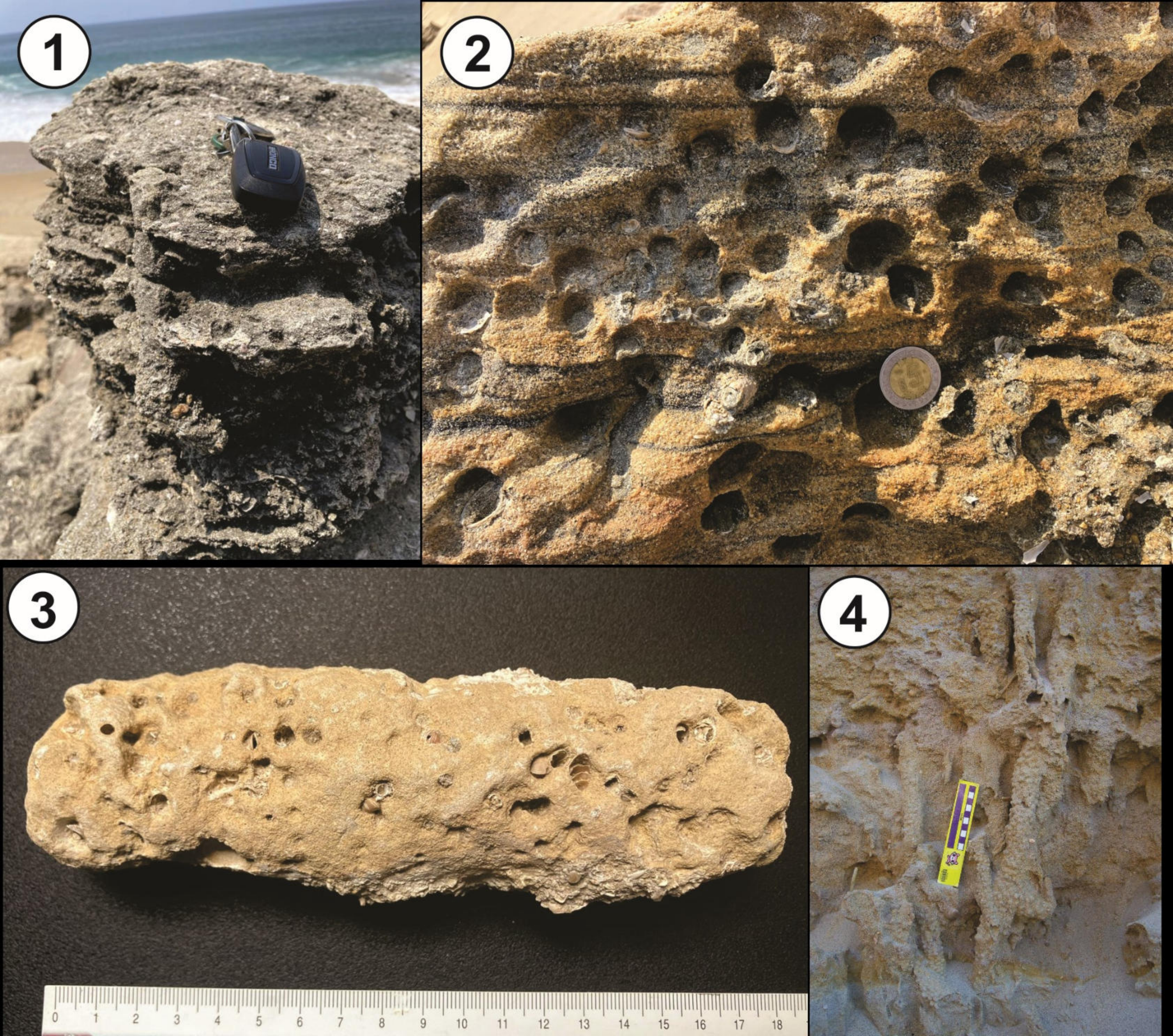
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TABLE 1. List of Pleistocene mollusks species from Punta Colorada and Playa Coral in Puerto Escondido localities, Oaxaca, and their current distribution. The list includes confirmed records in the primary literature reviewed through 2024. The classification of Bivalvia follows Coan & Valentich-Scott (2012) and the classification of Gastropoda is according to Bouchet *et al.* (2017). Updated species names and authors were verified in MolluscaBase (2024). Abbreviations for ecological conditions: HBT=habitat: Int=intertidal, Sbt=subtidal, SBS=substrate, H=hard, S=soft. LCL=locality. Abbreviations for countries and Mexican states, from north to south: CAN=Canada, CAL=California, USA, BC=Baja California, BCS=Baja California Sur, SON=Sonora, SIN=Sinaloa, NAY=Nayarit, JAL=Jalisco, COL=Colima, MICH=Michoacán, GRO=Guerrero, OAX=Oaxaca, CHIS=Chiapas, GC= Gulf of California, REI=Revillagigedo Islands, TMI= Tres Marías Islands, GT=Gulf of Tehuantepec, MTP=Mexican Tropical Pacific (BC, BCS, SON, SIN, NAY, JAL, COL, MICH, GRO, OAX, and CHIS); MSP=Mexican South Pacific (GRO, OAX, CHIS); GM=Gulf of Mexico, CPI= Clipperton Island, France, CR=Costa Rica, PA=Panamá, GAI= Galapagos Islands, TEP=Tropical Eastern Pacific (from Bahía Magdalena, Mexico to Punta Aguja, Peru). Acronyms of the collections: UMPLP= Universidad del Mar, Laboratorio de Paleobiología, CMNHNUMAR=Colección de Moluscos del Museo de Historia Natural de la Universidad del Mar

		HBT		SBS		LCL		Geographic distribution	Bibliographic reference
UMLP	Taxa	Int	Sbt	H	S	P. Col	P. Coral		
	Class Bivalvia								
	Family Mytilidae								
0079, 0105, 0153	***Choromytilus palliopunctatus*** (P. P. Carpenter, 1857)	✓		✓		✓	✓	Asunción Island, Pacific coast of BCS; in the GC in Bahía Kino SON and La Paz BCS; Chamela Bay and Tenacatita Bay JAL; Manzanillo and La Boquilla de Santiago COL; Maruata, Faro de Bucerías, Melchor de Ocampo and Zimapan MICH; MSP mainly in GRO; Mazunte OAX and CHIS Mexico to Bahía Piñas Darien PA.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Flores-Rodríguez *et al.* (2014), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0092	***Mytella*** sp. Soot-Ryen, 1955		✓	✓		✓			
	Family Arcidae								
0165	***Acar gradata*** (Broderip & G. B. Sowerby I, 1829)	✓		✓			✓	Ojo de Liebre Lagoon, Pacific coast of BCS; GC; Mazatlán SIN; Isabel Island NAY; Cuitzmala, Chamela, Tenacatita and Navidad Bays JAL; REI, Bahía Santiago, Tepalcates, and Bahía Ceniceros COL; Faro de Bucerías, MICH; Ixtapa GRO; Puerto Ángel and Huatulco Bays OAX Mexico to Cocos Island CR. ICP France; Las Perlas Archipelago PA; GAI Ecuador. From the Pleistocene of BCS.	Salcedo-Martínez *et al.* (1988), Rodríguez-Palacios *et al.* (1988), Landa-Jaime & Arciniega-Flores (1998), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0066	***Arca pacifica*** (G. B. Sowerby I, 1833)	✓			✓	✓		Ojo de Liebre Lagoon, Pacific coast of BC; La Choya Bay SON; Mazatlán SIN; Chamela and Tenacatita Bays JAL; El Coco Beach and REI COL Mexico to Paita Peru; PO. Cocos Island CR; GAI Ecuador. From the Pliocene and Pleistocene of Mexico.	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime & Arciniega-Flores (1998), Coan & Valentich-Scott (2012), Barrientos *et al.* (2022), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0063, 0118, 0180	***Acar rostae*** (S. S. Berry, 1954)		✓	✓		✓	✓	Ojo de Liebre Lagoon, Pacific coast of BCS; Los Ángeles Bay GC, Isabel Island and Marietas Islands NAY; Tenacatita Bay JAL, REI COL;	Salcedo-Martínez *et al.* (1988), Rodríguez-Palacios *et al.* (1988), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Barrientos-

