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# SYSTEMATIC LIST UPDATE OF THE CLASS GASTROPODA IN THE CENTRAL AND NORTHERN COAST OF SONORA, GULF OF CALIFORNIA

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**ABSTRACT.** Diversity studies and research have included members of the class Gastropoda from the Gulf of California. Still, the majority have been researched in a rudimentary or secondary way, with literature not specific to the region causing discrepancies in the nomenclature of the taxa. This could affect the information on some taxa. It could also affect the malacological knowledge of the region. Therefore, an updated fauna inventory was built for 71 families of the class Gastropoda on the coast of Sonora based on latitudinally-referenced information of 3261 records of species names from the region (27° N – 31° N), obtained from official electronic databases and physical revision of malacological material from a museum. Depuration and taxonomic updates were performed when the obtained information was compared with the World Register of Marine Species platform. As a result, 26.64% of the species' names showed status updates, resulting in 713 valid names of gastropods. The latitudinal distribution highlighted 27° N and 31° N with the greatest data and species diversity. The easy access to port cities (in the previously mentioned latitudes) makes them suitable points for scientific research since they have demonstrated a strong bias compared to intermediate latitudes.

**Keywords:** Benthos, mollusks checklist, macroinvertebrates, malacology, gastropods.

## Actualización del elenco sistemático de la Clase Gastropoda en la costa centro y norte de Sonora, Golfo de California

**RESUMEN.** Diversidad de estudios e investigaciones incluyen a miembros de la clase Gastropoda en el Golfo de California, la gran mayoría los estudia de manera rudimentaria o secundaria con literatura no específica para la región que causan discrepancias en la nomenclatura de los *taxa*. Como resultado, la información específica para algunos taxones podría ser afectada, asi como el conocimiento malacológico de la región. Por lo anterior, se realizó el inventario faunístico actualizado para 71 familias de la clase Gastropoda en el Noreste del Golfo de California, basado en información referenciada latitudinalmente de 3261 registros de especies para la región (27° N – 31° N), provenientes de bases de datos electrónicas oficiales y de la revisión física de material malacológico de museo. La depuración y actualización taxonómica se realizó al cotejar la información recopilada con la plataforma de World Register Of Marine Species. El 26.64% de las especies presentaron actualización, resultando en 713 nombres validados de gasterópodos. La distribución destaca las latitudes 27° N y 31° N con mayor cantidad de registros y riqueza de especies. El relativo fácil acceso a localidades costeras y portuarias (en las latitudes previamente menciondas), las vuelve puntos idóneos para investigaciones científicas, y denota un sesgo en comparación con latitudes intermedias y no accesibles.

**Palabras clave:** Bentos, listado de moluscos, macroinvertebrados, malacología, gasterópodos.

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## INTRODUCTION

The malacological work in the Gulf of California was initiated 150 years ago (Carpenter, 1857; Emerson *et al.,* 1957; Parker, 1964; Keen, 1971; Brusca *et al.,* 2004; Hendrickx *et al.,* 2019) and has primarily focused on fieldwork because a great number of specimens belonging to museum heritage and diverse collections. Similarly, the observed records that can be consulted in databases or field notebooks are available on the internet or special libraries (Invertebrate Zoology Collection from the Natural History Museum of Santa Barbara, U.S.A.) and photographic evidence that appears in technical publications and books (Brusca *et al.,* 2004; Hupp & Malone, 2016; Bertsch & Aguilar-Rosas, 2016). As a result, the availability of and access to a large amount of information has become more efficient (Sierwald *et al.,* 2018).

Nowadays, there is an overall idea of the great abundance, taxonomic composition, and distribution of mollusks within the Gulf of California (Bertsch & Aguilar-Rosas, 2016; Martínez-Córdova 1996; Skoglund, 2002; Brusca *et al.,* 2005; Brusca & Hendrickx, 2008). However, knowledge on this topic has not been generated homogeneously. Particular geographic areas exist in northwest Mexico, including islands and extensive coastlines where exploration has emerged, but mollusks' biological diversity documentation is incomplete. Progress in this area is crucial because the species that make up the Phylum provide multiple ecosystem services in the Gulf of California, which are the target of artisanal fisheries and industries with food and pharmacological purposes (Nevárez-Martínez *et al.,* 2010; Turk-Boyer *et al.,* 2014); at the beginning of the 2010 decade, almost 40% of the volume caught in the northern Gulf was made up of giant squid (*Dosidicus gigas* (d'Orbigny [in 1834-1847], 1835), black murex (*Hexaplex nigritus* (Philippi 1845)) and bivalves (PANGAS, 2012; Turk-Boyer *et al.,* 2014; Halford *et al.,* 2015).

The class Gastropoda is the mollusk group with greater species diversity and morphological variability in the Gulf of California. However, this clade has shown taxonomic complexities for several years

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due to disagreements among experts, such as the best diagnostic characteristics of the different families and levels of variability that are allowed to distinguish them from others (Claremont *et al.,* 2013; Demaintenon, 2019). This situation has led to conceptual difficulties and practices in determining species affiliation to major groups, such as genera or families (Vermeij, 2001; Sturm *et al.,* 2006). One way of solving these difficulties is to focus efforts on specific fauna localities or regions, where the task becomes concrete, leading to more accurate taxonomic listings. This situation has also been observed in the Gulf of California for the class Gastropoda. Currently, there are no updated taxonomic lists and few biogeographical analyses, including population management relevant to fisheries (Góngora-Gómez *et al.,* 2011; Tripp-Quezada *et al.,* 2018).

Within the Gulf of California, one of the most important economic and ecological zones in the northeast portion delimits across the central coast and the northern state of Sonora (between 27° N – 31º N). This region is a shelter for about 1,600 invertebrate species (Hendrickx *et al.,* 2007) that perform strategic roles in multiple biological and ecological processes. (Lluch-Cota *et al.,* 2007). The greatest abundance is found in the rocky bottoms (Brusca *et al.,* 2004), dominated by crustaceans, echinoderms, and mollusks (Brusca & Brusca, 2002; Ríos-Jara *et al.,* 2004; López-Uriarte *et al.,* 2009; Hendrickx *et al.,* 2014; Ríos-Jara, 2015), in this last group, the class Gastropoda is distinguished for appearing from the highest intertidal zone to the deepest, overcoming thousands of meters (Keen, 1971; Brusca, 1980; Hendrickx *et al.,* 2005; Hendrickx *et al.,* 2014; Ríos-Jara, 2015). Likewise, their biological plasticity places them into several ecological roles, making them important elements for energy transfer toward different trophic levels.