								Zihuatanejo GRO; Huatulco Bays OAX, Mexico. GAI Ecuador and Bayovar Peru.	Luján *et al.* (2021), MolluscaBase (2024).
0065	***Anadara formosa*** (G. B. Sowerby I, 1833)	✓			✓	✓		Cedros Island, Pacific coast of BCS; Los Ángeles Bay GC; San Carlos Bay SON; JAL, and GRO Mexico. El Salvador, CR, PA and Colombia.	Salcedo-Martínez *et al.* (1988), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), MolluscaBase (2024).
0129	***Anadara tuberculosa*** (G. B. Sowerby I, 1833)		✓		✓		✓	Mission Bay California USA; San Ignacio Lagoon, Pacific coast BCS; La Paz BC; Bahía Kino SON and CHIS Mexico. Punta Telégrafo Piura Peru.	Coan & Valentich-Scott (2012), Penagos-García (2013), MolluscaBase (2024).
0198	***Barbatia reeveana*** (d'Orbigny, 1846)		✓	✓			✓	San Pedro and San Diego California, USA; Cedros Island, Pacific coast of BCS; La Choya Bay SON; Mazatlán SIN, Tomatlán JAL Ixtapa, Zihuatanejo, GRO; and Huatulco Bays OAX, Mexico to Paita Peru. ICP France, Coco Island CR, GAI Ecuador. From the early Pliocene in BCS.	Holguín-Quiñones & González-Pedraza (1994), Salcedo-Martínez *et al.* (1988); Zamorano *et al.* (2006), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Esqueda-González *et al.* (2022), MolluscaBase (2024).
0128, 0149, 0306	***Calloarca alternata*** (G. B. Sowerby I, 1833)		✓	✓		✓	✓	From near head of the GC to La Choya Bay SON, Careyitos and Tomatlán JAL; and Huatulco Bays OAX Mexico to Manta Manabí Ecuador. GAI Ecuador. From the Pleistocene of Baja California Sur.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022).
0150	***Lamarcka mutabilis*** (G. B. Sowerby I, 1833)		✓	✓			✓	Ojo de Liebre Lagoon, Pacific coast of BC, into the GC at La Choya Bay SON, Isabel and Marietas Islands NAY; Chamela and Tenacatita Bays, and Tomatlán JAL; La Unión GRO, Huatulco Bays OAX, Mexico to Paita Piura Peru. Also in REI COL, and MICH Mexico, Del Coco Island CR, ICP France, Malpelo Island Colombia, GAI Ecuador.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Flores-Rodríguez *et al.* (2007), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021).
0088, 0166	***Lunarca brevifrons*** (G. B. Sowerby I, 1833)		✓		✓	✓	✓	Guaymas SON, Manzanillo COL, OAX and CHIS Mexico to Negritos Piura Peru. GAI Ecuador.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022).
	Family Glycymerididae								
0083, 0137	***Axinactis delessertii*** (Reeve, 1843)		✓		✓	✓	✓	Magdalena Bay, Pacific coast of BCS, El Tule BCS; TMI NAY, and OAX Mexico to PA.	Holguín-Quiñones & González-Pedraza (1989), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022).
0121, 0181	***Tucetona multicostata*** (G. B. Sowerby I, 1833)		✓		✓		✓	Magdalena Bay, Pacific coast of BCS; into the GC in La Choya Bay SON; La Paz BCS; Marietas Islands NAY; Chamela Bay JAL, Bahía Ceniceros COL; GRO and OAX, Mexico to PA, Colombia, Guayaquil, Ecuador, Del Coco Island CR.	Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0084	***Tucetona strigilata*** (G. B. Sowerby I, 1833)		✓		✓	✓		In the GC in Espíritu Santo Island BC; San José del Cabo BCS and Guaymas SON; Chamela Bay JAL, and OAX Mexico to Guatemala, CR, Tumbes, Peru and Del Coco Island CR.	Holguín-Quiñones *et al.* (1994), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).

	Family Noetiidae							
0117, 0182	***Arcopsis solida*** (G. B. Sowerby I, 1833)		✓			✓	San Diego CAL, USA; West coast of BCS; Puerto Peñasco SON; REI COL, and GRO Mexico to Chimbote, Ancash, Peru. Also, in the GAI Ecuador.	Keen (1971), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
	Family Ostreidae							
0203, 0238	***Crassostrea columbiensis*** (Hanley, 1846)		✓	✓	✓	✓	San Bartolomé Bay, Pacific coast of BCS; into the GC Guaymas SON and Loreto BCS, Mexico to Colombia and Bayovar Peru.	Coan & Valentich-Scott (2012), MolluscaBase (2024).
0127, 0210	***Ostrea megodon*** Hanley, 1846		✓	✓		✓	San Bartolomé Bay, Pacific coast of BCS; into the GC in Loreto BCS and Guaymas SON, and GRO Mexico to Bayovar Piura Peru. Also, in Peruvian Exclusive Economic Zone and Bahía de la Independencia Peru, GAI Ecuador. From the Miocene of southern California.	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0201	***Saccostrea palmula*** (P. P. Carpenter, 1857)		✓	✓		✓	Lagoon San Ignacio Lagoon, Pacific coast of BCS; and into the GC at La Choya Bay, SON; Mazatlán SIN; Chamela Bay, Puerto Vallarta JAL; Las Hadas COL; La Unión GRO; Puerto Escondido, and Mazunte OAX Mexico to Bayovar Peru. Del Coco Island CR, GAI Ecuador. The Pliocene and Pleistocene of California and BC.	Holguín-Quiñones y González-Pedraza (1994), Flores-Rodríguez *et al.* (2007), Coan & Valentich-Scott (2012), Flores-Rodríguez *et al.* (2014), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0071, 0185, 0231, 0237, 0240, 0267, 0269, 0271, 0272, 0273, 0275, 0280, 0283, 0292, 0294, 0308, 0310, 0319, 0320, 0320, 0326, 0330, 0331, 0333, 0335, 0425, 0427, 0447, 0449, 0455, 0456, 0463, 0464, 0465, 0471, 0475, 0498	***Striostrea prismatica*** (Gray, 1825)	✓		✓	✓	✓	La Paz BCS; Mazatlán SIN; and Chamela Bay and Tenacatita, Careyitos, Tomatlán JAL; Manzanillo COL; La Soledad Beach, Faro de Bucerías, Lázaro Cárdenas and Caleta de Campos MICH; Puerto Escondido OAX Mexico to Mancora Tumbes Peru. Also in CR, PA and Colombia. In the GM in Tampico Tamaulipas, Mexico and Marco Island Florida, USA.	Holguín-Quiñones y González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Flores-Rodríguez *et al.* (2014), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
	Family Gryphaeridae							

0086	***Hyotissa hyotis*** (Linnaeus, 1758)		✓	✓		✓		San Luis Gonzaga Bay BC; Cleofas Island, TMI NAY and OAX Mexico to La Plata Island Ecuador, Del Coco Island CR, Malpelo Island Colombia, GAI Ecuador. Mediterranean Sea, Mozambique, Republic of Mautitius, South Africa, USA, Belize, Caribbean Sea, Gulf of Mexico, Indian Ocean, Kenia, Madagascar, Tanzania.	Holguín-Quiñones & González-Pedraza (1989), Coan & Valentich-Scott (2012), MolluscaBase (2024).
	Family Spondylidae								
0097	***Spondylus leucacanthus*** Broderip, 1833		✓	✓		✓		Cedros Island, coast Pacific of BC; into GC at Los Ángeles Bay BC and Tiburón Island SON, Mexico to La Plata Island Manabí Ecuador. From the Miocene, lower Pliocene and Pleistocene of BC.	Coan & Valentich-Scott (2012).
0100, 0293	***Spondylus limbatus*** G. B. Sowerby II, 1847		✓	✓		✓	✓	Rocas Alijos, Pacific coast of BCS; into GC at La Choya Bay, SON; Mazatlán, SIN; Chamela and Tenacatita Bays, JAL, Faro de Bucerías and Zimapan MICH and GRO Mexico to Caleta Mero Tumbes Peru, and Coco Island CR. Present in the Miocene, Pliocene and Pleistocene of BC.	Holguín-Quiñones y González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), MolluscaBase (2024).
	Family Limidae								
0087, 0468, 0479	***Lima tetrica*** Gould, 1851		✓		✓	✓		In the GC in Willard Bay BC; Puerto Lobos SON; Faro de Bucerías MICH and Puerto Ángel OAX, Mexico to La Plata Island Manabí, Ecuador. Also, in Coco Island CR, Colombia and GAI Ecuador.	Holguín-Quiñones y González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
	Family Lucinidae								
0113	***Ctena mexicana*** (Dall, 1901)		✓	✓			✓	Punta San Pablo Pacific coast of BCS; into the GC at Puerto Peñasco, SON; Mazatlán, SIN; REI, COL; Faro de Bucerías MICH; CHIS Mexico a Tumbes Peru, and Malpelo Island Colombia.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Esqueda-González *et al.* (2022), Barrientos-Luján *et al.* (2022), MolluscaBase (2024)
0099, 0104, 0202, 0291, 0466, 0468	***Codakia distinguenda*** (Tryon, 1872)	✓			✓	✓	✓	Estero San José, Pacific coast BCS; into the GC in Adair Bay SO; Chamela Bay JAL; REI COL, Lázaro Cárdenas MICH; OAX Mexico to Tumbes Peru. Coco Island CR, ICP France, GAI Ecuador.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024.)
0093	***Dallocardia senticosa*** (G. B. Sowerby I, 1833)		✓		✓	✓	✓	San Francisco to Los Ángeles CAL, USA. From the head of the GC at Puerto Peñasco, SON to Mazatlán SIN; and Chamela Bay JAL; MSP Mexico. Guatemala, El Salvador, CR, PA, Colombia.	Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0124	***Divalinga perparvula*** (Dall, 1901)		✓		✓		✓	In the Mexican part of the North Pacific Ocean: Magdalena Bay, Pacific coast of BCS; into the GC in Concepción Bay BC; Kino Bay SON, and Chamela Bay, JAL Mexico. Independencia Bay	Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).

								Peru, Coco Island CR.	
	Family Carditidae								
0069, 0135	***Carditamera affinis*** (G.B. Sowerby I, 1833)		✓	✓		✓	✓	Punta Pequeña, Pacific coast of BCS; Puerto Peñasco SON; Mazatlán, SIN; Chamela Bay and Tenacatita and Tomatlán Bays JAL; Faro de Bucerías MICH; La Unión GRO, and Huatulco Bays OAX Mexico to El Salvador, Piura Peru and GAI, Ecuador.	Holguín-Quiñones & González-Pedraza (1994), Flores-Rodríguez *et al.* (2007), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0168	***Carditamera radiata*** (G. B. Sowerby I, 1833)		✓	✓			✓	Magdalena Bay, Pacific coast of BCS; Mazatlán SIN; Marietas Islands NAY; Tenacatita Bays JAL, Mazunte and Huatulco Bays OAX, Ixtapa GRO, and CHIS Mexico. Guatemala, El Salvador, CR, PA, Colombia and Ecuador.	Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0070, 0287	***Cardites crassicostatus*** (G. B. Sowerby I, 1825)	✓			✓	✓		La Choya Bay SON; Isla Isabel NAY; Chamela and Tenacatita Bays JAL; La Boquilla de Santiago COL; Faro de Bucerias MICH; Ixtapa, Zihuatanejo GRO; Huatulco Bays, OAX, Mexico to Tumbes Peru.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0288	***Cardites laticostatus*** (G. B. Sowerby I, 1833)							Magdalena Bay BCS; into the GC in Mulege BC and Kino Bay SON; Isabel Island NAY; Chamela Bay JAL; REI, COL; TEP, mainly in Puerto Ángel OAX and CHIS and Peru. Coco Island CR and GAI Ecuador	Keen (1971), Ortiz-Arellano & Flores-Campaña (2008), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
	Family Cardiidae								
0064, 0096, 0136, 0478	***Americardia planicostata*** (G. B. Sowerby I, 1833)							Ketchikan Alaska, California USA.; Los Islotes, north of Partida Island BCS Navachiste Bay Guasave, Mazatlán and off the SIN coast; JAL; Central America; Peruvian Exclusive Economic Zone. Coco Island, CR	Coan & Valentich-Scott (2012), MolluscaBase (2024)
	Family Chamidae								
0072, 0134, 0184	***Chama buddiana*** C.B. Adams, 1852		✓	✓		✓	✓	La Choya Bay GC, SON; Mazatlán, SIN; Isabel and Marietas Islands NAY; Chamela and Tenacatita Bays JAL; GRO and Huatulco Bays OAX Mexico to Manabí and GAI Ecuador.	Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0078, 0241, 0247, 0249,	***Chama coralloides*** Reeve, 1846		✓	✓		✓	✓	Magdalena Bay, Pacific coast of BCS; North from Ángel de la Guarda Island, GC and Mazatlán, SIN;	Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Flores-Rodríguez *et al.* (2014),