In the Gulf of California, gastropods have been the subject of taxonomic studies (Brusca, 1980; Carpenter, 1857; Keen, 1971; Skoglund, 2002; Hendrickx *et al.,* 2005), but there are dozens of studies with different ecological objectives (Cintra-Buenrostro & Flessa, 2004; Góngora-Gómez *et al.,* 2011; Hendrickx *et al.,* 2019; Hurtado *et al.,* 2007), biology and fisheries (Cudney-Bueno & Rowell, 2008). However, the available lists show outdated nomenclature that requires updating to know and describe endemism's biogeographical patterns and the roles those species perform in the regional ecosystem (Skoglund, 2002; Hendrickx *et al.,* 2005; Brusca & Hendrickx, 2008). Therefore, the production of systematic lists of regional species, taxonomically updated and linked to precise records of geographical distribution, provides a basis for further advances in knowledge of biology and biogeography, improving the efficiency of fieldwork and helping to strengthen reference collections.

Therefore, the objective of this study was to produce a taxonomic list of the gastropod species of the coast of Sonora (Northeast Gulf of California) based on georeferenced records of organisms that follow the most updated classification and nomenclature available. This list should strengthen future efforts in resource and environmental service management and conservation (Sagarin *et al.,* 2008).

## MATERIALS AND METHODS

### Information gathering

For this study, only families reached the adult size of ≥1 cm as the maximum length of their shell were considered since smaller sizes present greater complexity for taxonomic identification. Data were obtained from two platforms: an overall review of free access digital data and a revision of species from scientific collections. These sources were selected considering they managed georeferenced presence records of the class Gastropoda on the coast of Sonora in a latitudinal range between 27° N–31° N. The selected records come from the coastline (0m depth) towards adjacent undergrounds located at a maximum distance of 75 km (500m to 1000m depth) (Fig. 1) (Brusca *et al.,* 2004, NOAA, 2022).

Firstly, information was collected from Mexican databases such as the Sistema Nacional de Informacion sobre Biodiversidad (SNIB) and the Comision Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO) on the available records of the presence of gastropods on the coast from Sonora, the northeastern area of the Gulf of California, which co-

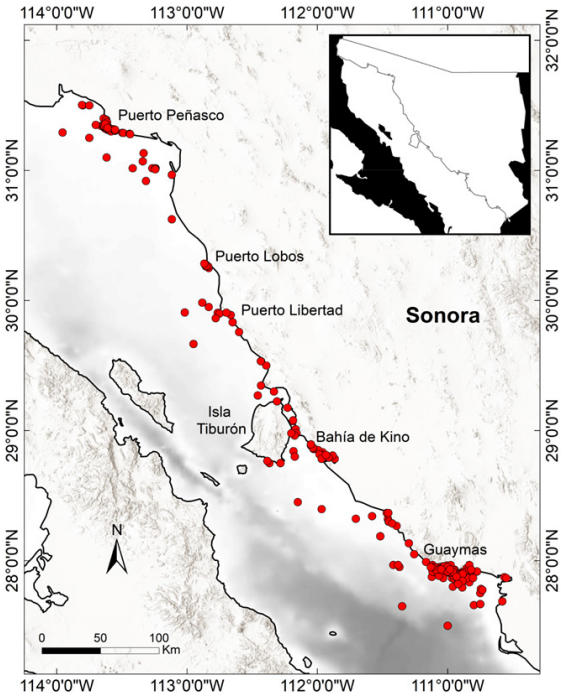


Figure 1. Geographic information from the records of the databases consulted for the Gastropoda class on the coast of Sonora, in Northeast Gulf of California, Mexico.

vered a large amount of data generated or collected by national institutions (1228 data) (Table 1). Moreover, information was downloaded from available electronic databases: Global Biodiversity Information Facility (2019) that integrated 1593 data and the Ocean Biogeographic Information System (2019) with 294 data. In addition, data on the gastropods from the coast of Sonora were requested from institutions and museums in the United States of America. All together they resulted in a total of 4911 species presence data: the Zoology collection of Invertebrates from the Smithsonian (National Museum of Natural History Smithsonian Institution, 2018), Malacological Collection (Academy of Natural Sciences of Philadelphia, 2018), Benthic Invertebrate Collection (SCRIPPS, 2017), Invertebrate Zoology Collection from the Museum of Florida (Florida Museum Invertebrate Zoology Collection, 2018), The Gulf of California Invertebrate Database (Brusca & Hendrickx, 2008), and the digital collection from Santa Barbara Museum of Natural History (SBMNH); Department of Invertebrate Zoology (Santa Barbara Museum of Natural

Table 1. List of data collected for the taxonomic review of the Gastropoda class on the coast of Sonora, in the Northeast Gulf of California (27° N – 31° N). Consulted sources: a physical collection of the Santa Barbara Natural History Museum*, CONABIO** (Comisión Nacional de Conocimiento y Uso de la Biodiversidad); GBIF*** (Global Biodiversity Information Facility); OBIS**** (Ocean Biogeographic Information System).