0250, 0254								Chamela Bay, Melaque JAL; MICH; Puerto Escondido, Mazunte and Huatulco Bays, OAX Mexico to Piura and La Libertad, Peru.	Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2022)
0256, 0264	***Chama echinata*** Broderip, 1835		✓	✓			✓	Cedros Island, Pacific coast of BC; into the GC to near its head at Bahía la Choya SON; TEP, mainly in Isabel and Marietas Islands NAY; Bahía Chamela JAL; Bahía Santiago and REI, COL; MSP in La Unión GRO, Carrizalillo and Coral beaches OAX; Puerto Ángel and Huatulco Bays OAX, and CHIS Mexico. Coco Island CR, GAI Ecuador. At the GM in Florida USA	Coan & Valentich-Scott (2012), Flores-Rodríguez *et al.* (2014), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0245	***Chama producta*** Broderip, 1835		✓	✓			✓	Tehuantepec Gulf, OAX and CHIS, Mexico	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0188, 0258, 0295	***Pseudochama corrugata*** (Broderip, 1835)		✓	✓			✓	Punta Anhelo BC, and Mazatlán SIN, OAX Mexico to Bayovar Piura Peru, and GAI Ecuador.	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022).
0090	***Pseudochama inermis*** (Dall, 1871)		✓	✓		✓		La Choya Bay SON, Chamela Bay JAL; Faro de Bucerías MICH; GRO and OAX Mexico to Jacarita Island Veraguas, PA.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022).
	Family Donacidae								
0081	***Donax gracilis*** Hanley, 1845	✓			✓	✓		TEP, also in San Bartolomé Bay, Pacific coast of BCS; in the GC La Choya Bay SON; Mazatlán SIN, Barra de Navidad JAL; Manzanillo COL; and OAX, Mexico. Also in PA, Ecuador, and Negritos Peru.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022), Esqueda-González *et al.* (2022), MolluscaBase (2024)
0080	***Donax kindermanni*** (R. A. Philippi, 1847)	✓			✓	✓		TEP, and Tenacatita Bay JAL, Manzanillo COL; Melchor Ocampo MICH; OAX and CHIS Mexico to Punta Ampala, El Salvador and Chilean Exclusive Economic Zone.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
	Family Solecurtidae								
Reported in the field	***Tagelus longisinuatus*** Pilsbry & H. N. Lowe, 1932		✓		✓	✓		El Sábalo Estuary, Mazatlán SIN; Chamela Bay JAL; GRO and Chacahua-Pastoria and Corralero-Alotengo lagoon systems OAX Mexico. Colombia.	Zamorano *et al.* (2010), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
	Family Veneridae								
0242, 0243, 0248	***Chione californiensis*** (Broderip, 1835)					✓		San Francisco, Santa Bárbara and Point Mugu Beach CAL, USA; throughout the GC in La Choya Bay SON; Archipielago Espiritu Santo BCS; Navachiste Bay SIN to Acapulco GRO.	Ortiz-Arellano & Flores-Campaña (2008), Coan & Valentich-Scott (2012).
0075, 0122, 0151	***Chione compta*** (Broderip, 1835)		✓		✓	✓	✓	Concepción Bay BC and San Carlos Bay SON, Mexico to Bayovar Peru. Also, Lobos de Tierra	Coan & Valentich-Scott (2012), MolluscaBase (2024).

							Island Lambayeque Peru and GAI Ecuador.	
0076, 0123, 0152	***Chione subimbricata*** (G. B. Sowerby I, 1835)	✓		✓	✓	✓	Magdalena Bay Pacific coast of BCS and La Paz BCS; Guaymas SON; Mazatlán SIN; Isabel and Marietas Islands NAY; Chamela Bay, JAL, La Boquilla de Santiago Island, Ceniceros Bay COL; Faro de Bucerías and Melchor Ocampo MICH; Ixtapa and Zihuatanejo GRO, OAX and CHIS Mexico to La Libertad Province Peru. GAI Ecuador.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0077	***Chione tumens*** A. E. Verrill, 1870	✓		✓	✓		Pacific coast of BCS; into the GC in Cabo San Lucas BCS La Choya Bay and San Carlos, SON; Chamela and Barra de Navidad Bays JAL, OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0085	***Globivenus isocardia*** (A. E. Verril, 1870)		✓	✓	✓		Rocas Alijos Pacific coast of BC; Isla Danzante BCS; Cabo Haro SON, and IRA, COL Mexico to La Plata Island Ecuador and Punta Picos Peru. Also in Coco Island CR, GAI Ecuador since the Pleistocene.	Coan & Valentich-Scott (2012), MolluscaBase (2024).
0089	***Hysteroconcha rosea*** (Broderip & G. B. Sowerby I, 1829)		✓	✓	✓		Altata SIN, OAX and CHIS Mexico to Tumbes Peru. Also recorded in the Pleistocene of Ecuador.	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022).
0189, 0197	***Lamelliconcha alternata*** (Broderip, 1835)		✓	✓		✓	Cabo San Lucas BCS, into the GC in Puerto Peñasco SON, OAX and CHIS Mexico to Cabo Blanco Piura Peru.	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2022).
0467	***Megapitaria aurantiaca*** (G. B. Sowerby I, 1831)				✓		Estero Guerrero Negro, Pacific coast of BC; From the head of the GC in La Choya Bay, SON; Navachiste Bay SIN; Chamela Bay JAL, Mexico to Salinas and GAI Ecuador. TEP. Lobos de Tierra Islands, Lambayeque Peru. Pliocene and Pleistocene of BC	Keen (1971), Ortiz-Arellano & Flores-Campaña (2008), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2020).
0091, 0336	***Periglypta multicostata*** (G. B. Sowerby I, 1835)		✓	✓	✓		Into the GC in San Marcos Island BCS and Puerto Lobos SON; Mazatlán SIN; Chamela and Tenacatita Bays JAL, Ceniceros Bay COL; GRO, Puerto Ángel OAX and CHIS Mexico to Punta Verde Piura Peru. GAI Ecuador. From the Pliocene and Pleistocene of BC and Pleistocene of Ecuador and GAI.	Coan & Valentich-Scott (2012), Landa-Jaime *et al.* (2013), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Esqueda-González *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0094	***Tivela byronensis*** (Gray, 1838)	✓	✓	✓	✓		Ojo de Liebre Lagoon coast Pacific of BCS; in the GC in Puerto Peñasco SON; Mazatlán SIN; Chamela Bay JAL; La Soledad, Caleta de Campos and Melchor Ocampo MICH, GRO, OAX and CHIS Mexico to Los Órganos Piura Peru. Also in CR, Panamá, and Colombia. In the GM, Florida, USA.	Holguín-Quiñones & González-Pedraza (1994), Coan & Valentich-Scott (2012), Ríos-Jara *et al.* (2022), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0186	***Tivela delessertii*** (G. B. Sowerby II, 1854)		✓	✓		✓	Santa Inés Bay BCS; Mazatlán SIN; JAL, Zihuatanejo GRO and CHIS, Mexico to	Coan & Valentich-Scott (2012), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.*

							Archipiélago de Las Perlas PA.	(2022), MolluscaBase (2024).
0095	***Trachycardium*** spp. Mörch, 1853				✓			
	Class Gastropoda							
	Family Fissurellidae							
0027, 0055, 0155	***Diodora inaequalis*** (G. B. Sowerby I, 1835)		✓	✓	✓	✓	Santa Cruz Island, GC BCS, Puerto Peñasco, Puerto Lobos, Bahía Kino and Guaymas SON and, Isabel Island and Marietas NAY; Chamela and Tenacatita Bays JAL, Faro de Bucerias MICH; Ixtapa and Zihuatanejo GRO, Puerto Ángel and Huatulco Bays OAX and CHIS Mexico.	Holguín-Quiñones & González-Pedraza (1994), Tripp-Quezada *et al.* (2018), Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0200	***Diodora saturnalis*** (P. P. Carpenter, 1864)				✓		San Ignacio Lagoon Pacific coast of BCS; throughout the GC in Puerto Peñasco SON, Mexico and south to Salinas and GAI Ecuador	Keen (1971), Arvizu-Ruiz *et al.* (2022).
0107, 0147	***Fissurella asperella*** G. B. Sowerby I, 1835	✓		✓		✓	Chamela and Tenacatita Bays JAL; Manzanillo COL, La Soledad and Maruata beaches MICH; Puerto Escondido OAX Mexico to Lobos Island Peru.	Holguín-Quiñones & González-Pedraza (1994), Keen (1971), Flores-Rodríguez *et al.* (2014), Barrientos-Luján *et al.* (2021).
0029	***Fissurella decemcostata*** J. H. McLean, 1970	✓		✓	✓		Mazatlán Sinaloa, GRO, to Puerto Ángel Oaxaca and CHIS Mexico.	Keen (1971), Barrientos-Luján *et al.* (2022).
0059	***Fissurella nigrocincta*** P. P. Carpenter, 1856		✓	✓	✓		Tenacatita Bay JAL; Manzanillo, La Boquilla de Santiago COL; La Soledad Beach, Caleta de Campos, Faro de Bucerias MICH; MSP Mexico.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Landa-Jaime *et al.* (2013), Barrientos-Luján *et al.* (2022).
0173	***Fissurella rubropicta*** Pilsbry, 1890		✓	✓		✓	Santa Cruz Island GC; Chamela and Tenacatita Bays JAL; La Soledad Beach, Caleta de Campos MICH; MSP, Puerto Escondido, OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Tripp-Quezada *et al.* (2018), Flores-Rodríguez *et al.* (2014), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0156	***Fissurella spongiosa*** P. P. Carpenter, 1857		✓	✓		✓	Maruata and Faro de Bucerías MICH; GRO and Puerto Escondido OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Flores-Rodríguez *et al.* (2014), Barrientos-Luján *et al.* (2022).
	Family Calliostomatidae							
0009	***Calliostoma aequisculptum*** P. P. Carpenter, 1865		✓	✓	✓		Mazatlán SIN; Tenacatita and Careyitos Bays JAL; Acapulco and Iztapa GRO and Bahías de Huatulco and Puerto Ángel, OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), CMNHNUMAR (2024), MolluscaBase (2024).
0010, 0111, 0145	***Calliostoma mcleani*** Shasky & G. B. Campbell, 1964		✓	✓	✓	✓	In the GC in de los Ángeles Bay BC and Cabo Tepoca SON Mexico. CR, PA, Colombia, and Ecuador.	MolluscaBase (2024).

	Family Tegulidae								
0049	***Tegula eiseni*** E. K. Jordan, 1936	✓		✓		✓		Bahía Kino, SON and CHIS Mexico	Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
	Family Turritellidae								
0053, 0159, 0481	***Caviturritella leucostoma*** (Valenciennes, 1832)		✓		✓	✓	✓	Cedros Island, Pacific coast of BCS through GC in Puerto Peñasco, Puerto Lobos, Bahía Kino and Guaymas SON; Cuitzmala and Tenacatita JAL, Coco Beach and Cuyutlán COL; Puerto Ángel and Salina Cruz OAX and CHIS Mexico to PA. Pliocene of GRO	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime y Arciniega-Flores (1998), Gómez-Espinosa *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), CMNHNUMAR (2024), MolluscaBase (2024).
	Family Hipponicidae								
0031	***Hipponix grayanus*** Menke, 1853		✓	✓		✓		Bahía Kino SON; Island Isabel Island NAY; Chamela and Tenacatita Bays JAL; Santiago and Ceniceros Bays COL; Faro de Bucerías MICH; GRO and Huatulco Bays OAX Mexico. Pliocene of GRO	Holguín-Quiñones & González-Pedraza (1994), Barrientos-Luján *et al.* (2021), Gómez-Espinosa *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
0190, 0304	***Pilosabia trigona*** (Gmelin, 1791)		✓	✓		✓	✓	Santa Cruz Island GC; Isabel and Marietas Islands NAY; Tenacatita Bay JAL, Santiago and Ceniceros Bays COL; La Soledad and Melchor Ocampo beaches MICH, Puerto Ángel OAX and MSP, Mexico.	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Flores-Rodríguez *et al.* (2007), Tripp-Quezada *et al.* (2018), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022).
	Family Naticidae								
0040	***Natica caneloensis*** Hertlein & A. M. Strong, 1955		✓		✓	✓		Mazatlán SIN, Mexico to Manta Ecuador.	Keen (1971)
0042	***Natica grayi*** R. A. Philippi, 1852		✓		✓	✓		Magdalena Bay BC, within the GC in Guaymas SON; Faro de Bucerías MICH; Mexico.	Keen (1971), Arvizu-Ruiz *et al.* (2022).
0041	***Natica idiopoma*** Pilsbry & H. N. Lowe, 1932		✓		✓	✓		Guaymas SON; CHIS, Mexico.	Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
	Family Vermetidae								
0056	***Thylaeodus indentatus*** (P. P. Carpenter, 1857)		✓	✓		✓		OAX	Barrientos-Luján *et al.* (2022),
	Family Calyptraeidae								
0021	***Bostrycapulus aculeatus*** (Gmelin, 1791)		✓	✓		✓		Pantropical	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime & Arciniega-Flores (1998), Tripp-Quezada *et al.* (2018), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-

								Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0163	***Crepidula excavata*** (Broderip, 1834)	✓	✓			✓	From Vancouver CAN, Washington, Oregon and California USA; within the GC in Guaymas SON. Chamela Bay JAL, MSP in Puerto Ángel OAX, Mexico. CR, PA, Colombia, Peru. In the Atlantic on Margarita Island Venezuela.	Keen (1971), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Ríos-Jara *et al.* (2022), MolluscaBase (2024)
0208	***Crepidula incurva*** (Broderip, 1834)	✓	✓			✓	Santa Barbara California, USA. In the GC, San Felipe, Los Ángeles Bay BC, Puerto Peñasco, Bahía Kino, Guaymas SON; Chamela Bay, Melaque JAL, and OAX, Mexico. CR, PA, Ecuador, and Paita Peru. In the Atlantic in the Gulf of Venezuela.	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0022	***Crepidula lessonii*** (Broderip, 1834)	✓		✓	✓		From the head of the GC; Guaymas SON; Chamela and Tenacatita Bays JAL; Faro de Bucerías MICH; MSP in Ixtapa GRO Mexico. CR, PA, Colombia, and Peru.	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0207	***Crepidula onyx*** G. B. Sowerby I, 1824	✓	✓			✓	Revillagigedo Island Alaska, Santa Cruz, Monterey Bay, Santa Barbara, and San Diego California CAL, USA. Through the GC in San Marcos Island BCS; Guaymas SON; Mazatlán SIN; Chamela and Tenacatita Bays, Cuitzmala and Melaque JAL; Coco Beach COL; Faro de Bucerías and Melchor Ocampo MICH; MSP in Zihuatanejo GRO, Mexico. CR, PA, Gorgon Island Colombia, and Punta Arenas Chile. In the Atlantic, Myrtle Beach South Carolina, Miami Florida, and Bahía Creek Argentina.	Holguín-Quiñones & González-Pedraza (1994), Keen (1971), *Landa-Jaime* & Arciniega-Flores (1998), Ortiz-Arellano y Flores-Campaña (2008), Landa-Jaime *et al.* (2013), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0193	***Crucibulum monticulus*** S. S. Berry, 1969	✓	✓			✓	In the GC in Guaymas SON; Santa Cruz Island BCS; Mazatlán SIN; Marietas Islands NAY; Chamela Bay JAL; Ceniceros and Santiago Bays COL; Faro de Bucerías MICH; MSP, specifically in Puerto Escondido, Puerto Angel and GT OAX, Mexico. Piura Peru.	Keen (1971), Villaroel-Melo *et al.* (2000), Arvizu-Ruiz *et al.* (2022), Tripp-Quezada *et al.* (2018), Flores-Rodríguez *et al.* (2014), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0023, 0174, 0194	***Crucibulum scutellatum*** (W. Wood, 1828)	✓		✓	✓	✓	Revillagigedo Island Alaska, in the Mexican Pacific from Ensenada and Cedros Island BC; Asunción Bay and Punta Abreojos BCS; in the GC from Puerto Libertad, Bahía Kino and Guaymas SON; Santa Cruz Island BCS; and Mazatlán SIN; Marietas Islands NAY; Chamela Bay, Cuitzmala and Tenacatita and Navidad Bays JAL; Faro de Bucerías MICH; Tepalcates COL, MSP specifically in Ixtapa and Zihuatanejo GRO and, Puerto	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), *Landa-Jaime* & Arciniega-Flores (1998), Villaroel-Melo *et al.* (2000), Ortiz-Arellano & Flores-Campaña (2008), Landa-Jaime *et al.* (2013), Flores-Rodríguez *et al.* (2014), Tripp-Quezada *et al.* (2018), Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).

0024, 0298	***Crucibulum spinosum*** (G. B. Sowerby I, 1824)	✓		✓	✓		Escondido, Puerto Ángel and Huatulco Bays OAX Mexico. CR, PA, Gorgona Island Colombia, GAI Ecuador, and Peruvian Exclusive Economic Zone. Also, in the China Sea. North Pacific Ocean, Revillagigedo Island Alaska. In the Mexican Pacific from Ensenada, Cedros Island BC; Asunción and Punta Abreojos Bays, BCS, Pacific coast; in the GC from Puerto Libertad, Bahía Kino and Guaymas SON, Santa Cruz Island BCS and Mazatlán SIN; Marietas Islands NAY; Cuitzmala, Chamela, Tenacatita and Navidad Bays JAL; Cuyutlán and Manzanillo COL, La Soledad Beach, Faro de Bucerías, Melchor Ocampo and Zimapam MICH; MSP specifically in Ixtapa GRO and Huatulco Bays OAX, Mexico. CR, PA, Gorgona Island Colombia, and Peruvian Also, Exclusive Economic Zone and Cape Horn Chile. Pliocene from GRO	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), *Landa-Jaime* & Arciniega-Flores (1998), Ortiz-Arellano & Flores-Campaña (2008), Landa-Jaime *et al.* (2013), Tripp-Quezada *et al.* (2018), Ríos-Jara *et al.* (2020), Gómez-Espinosa *et al.* (2021), Barrientos-Luján *et al.* (2022), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
	Family Cypraeidae							
0032	***Jenneria pustulata*** ([Lightfoot], 1786)	✓	✓		✓		Puerto Peñasco and Guaymas SON; Chamela and Tenacatita Bays JAL, MSP, Mexico.	Landa-Jaime *et al.* (2013), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0057	***Pseudozonaria annettae*** (Dall, 1909)	✓		✓	✓		Chamela Bay JAL, Mexico.	Ríos-Jara *et al.* (2022).
0035, 0140	***Pseudozonaria arabicula*** (Lamarck, 1810)	✓		✓	✓		Puerto Peñasco and Guaymas SON; Isabel Island NAY; Chamela and de Tenacatita Bays JAL, Ceniceros Bay COL; Faro de Bucerías MICH; MSP specifically in Ixtapa and Zihuatanejo GRO; Huatulco Bays, OAX; Mexico.	Landa-Jaime *et al.* (2013), Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
	Family Triviidae							
0164	***Niveria pacifica*** (G. B. Sowerby II, 1832)	✓		✓		✓	Chamela Bay JAL, Faro de Bucerías MICH; Ixtapa and Zihuatanejo GRO and OAX Mexico.	Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Barrientos-Luján *et al.* (2022).
0051	***Pseudopusula fusca*** (J. E. Gray, 1832)	✓		✓	✓		OAX, Mexico and GAI Ecuador	Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0052	***Pusula radians*** (Lamarck, 1810)	✓		✓	✓		Chamela Bay JAL, Mexico.	Ríos-Jara *et al.* (2020).
	Family Tonnidae							
Reported in the field	***Malea ringens*** (Swainson, 1822)	✓		✓	✓		Puerto Peñasco SON; Chamela Bay JAL, MSP Mexico.	Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).

	Family Bursidae							
0008	***Bursa rugosa*** (G. B. Sowerby II, 1835)	✓	✓		✓		Tanzania. Pliocene of GRO.	Gómez-Espinosa *et al.* (2021), MolluscaBase (2024).
	Family Cassidae							
0026	***Cypraecassis coarctata*** (G. B. Sowerby I, 1825)	✓		✓	✓		Puerto Peñasco SON; Chamela and de Tenacatita Bay, and Melaque JAL, OAX and CHIS Mexico.	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
	Family Cymatiidae							
0025	***Monoplex keenae*** (Beu, 1970)	✓	✓		✓		Bahía Kino and Guaymas SON Mexico.	Arvizu-Ruiz *et al.* (2022).
0157	***Monoplex lignarius*** (Broderip, 1833)	✓	✓			✓	Marietas Islands NAY; Tenacatita Bay JAL; Santiago and Ceniceros Bays COL; Faro de Bucerías, MICH; OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022).
	Family Personidae							
0028, 0138	***Distorsio constricta constricta*** (Broderip, 1833)	✓	✓		✓		Bahía Kino and Guaymas SON; Tenacatita Bay JAL; Cuyutlán COL, Mexico.	Landa-Jaime & Arciniega-Flores (1998), Arvizu-Ruiz *et al.* (2022).
	Family Harpidae							
0030	***Harpa crenata*** Swainson, 1822	✓		✓	✓		Chamela and Tenacatita Bay, JAL; Manzanillo COL; OAX and CHIS Mexico.	Holguín-Quiñones & González-Pedraza (1994), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0038,0206	***Morum tuberculosum*** (Reeve, 1842)	✓		✓	✓	✓	Bahía Kino and Guaymas SON; Bahía de Chamela and Tenacatita Bays, JAL; GRO and Montosa Island OAX Mexico.	Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
	Family Columbellidae							
0004, 0162	***Anachis scalarina*** (G. B. Sowerby I, 1832)	✓		✓	✓	✓	Within the Gulf of California in Puerto Peñasco, Bahía Kino and Guaymas SON; Chamela Bay JAL; Ceniceros Bay COL; Zihuatanejo GRO; Huatulco Bays and Puerto Ángel, OAX, Mexico to PA.	Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024), CMNHNUMAR (2024).
0014, 0106, 0146	***Columbella strombiformis*** Lamarck, 1822	✓	✓	✓	✓	✓	From the GC; the REI Mexican Pacific, to CR, PA, Colombia, and GAI Ecuador.	Keen (1971), Landa-Jaime *et al.* (2013), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0048	***Strombina bonita*** A. M. Strong & Hertlein, 1937	✓		✓	✓		Guaymas SON, Mexico.	Arvizu-Ruiz *et al.* (2022).