| Acronym | Institution name | Records in the NEGC |
|---|---|---|
| AM | Australian Museum** | 17 |
| | Australian Museum**** | 1 |
| ANSP | Academy of Natural Sciences, Philadelphia | 405 |
| | Academy of Natural Sciences, Philadelphia** | 250 |
| | Academy of Natural Sciences, Philadelphia*** | 119 |
| | Academy of Natural Sciences, Philadelphia**** | 36 |
| ASDM | Arizona-Sonora Desert Museum | 1536 |
| BMNSM | Bailey-Matthews National Shell Museum*** | 1 |
| CAS | California Academy of Sciences*** | 189 |
| | California Academy of Sciences (iNaturalist)*** | 43 |
| CICIMAR-IPN | Centro Interdisciplinario de Ciencias Marinas*** | 67 |
| DMNS | Denver Museum of Nature & Science Marine Invertebrate Collection*** | 409 |
| ELMC | East London Museum | 69 |
| FMNH | Field Museum of Natural History** | 1 |
| ICMyL-UNAM | Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México** | 92 |
| | Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México*** | 90 |
| IGL-UNAM | Instituto de geología, Universidad Nacional Autónoma de México | 111 |
| MCZ | Museum of Comparative Zoology, Harvard University** | 147 |
| | Museum of Comparative Zoology, Harvard University*** | 265 |
| NCSM | North Carolina State Museum of Natural Sciences*** | 5 |
| NHM | Natural History Museums of LA County** | 1 |
| NHMD | Natural History Museum of Denmark | 3 |
| NHM | Natural History Museums of LA County*** | 117 |
| NL | Naturalis Biodiversity Center | 37 |
| NMR | Natuurhistorisch Museum Rotterdam** | 215 |
| | Natuurhistorisch Museum Rotterdam*** | 65 |
| NRM | Swedish Museum of Natural History-Naturhistoriska riksmuseet*** | 7 |
| OMNH | Sam Noble Oklahoma Museum of Natural History, University of Oklahoma** | 11 |
| | Sam Noble Oklahoma Museum of Natural History, University of Oklahoma*** | 9 |
| PBDB | Paleobiological Data Base** | 1 |
| | Paleobiological Data Base*** | 40 |
| PRI | Paleontological Research Institution*** | 12 |
| SBMNH | Santa Barbara Museum of Natural History | 4314 |
| | Santa Barbara Museum of Natural History* | 1917 |
| | Santa Barbara Museum of Natural History*** | 1 |
| SIO | Scripps Institution of Oceanography, University of California, San Diego | 1 |
| | Scripps Institution of Oceanography, University of California, San Diego*** | 29 |
| UA | University of Arizona** | 105 |
| | University of Arizona*** | 125 |
| UCMP | University of California Museum of Paleontology*** | 16 |
| UF | Florida Museum of Natural History, University of Florida | 314 |
| | Florida Museum of Natural History, University of Florida*** | 60 |
| | Florida Museum of Natural History, University of Florida**** | 24 |
| USNM | National Museum of Natural History, Smithsonian Institution | 521 |
| | National Museum of Natural History, Smithsonian Institution*** | 38 |
| | National Museum of Natural History, Smithsonian Institution**** | 21 |
| YPM | Yale Peabody Museum of Natural History*** | 1 |
| ZMA | Zoölogisch Museum Amsterdam, University of Amsterdam** | 19 |
| | Total records | 11877 |

History, 2018). Furthermore, the dry mollusk collection was physically performed at the SBMNH due to the great amount of material from the Gulf of California that was not classified on the electronic collection website. Additionally, private collections of important malacologists (Angeline Myra Keen 1905–1986; Carol Hansen Skoglund 1924–2015; Donald Robert Shasky 1925–2002) with recollection and representative studies for the Gulf of California, especially for the northeastern region were also obtained (Table 1).

### Taxonomic analysis

Once all the information was collected, a list with the scientific names of the gastropod species was elaborated, revised, and refined to detect errors in geographic information: incompatibility of coordinates, signs, nomenclature, and incomplete or misspelled names. This list was contrasted with the nomenclatural database found in the platform World Register of Marine Species (WORMS, 2022) to define the nomenclatural status (valid, invalid, or synonym) (Bouchet *et al.,* 2017). Thus, it was possible to obtain the correct information about every taxon and generate updated, approved, and final records, as well as list the synonymous names that have been used in the gastropod fauna study of Northeast Mexico.

## RESULTS

The first encounter for the construction of the faunistic inventory of the class Gastropoda in the coast of Sonora demonstrated a total of 11887 records of species with latitudinal references corresponding to all available references (Table 1). After the data's depuration, all name records with geographic information errors, nomenclature and families belonging to <1 cm were discarded. The database attained a total of 5787 latitudinal records referenced to 1410 names with different status (valid, invalid, synonym) to be examined and validated in the WORMS platform.

### Taxonomic status validation in WORMS

With the gathered information that included all the nominal gastropod species with georeferenced records within regions of interest, 50.6% (out of 1410 names) of nomenclature appeared in the WORMS platform; 125 names out of 1410 were not found in the platform (8.86% of the names examined) and will not be part of this research. It is important to clarify that nomenclature considered valid for this study were the ones that directly appeared with a valid status, without verification or in process, which resulted in a total of 713 names of species with valid status in 71 families (Table 2) and a total of 3261 latitudinal records (Fig. 2).

Describing the results of the taxonomic status. 190 names were updated in their nomenclature for this list (26.64% of 713 valid names). The Muricidae family showed the greatest number of nomenclature changes with a record of 26 species that had their names updated (39.39% total of the family), followed by the Columbellidae family with nomenclature update in 11 species names (18.64% of the total family). (Fig. 3).

### Species abundance by major taxonomic group

Based on the definite updated list, species abundance per family was not homogeneous; 54 families (76.1%) showed from one to 10 species; 11 families exceeded the 20 species (16.9%), and 14 had only one representative species (8.5%). The families with major diversity recorded in the central and northern coast of Sonora was Muricidae with 66 species (9.2% of the total in the list), followed by Pseudomelatomidae, 59 species (8.45%); Columbellidae, 59 (8.45 %); Conidae, 35 species (4.9 %); Nassariidae, 31 (4.3 %); Drillidae, 29 species (4.1%); and Terebridae, 28