	Family Fasciolariidae								
0199	***Opeatostoma pseudodon*** (Burrow, 1815)	✓		✓			✓	Puerto Peñasco SON; Chamela and Tenacatita Bays, Melaque, JAL; La Boquilla de Santiago and Bahía Ceniceros COL; Faro de Bucerías, MICH; La Unión GRO; Puerto Escondido and Huatulco Bays, OAX, Mexico.	Holguín-Quiñones & González-Pedraza (1994), Flores-Rodríguez *et al.* (2007), Landa-Jaime *et al.* (2013), Flores-Rodríguez *et al.* (2014), Barrientos-Luján *et al.* (2021), Ríos-Jara *et al.* (2020), Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2022).
0033	***Polygona concentrica*** (Reeve, 1847)		✓	✓		✓		Guaymas SON; Huatulco Bays OAX Mexico.	Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
0161	***Polygona* cf. *socorroensis*** (Hertlein & A. M. Strong, 1951)		✓	✓			✓	MTP; REI COL; ICP France; and PA.	Keen (1971), MolluscaBase (2024).
	Family Pisaniidae								
0013	***Gemophos sanguinolentus*** (Duclos, 1833)		✓	✓		✓		Isabel and Marietas Islands NAY; Chamela and Tenacatita Bays, Melaque JAL; Manzanillo, La Boquilla de Santiago, Ceniceros Bays COL; Faro de Bucerías, MICH; La Unión, Ixtapa and Zihuatanejo GRO; Puerto Escondido, Puerto Ángel and Huatulco Bays OAX, and CHIS Mexico.	Holguín-Quiñones & González-Pedraza (1994), Flores-Rodríguez *et al.* (2007), Landa-Jaime *et al.* (2013), Flores-Rodríguez *et al.* (2014), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2022), Barrientos-Luján *et al.* (2021).
0012	***Pusio elegans*** (J. E. Gray, 1833)		✓	✓		✓		Isabel and Marietas Islands NAY; Chamela and Tenacatita Bays, Melaque JAL; Manzanillo, La Boquilla de Santiago, Ceniceros Bays and Santiago COL; Faro de Bucerías, MICH; Ixtapa and Zihuatanejo GRO; Puerto Ángel and Huatulco Bays OAX, and CHIS Mexico.	Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020).
	Family Muricidae								
0172	***Penethais triangularis*** (Blainville, 1832)		✓	✓			✓	Cabo San Lucas BC, through the GC in Bahia Kino and Guaymas SON; Chamela and Tenacatita Bays, Melaque JAL; Manzanillo, La Boquilla de Santiago COL; La Soledad Beach, Caleta de Campos, Maruata, Faro de Bucerías, Melchor Ocampo MICH, and MSP mainly in Zihuatanejo GRO, and Huatulco Bays OAX, Mexico and Peru.	Holguín-Quiñones & González-Pedraza (1994), Keen (1971), Villaroel-Melo *et al.* (2000), Castrejón-Ríos *et al.* (2015), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022).
0061	***Neorapana muricata*** (Broderip, 1832)		✓	✓	✓	✓		Bahía Kino and Guaymas SON; Isabel Island NAY; Chamela Bay JAL, GRO and Puerto Ángel OAX Mexico.	Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022).
0034	***Neorapana tuberculata*** (G. B. Sowerby I, 1835)		✓	✓	✓	✓		Bahía Kino and Guaymas SON, OAX Mexico.	Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
0062, 0142	***Stramonita biserialis*** (Blainville, 1832)		✓	✓		✓	✓	Cedros Island BC in the GC, Puerto Peñasco, Bahía Kino and Guaymas Son; Chamela and Tenacatita Bays, Melaque, Careyitos JAL; Socorro Island in REI, Manzanillo, La Boquilla de Santiago,	Holguín-Quiñones & González-Pedraza (1994), Villaroel-Melo *et al.* (2000), Ortiz-Arellano y Flores-Campaña (2008), Landa-Jaime *et al.* (2013), Flores-Rodríguez *et al.*

								COL; Caleta de Campos, Maruata, Faro de Bucerías, Melchor Ocampo MICH; Acapulco GRO; Puerto Escondido, Mazunte and Huatulco Bays OAX, and CHIS Mexico and ICP France.	(2014), Castrejón-Ríos *et al.* (2015), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2020), Ríos-Jara *et al.* (2022).
0192	***Vokesimurex elenensis*** (Dall, 1909)		✓	✓			✓	Puerto Peñasco, Puerto Lobos, Bahía Kino and Guaymas SON and CHIS, Mexico.	Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
0037	***Zetecopsis zeteki*** (Hertlein & A. M. Strong, 1951)		✓	✓		✓		MTP	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Castrejón-Ríos *et al.* (2015), Ríos-Jara *et al.* (2020), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022).
	Family Mitridae								
0036	***Neotiara lens*** (W. Wood, 1828)		✓	✓	✓	✓		Guaymas SON, Chamela and Tenacatita Bays, Melaque JAL; Zihuatanejo, Ixtapa GRO and Puerto Ángel OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
	Family Olividae								
0001	***Agaronia propatula*** (Conrad, 1849)		✓		✓	✓		West American coast. MTP to Ecuador.	Keen (1971), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0002, 0299, 0315	***Agaronia testacea*** (Lamarck, 1811)		✓		✓	✓		West American coast. Type locality within the Mexican part of the North Pacific Ocean. Guaymas, SON; TEP, Melchor Ocampo, MICH; OAX and CHIS Mexico.	Holguín-Quiñones & González-Pedraza (1994), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0044	***Oliva incrassata*** ([Lightfoot], 1786)		✓		✓	✓		Puerto Peñasco, Bahía Kino and Guaymas SON, OAX and CHIS, Mexico. Pliocene of GRO.	Gómez-Espinosa *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022).
0158	***Olivella dama*** (W. Wood, 1828)		✓		✓		✓	Puerto Peñasco, Bahía Kino and Guaymas SON, Mexico.	Arvizu-Ruiz *et al.* (2022).
0131, 0154	***Olivella gracilis*** (Broderip & G. B. Sowerby I, 1829)		✓		✓	✓	✓	Guaymas SON; Marietas Islands NAY; Chamela Bay JAL; Faro de Bucerías, MICH; Zihuatanejo and Ixtapa GRO; Puerto Ángel and Huatulco Bays OAX Mexico.	Holguín-Quiñones & González-Pedraza (1994), Barrientos-Luján *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Ríos-Jara *et al.* (2022).
	Family Conidae								
0015	***Conasprella arcuata*** (Broderip & G. B. Sowerby I, 1829)	✓	✓	✓	✓	✓		From the GC, the entREI Mexican Pacific, OAX, Mexico to CR, PA, and Colombia. Also, in Borneo.	Keen (1971), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0480	***Conasprella ximenes*** (Gray, 1839)					✓		Throughout the GC in Puerto Peñasco and Guaymas SON, Mexico and south to PA or probably to Peru.	Keen (1971), Arvizu-Ruiz *et al.* (2022),
0017, 0112, 0148	***Conus brunneus*** W. Wood, 1828	✓			✓		✓	Magdalena Bay, Pacific coast of BCS; Guaymas SON; Mazatlán SIN, Isabel and Marietas Islands NAY; Chamela and Tenacatita, Melaque, JAL;	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.*