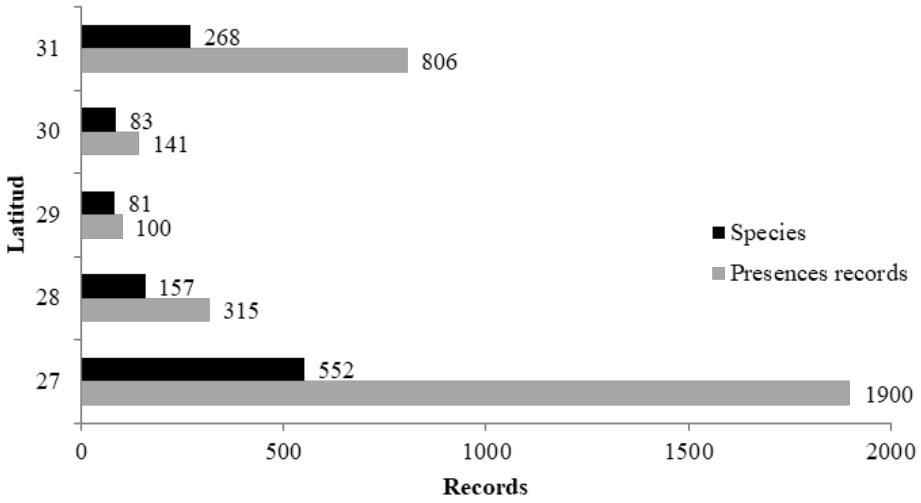


Figure 2. Records of the latitudinal presence of individuals of the class Gastropoda with valid taxonomic status according to the World Register of Marine Species (WORMS) a platform for the central and northern coast of Sonora.

Table 2. Systematic list of macrogastropods (≥1 cm) for the central and northern coast of Sonora, validated with the World Registry of Marine Species (WORMS, 2022). Bold letters indicate endemic species in the Gulf of California (Brusca & Hendrickx, 2008). See a list of acronyms in Table 1.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Calyptraeidae | *Bostrycapulus aculeatus* | (Gmelin, 1791) | ● | | | | | NMR |
| | *Calyptraea conica* | Broderip, 1834 | ● | | | | | ANSP; ASDM; MCZ; SBMNH |
| | *Calyptraea mamillaris* | Broderip, 1834 | | ● | | ● | ● | AM; ANSP; ASDM; DMNS; ELMC; ICMyL-UNAM; MCZ; PBDB; SBMNH; UF |
| | *Calyptraea subreflexa* | (Carpenter, 1856) | ● | ● | | | ● | ASDM; MCZ |
| | *Crepidula adunca* | G. B. Sowerby I, 1825 | ● | ● | ● | | | ANSP; ICMyL-UNAM; UA |
| | *Crepidula arenata* | (Broderip, 1834) | ● | | ● | | | DMNS; MCZ; SBMNH; UA |
| | *Crepidula excavata* | (Broderip, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; IGL-UNAM; MCZ; SBMNH; SIO; UA; UF |
| | *Crepidula incurva* | (Broderip, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; SBMNH; UA; UF |
| | *Crepidula lessonii* | (Broderip, 1834) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Crepidula nummaria* | Gould, 1846 | | | | | ● | IGL-UNAM; MCZ; UF |
| | *Crepidula onyx* | G. B. Sowerby I, 1824 | ● | ● | | | | ASDM; DMNS; IGL-UNAM; MCZ; SBMNH; UA; UF |
| | *Crepidula perforans* | Valenciennes, 1846 | | | | | ● | SBMNH; UF |
| | *Crepidula rostrata* | C. B. Adams, 1852 | ● | | | | | ASDM; SBMNH |
| | *Crepidula striolata* | Menke, 1851 | | ● | ● | | ● | ANSP; ASDM; CAS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; SBMNH; UA; UF |
| | *Crepipatella dorsata* | (Broderip, 1834) | ● | | | | | WORMS |
| | *Crucibulum concameratum* | Reeve, 1859 | ● | | | | | ASDM; ICMyL-UNAM; SBMNH |
| | *Crucibulum lignarium* | (Broderip, 1834) | ● | | | | | ASDM; DMNS; SBMNH |
| | *Crucibulum monticulus* | Berry, 1969 | ● | | | | | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| | *Crucibulum pectinatum* | Carpenter, 1856 | ● | | | | | ASDM |
| | *Crucibulum personatum* | Keen, 1958 | ● | | | | | ASDM; DMNS; SBMNH; UF |
| | *Crucibulum scutellatum* | (Wood, 1828) | ● | | | | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Crucibulum spinosum* | (G. B. Sowerby I, 1824) | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; SBMNH; UA; UF; USNM |
| | *Crucibulum subactum* | Berry, 1963 | ● | | | | | SBMNH; UF |
| | *Crucibulum umbrella* | (Deshayes, 1830) | ● | | | | | ASDM; SBMNH; UF |
| Capulidae | *Capulus sericeus* | J. Q. Burch & R. L. Burch, 1961 | ● | ● | ● | ● | ● | ASDM; DMNS; SBMNH |
| Cypraeidae | *Luria isabellamexicana* | (Stearns, 1893) | ● | | | | | DMNS; SBMNH; USNM |
| | *Macrocypraea cervinetta* | (Kiener, 1844) | | | | | ● | CAS; DMNS; SBMNH |
| | *Mauritia arabica* | (Linnaeus, 1758) | ● | | | | | DMNS |
| | *Naria albuginosa* | (J. E. Gray, 1825) | ● | ● | | | | DMNS |
| | *Naria ostergaardi* | (Dall, 1921) | | | | | ● | ELMC |
| | *Pseudozonaria annettae* | (Dall, 1909) | ● | | ● | | ● | ANSP; CAS; DMNS; ELMC; MCZ; NHM; PBDB; SBMNH; UF; USNM |
| | *Pseudozonaria arabicula* | (Lamarck, 1810) | ● | | | | ● | DMNS; SBMNH |
| | *Pseudozonaria robertsi* | (Hidalgo, 1906) | ● | | | | | WORMS |
| Eratoidae | *Hespererato columbella* | (Menke, 1847) | | | | | ● | ANSP; ASDM |
| Ovulidae | *Cyphoma emarginatum* | (G. B. Sowerby I, 1830) | ● | | | | | DMNS; SBMNH; USNM |
| | *Jenneria pustulata* | (Lightfoot, 1786) | ● | | | | ● | ASDM; DMNS; NHM; SBMNH; UF |
| | *Simnia avena* | (G. B. Sowerby II, 1832) | ● | | | | ● | ANSP; MCZ; NHM; NMR; UF |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Simnialena rufa* | (G. B. Sowerby I, 1832) | | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| Triviidae | *Dolichupis myrae* | (G. B. Campbell, 1961) | ● | | | | ● | WORMS |
| | *Pseudopusula californiana* | (Gray, 1827) | | | | | ● | ANSP; SBMNH |
| | *Pseudopusula geigeri* | Fehse & Grego, 2014 | ● | | | | | SBMNH |
| | *Pseudopusula sanguinea* | (Gray, 1832) | ● | | | | | CAS |
| | *Pusula radians* | (Lamarck, 1810) | ● | | | | | ANSP; SBMNH |
| | *Pusula solandri* | (Gray, 1832) | ● | | ● | ● | ● | ANSP; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| Naticidae | *Cryptonatica affinis* | (Gmelin, 1791) | ● | | | | | DMNS |
| | *Mammilla caprae* | (Philippi, 1852) | ● | | | | | WORMS |
| | *Natica broderipiana* | Récluz, 1844 | ● | | | | ● | ASDM; DMNS; NMR |
| | *Natica colima* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; SBMNH |
| | *Natica grayi* | Philippi, 1852 | ● | | | | | ASDM; ELMC; ICMyL-UNAM; SIO |
| | *Natica idiopoma* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; SBMNH |
| | *Natica lunaris* | (S. S. Berry, 1964) | | ● | | | ● | ASDM |
| | *Natica marochiensis* | (Gmelin, 1791) | ● | | | | | ANSP; UF |
| | *Natica othello* | Dall, 1908 | | ● | | | | NHM |
| | *Natica scethra* | Dall, 1908 | ● | | | | | ASDM |
| | *Natica unifasciata* | Lamarck, 1822 | | | | | ● | NMR; UF |
| | *Natica vitellus* | (Linnaeus, 1758) | | | | | ● | ANSP; USNM |
| | *Naticarius alapapilionis* | (Röding, 1798) | ● | | | | | WORMS |
| | *Neverita aulacoglossa* | (Pilsbry & Vanatta, 1909) | | ● | | | ● | DMNS |