							GRO; Huatulco Bays OAX, Mexico. CR, PA, Colombia, Peru. Also, in the GAI Ecuador.	(2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024), CMNHNUMAR (2024).
0018	***Conus gladiator*** Broderip, 1833	✓	✓		✓		Magdalena Bay Pacific coast of BCS to Guaymas SON, and Mazatlán SIN, in the GC. Tenacatita and Melaque Bays, JAL; Guerrero Mexico. CR, PA, Colombia, and GAI Ecuador.	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Arvizu-Ruiz *et al.* (2022), MolluscaBase (2024).
0016	***Conus purpurascens*** G. B. Sowerby I, 1833	✓	✓		✓		Magdalena Bay Pacific coast of BCS, the entREI GC in Bahía de los Ángeles BC; Bahía Kino and Guaymas SON to Cabo Pulmo BCS, Mazatlán SIN; Tenacatita Bay JAL; La Boquilla de Santiago, Ceniceros Bay COL; Faro de Bucerías, MICH; MSP especially in Huatulco Bays OAX, Mexico. CR, PA, Colombia, and GAI Ecuador.	Keen (1971), Holguín-Quiñones & González-Pedraza (1994), Landa-Jaime *et al.* (2013), Ríos-Jara *et al.* (2020), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).
0019	***Conus regularis*** G. B. Sowerby I, 1833	✓		✓	✓		Magdalena Bay Pacific coast of BCS; the entREI GC in Bahía de los Ángeles BC; Puerto Peñasco, Bahía Kino and Guaymas SON to Cabo Pulmo BCS; Mazatlán SIN; Chamela Bay JAL, and CHIS Mexico. CR, PA, and Colombia.	Keen (1971), Gómez-Espinosa *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).
0119, 0144	***Conus scalaris*** Valenciennes, 1832	✓		✓		✓	Pliocene of GRO From the Pacific coast of BC and BCS, GC and along the Mexican Pacific and CR. In the Atlantic in the GM and the Mexican Caribbean to North Carolina, USA, and the Caribbean Sea.	Keen (1971), Arvizu-Ruiz *et al.* (2022), MolluscaBase (2024).
	Family Mangeliidae							
	Kurtzia aethra (Dall, 1919)	✓	✓			✓	Cabo Tepoca SON, to CHIS, Mexico. Manzanillo, COL	Keen (1971), CNMO (2024).
	Family Terebridae							
0050, 0132, 0178	***Neoterebra tuberculosa*** (Hinds, 1844)	✓		✓	✓	✓	Puerto Peñasco, Puerto Lobos, Bahía Kino, Guaymas SON, Mexico.	Arvizu-Ruiz *et al.* (2022).
0054	***Terebra* sp.** Bruguière, 1789	✓		✓	✓			
	Family Architectonicidae							
0006	***Architectonica nobilis*** Röding, 1798	✓		✓	✓		The species occurs in both the eastern and western Atlantic and the eastern Pacific. In the Atlantic: Cabo Verde, Caribbean Sea, Venezuela, Angola, North Atlantic Ocean, Colombia, Cuba, Gabon, GM, Jamaica, PA. In the Pacific Ocean, Todos Santos Pacific coast of BCS, in the GC in Puerto Peñasco, Puerto Libertad, Bahia Kino SON; Tenacatita Bay JAL, OAX and GRO, Mexico. CR,	Keen (1971), Landa-Jaime *et al.* (2013), Gómez-Espinosa *et al.* (2021), Arvizu-Ruiz *et al.* (2022), Barrientos-Luján *et al.* (2022), MolluscaBase (2024).

							PA, Colombia, Peru, and GAI Ecuador. Pliocene of GRO.	
	Family Bullidae							
0007, 0143	***Bulla gouldiana*** Pilsbry, 1895	✓	✓	✓	✓		Vancouver British Columbia CAN; Ketchikan Alaska, Santa Barbara, San Diego CAL, USA. Pacific coast of BC, GC, Southern SIN; Marietas Islands NAY; Chamela Bay JAL, MSP in Huatulco Bays OAX, Mexico. Colombia and Lima Peru. Also, in the GAI Ecuador.	Keen (1971), Ríos-Jara *et al.* (2020), Barrientos-Luján *et al.* (2021), Barrientos-Luján *et al.* (2022), Ríos-Jara *et al.* (2022), MolluscaBase (2024).

TABLE 2. Specimens with sclerobionts from Punta Colorada locality, Puerto Escondido, Oaxaca

UMLP-	Taxa	External valve/ Internal valve/ Both	Bryozoa	Barnacles	Serpulidae tubes	***Entobia***	***Gastrochaenolites***	***Caulostrepsis***
0061	***Neorapana muricata***					X		
0062	***Stramonita biserialis***			X		X		
0066	***Arca pacifica***	Both				X		
0100	***Spondylus*** sp.	Both				X	X	X
0427	***Striostrea prismatica***	External				X	X	X
0428	Ostreidae indet.	Both				X		X
0431	Ostreidae indet.	Both				X	X	X
0432	***Ostrea*** sp.	Both	X		X	X	X	
0433	Ostreidae indet.	Both			X	X	X	X
0434	***Crassostrea*** sp.	External		X	X	X	X	
0437	Ostreidae indet.	Both				X	X	
0438	***Striostrea*** sp.	Both			X	X	X	
0439	Ostreidae indet.	Both				X	X	
0441	Ostreidae indet.	External		X		X	X	
0442	***Striostrea prismatica***	External				X	X	X
0445	Ostreidae indet.	Both	X	X	X	X	X	
0447	***Striostrea prismatica***	Both				X	X	
0453	***Striostrea*** sp.	Both			X		X	X
0454	Ostreidae indet.	Both				X	X	
0456	***Striostrea prismatica***	External					X	
0457	Ostreidae indet.	Both		X		X	X	
0458	Ostreidae indet.	Both			X	X	X	
0462	***Striostrea*** sp.	External				X		
0464	***Striostrea prismatica***	Both			X	X	X	X
0472	***Crassostrea*** sp.	Both	X		X	X	X	
0473	Ostreidae indet.	External				X	X	
0490	***Codakia distinguenda***	Both			X	X		
0491	***Striostrea*** sp.	External				X	X	

0492	***Striostrea* sp.**	Both	X	X		
0493	***Striostrea* sp.**	Both	X	X	X	
0494	***Crassostrea* sp.**	Extermal		X	X	X
0495	***Crassostrea* sp.**	External		X	X	
0496	Ostreidae indet.	External		X	X	
0497	Ostreidae indet.	Both		X	X	