| | *Neverita reclusiana* | (Deshayes, 1839) | ● | ● | | | ● | ASDM; CAS; DMNS; MCZ; NHM; PBDB; PRI; UA; UF |
| | *Notocochlis chemnitzii* | (L. Pfeiffer, 1840) | ● | | ● | | ● | DMNS; MCZ; PBDB; PRI; SBMNH |
| | *Polinices bifasciatus* | (Gray in Griffith & Pidgeon, 1833) | ● | | | ● | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; SBMNH |
| | *Polinices cumingianus* | (Récluz, 1844) | | ● | | | | SIO |
| | *Polinices otis* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | DMNS; UF |
| | *Polinices panamaensis* | (Récluz, 1844) | ● | | | | | ASDM |
| | *Polinices uber* | (Valenciennes, 1832) | ● | | | | | ANSP; ASDM; DMNS; ELMC; IGL-UNAM; NHM; PBDB; NMR; SBMNH; UF; USNM |
| | *Sinum grayi* | (Deshayes, 1843) | | | | ● | | ASDM |
| | *Sinum sanctijohannis* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Stigmaulax elenae* | (Récluz, 1844) | ● | | | | | DMNS; NMR |
| Rissoinidae | *Zebinella dilatata* | (Faber, 2017) | ● | | | | | WORMS |
| Strombidae | *Lobatus galeatus* | (Swainson, 1823) | ● | | | | ● | CAS; DMNS; MCZ; PBDB; SBMNH |
| | *Lobatus gallus* | (Linnaeus, 1758) | ● | ● | | ● | ● | NMR |
| | *Lobatus peruvianus* | (Swainson, 1823) | ● | | | | | CAS; DMNS |
| | *Persististrombus granulatus* | (Swainson, 1822) | ● | ● | | ● | ● | CAS; DMNS; ICMyL-UNAM; NHM; SBMNH; UF |
| | *Strombus gracilior* | G. B. Sowerby I, 1825 | ● | | | | ● | AM; ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; NHM; PRI; SBMNH; SIO; UF; USNM |
| Cymatiidae | *Monoplex amictus* | (Reeve, 1844) | | | ● | ● | | ICMyL-UNAM; SBMNH |
| | *Monoplex corrugatus* | (Lamarck, 1816) | ● | | | | | WORMS |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Monoplex keenae* | (Beu, 1970) | ● | | ● | | | DMNS; IGL-UNAM; SBMNH |
| | *Monoplex parthenopeus* | (Salis Marschlins, 1793) | ● | | | | | CAS |
| | *Monoplex wiegmanni* | (Anton, 1838) | ● | | | | | DMNS; SBMNH |
| | *Turritriton gibbosus* | (Broderip, 1833) | ● | | | | ● | ANSP; DMNS; IGL-UNAM; NHM; PBDB; USNM |
| Olividae | *Agaronia hiatula* | (Gmelin, 1791) | ● | | | ● | | ANSP |
| | *Agaronia testacea* | (Lamarck, 1811) | ● | | | | | ANSP; ASDM; CAS; DMNS; MCZ; PBDB; NMR; SBMNH; UA; USNM |
| | *Americoliva polpasta* | (Duclos, 1833) | ● | | | | | DMNS; IGL-UNAM; MCZ |
| | *Americoliva reticularis* | (Lamarck, 1811) | | | | | ● | WORMS |
| | *Felicioliva kaleontina* | (Duclos, 1835) | ● | | | | | WORMS |
| | *Oliva fulgurator* | (Röding, 1798) | ● | | | | | DMNS |
| | *Oliva incrassata* | (Lightfoot, 1786) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; IGL-UNAM; MCZ; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Oliva pindarina* | Duclos, 1840 | | ● | | | | USNM |
| | *Oliva porphyria* | (Linnaeus, 1758) | ● | | | | | ASDM; CAS; DMNS; OMNH; NRM; SBMNH; UF; USNM |
| | *Oliva spicata* | (Röding, 1798) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NMR; SBMNH; UA; UF; USNM |
| | *Oliva subangulata* | Philippi, 1848 | | | | | ● | NMR; USNM |
| | *Oliva undatella* | Lamarck, 1811 | | | | | ● | SBMNH; UF |
| | *Oliva venulata* | Lamarck, 1811 | | | | | ● | OMNH |
| | *Oliva violacea* | Marrat, 1867 | ● | | | | | NMR; USNM |
| | *Olivella anazora* | (Duclos, 1835) | ● | | | | | ASDM; SBMNH; UF; USNM |
| | *Olivella cymatilis* | Berry, 1958 | ● | | | | | DMNS; USNM |
| | *Olivella dama* | (Wood, 1828) | ● | | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; PBDB; SBMNH; SIO; UA; UF; USNM |
| | *Olivella fletcherae* | Berry, 1958 | | ● | | | ● | ANSP; ASDM; CAS; ICMyL-UNAM; MCZ; SBMNH; UF; USNM |
| | *Olivella gracilis* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | ANSP; ASDM; MCZ; SBMNH |
| | *Olivella sphoni* | J. Q. Burch & G. B. Campbell, 1963 | ● | | | | | ASDM; USNM |
| | *Olivella steveni* | J. Q. Burch & G. B. Campbell, 1963 | ● | | | | | ASDM |
| | *Olivella tergina* | (Duclos, 1835) | ● | | | | | ANSP; UF; USNM |
| | *Olivella volutella* | (Lamarck, 1811) | | | | | ● | ELMC; SBMNH; UF; USNM |
| | *Olivella walkeri* | Berry, 1958 | ● | | | | | ASDM; SBMNH; USNM |
| | *Olivella zanoeta* | (Duclos, 1835) | | ● | | | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF; USNM |
| | *Olivella zonalis* | (Lamarck, 1811) | | | | | ● | DMNS; USNM |
| Bursidae | *Bursa corrugata* | (Perry, 1811) | ● | ● | | | ● | ASDM; SBMNH |
| | *Crossata californica* | (Hinds, 1843) | ● | | | ● | ● | ASDM |
| | *Crossata ventricosa* | (Broderip, 1833) | ● | | | | | DMNS |
| | *Marsupina nana* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | DMNS; NMR |
| Cassidae | *Casmaria erinaceus* | (Linnaeus, 1758) | ● | | | ● | ● | WORMS |
| | *Cypraecassis coarctata* | (G. B. Sowerby I, 1825) | | | | | ● | ANSP; ASDM; CAS; DMNS; NHM; SBMNH; UF |
| | *Cypraecassis tenuis* | (W. Wood, 1828) | | ● | | | | CAS; SBMNH |
| | *Semicassis centiquadrata* | (Valenciennes, 1832) | ● | | | | | ASDM; CAS; DMNS; MCZ; SBMNH |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Littorinidae | *Echinolittorina albicarinata* | (McLean, 1970) | | | | | ● | ASDM; SBMNH; UF |
| | *Echinolittorina aspera* | (Philippi, 1846) | ● | ● | | | ● | ASDM; NHM; SBMNH; UA |
| | *Echinolittorina modesta* | (Philippi, 1846) | | | | ● | | ANSP; ASDM; CAS; SBMNH; USNM |
| | *Littoraria aberrans* | (Philippi, 1846) | | | | | ● | ASDM; DMNS; SBMNH; USNM |
| | *Littoraria pintado* Subespecies: *L. pintado pullata* | (Carpenter, 1864) | | | | | ● | SBMNH |
| | *Littoraria rosewateri* | D. Reid, 1996 | | | | | ● | ASDM |
| | *Littoraria scabra* | (Linnaeus, 1758) | ● | | | | | ELMC |
| Hipponicidae | *Cenchritis muricatus* | (Linnaeus, 1758) | | | | | ● | SBMNH |
| | *Cheilea cepacea* | (Broderip, 1834) | ● | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Cheilea corrugata* | (Broderip, 1834) | ● | | | | | ASDM |
| | *Hipponix antiquatus* | (Linnaeus, 1767) | ● | | | | | ASDM; SBMNH; UF |
| | *Hipponix grayanus* | Menke, 1853 | | | ● | | | ANSP; IGL-UNAM |
| | *Pilosabia trigona* | (Gmelin, 1791) | ● | | | | ● | ANSP; ICMyL-UNAM; MCZ; NHM |
| Vermetidae | *Dendropoma lituella* | (Mörch, 1861) | ● | | | | | ASDM; SBMNH |
| | *Eualetes centiquadrus* | (Valenciennes, 1846) | | | | | ● | UF |
| | *Eualetes tulipa* | (Rousseau in Chenu, 1843) | ● | | | | | DMNS; SBMNH |
| | *Petaloconchus complicatus* | Dall, 1908 | ● | | | | | ASDM |
| | *Petaloconchus innumerabilis* | Pilsbry & Olsson, 1935 | ● | | | | | ASDM; DMNS |
| | *Thylacodes eruciformis* | Mörch, 1862 | | | | | ● | IGL-UNAM |
| | *Thylacodes margaritaceus* | (Rousseau in Chenu, 1844) | ● | | | | | DMNS |
| | *Thylacodes oryzatus* | Mörch, 1862 | ● | | | | | WORMS |
| | *Thylaeodus contortus* | (Carpenter, 1857) | | | | ● | ● | WORMS |
| | *Thylaeodus indentatus* | (Carpenter, 1857) | | ● | ● | | ● | ICMyL-UNAM; UA |
| | *Tripsycha tripsycha* | (Pilsbry & H. N. Lowe, 1932) | ● | ● | | | ● | ASDM; MCZ; SBMNH; UF |
| Personidae | *Distorsio constricta* | (Broderip, 1833) | | ● | ● | | | ASDM; NMR; SBMNH; UF |
| | *Distorsio decussata* | (Valenciennes, 1832) | ● | | | ● | | ASDM; SBMNH |
| | *Distorsio minoruohnishii* | Parth, 1989 | | ● | | | | ASDM |
| | *Distorsio ridens* | (Reeve, 1844) | | ● | | | | WORMS |
| Ficidae | *Ficus variegata* | Röding, 1798 | ● | | | | | ANSP |
| | *Ficus ventricosa* | (G. B. Sowerby I, 1825) | ● | | | | | ASDM; CAS; ICMyL-UNAM; SBMNH; SIO; USNM |
| Pterotracheidae | *Firoloida desmarestia* | Lesueur, 1817 | ● | ● | | | ● | CICIMAR-IPN |
| | *Pterotrachea coronata* | Forsskål, 1775 | | ● | | | | CICIMAR-IPN |
| | *Pterotrachea hippocampus* | Philippi, 1836 | | ● | | | | CICIMAR-IPN |
| Harpidae | *Harpa crenata* | Swainson, 1822 | ● | | | | | ASDM; DMNS; NMR; SBMNH; UF; USNM |
| | *Morum oniscus* | (Linnaeus, 1767) | ● | | | | | DMNS |
| | *Morum tuberculosum* | (Reeve, 1842) | ● | ● | | | | CAS; DMNS; SBMNH |
| Tonnidae | *Malea ringens* | (Swainson, 1822) | | | | | ● | ASDM; DMNS; SBMNH |
| Melongenidae | *Melongena patula* | (Broderip & Sowerby, 1829) | | | | | ● | ASDM; DMNS; ELMC; IGL-UNAM; PBDB; SBMNH; UF; USNM |
| Caecidae | *Caecum liratocinctum* | Carpenter, 1857 | ● | | | | | ANSP; BMNSM; DMNS; MCZ |
| Xenophoridae | *Xenophora conchyliophora* | (Born, 1780) | ● | | | | ● | ASDM; DMNS; NMR; YPM |
| Colubrariidae | *Colubraria lucasensis* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM |
| | *Metula amosi* | Vanatta, 1913 | ● | | | | | ASDM; SBMNH |
| | *Aesopus chrysalloideus* | (Carpenter, 1864) | ● | | | ● | | WORMS |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Anachis albonodosa* | Carpenter, 1857 | | | | | ● | DMNS |
| | *Anachis coronata* | (G. B. Sowerby I, 1832) | ● | ● | | | | ANSP; DMNS; IGL-UNAM; SBMNH; UA; UF |
| | *Anachis fayae* | Keen, 1971 | ● | | | | | SBMNH |
| | *Anachis fluctuata* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | WORMS |
| | *Anachis lentiginosa* | (Hinds, 1844) | ● | | | | | WORMS |
| | *Anachis lillianae* | Whitney, 1978 | ● | | | | | ASDM |
| | *Anachis nigrofusca* | Carpenter, 1857 | ● | | ● | | | NMR; SBMNH |
| | *Anachis rugosa* | (G. B. Sowerby I, 1832) | ● | ● | | | | SBMNH; UF |
| | *Anachis sanfelipensis* | H. N. Lowe, 1935 | ● | | | | | NMR; SBMNH; UF |
| | *Anachis scalarina* | (G. B. Sowerby I, 1832) | | ● | ● | | ● | ANSP; ASDM; DMNS; MCZ; SBMNH; UF; USNM |
| | *Anachis varia* | (G. B. Sowerby I, 1832) | ● | | | | ● | ANSP; CAS; DMNS; MCZ; SBMNH; UA; UF |
| | *Anachis varicosa* | (Gaskoin, 1852) | ● | | | | | WORMS |
| | *Anachis vexillum* | (Reeve, 1858) | ● | ● | | | ● | NMR; SBMNH; UF |
| | *Bifurcium bicanaliferum* | (G. B. Sowerby I, 1832) | ● | | | | ● | ASDM |
| | *Columbella aureomexicana* | (Howard, 1963) | ● | | | | ● | ANSP; ASDM; CMN; DMNS; NMR; SBMNH; UF; USNM |
| | *Columbella fuscata* | G. B. Sowerby I, 1832 | ● | | | | | ANSP; ASDM; CAS; DMNS; IGL-UNAM; NRM; SBMNH; UA |
| | *Columbella haemastoma* | G. B. Sowerby I, 1833 | ● | | | | | ANSP; ASDM; DMNS; SBMNH |
| | *Columbella major* | G. B. Sowerby I, 1834 | ● | | | | | ASDM; CAS; DMNS; NRM |
| | *Columbella sonsonatensis* | (Mörch, 1860) | ● | | | | | ASDM; SBMNH |
| | *Columbella strombiformis* | Lamarck, 1822 | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; MCZ; NMR; NRM; SBMNH; UA; UF; USNM |
| | *Cosmioconcha palmeri* | (Dall, 1913) | | | | | ● | ASDM; DMNS; NHM; SBMNH; SIO |
| | *Cosmioconcha parvula* | (Dall, 1913) | ● | | | | | DMNS |
| | *Cosmioconcha pergracilis* | (Dall, 1913) | | | | ● | | ASDM; ICMyL-UNAM; NHM; USNM |
| | *Cotonopsis hirundo* | (Gaskoin, 1852) | | | | | ● | ASDM |
| | *Decipifus dictynna* | Dall, 1919 | ● | | | | | ASDM |
| | *Decipifus gracilis* | McLean, 1959 | ● | | | | | ASDM |
| | *Decipifus lyrta* | (F. Baker, Hanna & A. M. Strong, 1938) | | | | ● | | DMNS; SBMNH |
| | *Decipifus macleani* | Keen, 1971 | | | | | ● | ASDM |
| | *Glyptanachis hilli* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ANSP; MCZ; SBMNH; UA |
| | *Ithiaesopus arestus* | (Dall, 1919) | ● | | ● | ● | | WORMS |
| | *Mazatlania fulgurata* | (Philippi, 1846) | ● | | | | | ASDM; SBMNH |
| | *Mitrella baccata* | (Gaskoin, 1852) | ● | | | | | UF |
| | *Mitrella caulerpae* | Keen, 1971 | ● | | | | | ASDM |
| | *Mitrella dorma* | F. Baker, Hanna & A. M. Strong, 1938 | | | | | ● | ASDM; DMNS; SBMNH |
| | *Mitrella elegans* | (Dall, 1871) | ● | | | | | UF |
| | *Mitrella granti* | H. N. Lowe, 1935 | | | | | ● | ASDM; SBMNH |
| | *Mitrella guttata* | (G. B. Sowerby I, 1832) | ● | ● | | | ● | NMR; SBMNH; UA; USNM |
| | *Mitrella harfordi* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM |
| | *Mitrella lalage* | Pilsbry & Lowe, 1932 | ● | | | | | ASDM |
| | *Mitrella millepunctata* | (Carpenter, 1864) | | ● | | | | ASDM; DMNS |
| | *Mitrella ocellata* | (Gmelin, 1791) | | | | | ● | ASDM; SBMNH |
| | *Mitrella santabarbarensis* | (Carpenter, 1856) | ● | | | | | ASDM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Nassarina helenae* | Keen, 1971 | | | | | ● | ASDM |
| | *Parametaria dupontii* | (Kiener, 1846) | ● | | | | | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Parvanachis nigricans* | (G. B. Sowerby I, 1844) | ● | | ● | | | DMNS; SBMNH |
| | *Parvanachis pygmaea* | (G. B. Sowerby I, 1832) | ● | | | | | SBMNH; UA |
| | *Sincola dorsata* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; CAS |
| | *Sincola gibberula* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; DMNS; MCZ |
| | *Steironepion tinctum* | (Carpenter, 1864) | ● | | | | | WORMS |
| | *Strombina angularis* | (G. B. Sowerby I, 1832) | | ● | | | | ASDM; DMNS; NMR |
| | *Strombina bonita* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM |
| | *Strombina carmencita* | H. N. Lowe, 1935 | | ● | | | | ASDM |
| | *Strombina colpoica* | Dall, 1916 | ● | | | | | ASDM |
| | *Strombina maculosa* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; DMNS; IGL-UNAM; SBMNH |
| | *Strombina pavonina* | (Hinds, 1844) | ● | | | | | ASDM |
| | *Strombina solidula* | (Reeve, 1859) | ● | | | | | ASDM; MCZ |
| | *Zafrona incerta* | (Stearns, 1892) | ● | | | | | ASDM |
| | *Zetekia gemmulosa* | (C. B. Adams, 1852) | ● | | | | | DMNS |
| Fasciolariidae | *Araiofusus colpoicus* | (Dall, 1915) | ● | | | | | SBMNH; USNM |
| | *Callifusus irregularis* | (Grabau, 1904) | ● | | | | | DMNS |
| | *Fusinus boettgeri* | (Maltzan, 1884) | | | | | ● | ELMC |
| | *Fusinus sonorae* | Poorman, 1981 | ● | | | | | ASDM; SBMNH; USNM |
| | *Fusinus zacae* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; OMNH; SBMNH |
| | *Goniofusus dupetitthouarsi* | (Kiener, 1840) | | | | | ● | CAS; DMNS; ICMyL-UNAM; MCZ |
| | *Goniofusus spectrum* | (A. Adams & Reeve, 1848) | ● | | | | | WORMS |
| | *Hesperaptyxis ambustus* | (Gould, 1853) | ● | | | | | DMNS; ELMC; MCZ; OMNH; SBMNH; UF |
| | *Hesperaptyxis cinereus* | (Reeve, 1847) | ● | | ● | | ● | ANSP; NMR; SBMNH |
| | *Hesperaptyxis felipensis* | (H. N. Lowe, 1935) | ● | | | | | DMNS |
| | *Hesperaptyxis fredbakeri* | (H. N. Lowe, 1935) | | | | | ● | ANSP; SBMNH |
| | *Leucozonia cerata* | (W. Wood, 1828) | ● | | | | | ASDM; NMR |
| | *Opeatostoma pseudodon* | (Burrow, 1815) | | | | | ● | ASDM; DMNS |
| | *Polygona concentrica* | (Reeve, 1847) | ● | | | | | WORMS |
| | *Pustulatirus hemphilli* | (Hertlein & A. M. Strong, 1951) | ● | | | | | DMNS; SBMNH |
| | *Pustulatirus praestantior* | (Melvill, 1891) | ● | | | | | DMNS; NHM |
| | *Triplofusus princeps* | G. B. Sowerby I, 1825) | | | | | ● | CAS; DMNS; SBMNH |
| Nassariidae | *Antillophos elegans* | (Guppy, 1866) | | ● | | | ● | CAS; ELMC; UA |
| | *Antillophos veraguensis* | (Hinds, 1843) | ● | | | | | ASDM; DMNS; ELMC; ICMyL-UNAM; NMR; SBMNH; SIO |
| | *Metaphos articulatus* | (Hinds, 1844) | ● | | | | | DMNS |
| | *Metaphos gaudens* | (Hinds, 1844) | ● | | | | | WORMS |
| | *Metaphos minusculus* | (Dall, 1917) | | | ● | | | IGL-UNAM |
| | *Nassarius bailyi* | (Pilsbry & H. N. Lowe, 1932) | | | | | ● | UF |
| | *Nassarius brunneostoma* | (Stearns, 1893) | | ● | | | ● | ANSP; ASDM; NMR |
| | *Nassarius catallus* | (Dall, 1908) | ● | | | | | ASDM; DMNS; SBMNH; UF |
| | *Nassarius cerritensis* | (Arnold, 1903) | ● | | | | | ASDM; UF |
| | *Nassarius coppingeri* | (E. A. Smith, 1881) | ● | | | | | ASDM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Nassarius gallegosi* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; SBMNH |
| | *Nassarius guaymasensis* | (Pilsbry & H. N. Lowe, 1932) | | | | | ● | ASDM; MCZ; SBMNH |
| | *Nassarius howardae* | Chace, 1958 | ● | | | ● | | ASDM; ICMyL-UNAM; NMR; SBMNH |
| | *Nassarius insculptus* | (Carpenter, 1864) | ● | | | | | ASDM; NHM; UF |
| | *Nassarius iodes* | (Dall, 1917) | ● | ● | | | ● | ANSP; ASDM; DMNS; MCZ; NHM; NMR; SBMNH; UA; UF; UCMP |
| | *Nassarius limacinus* | (Dall, 1917) | | | | | ● | ASDM; USNM |
| | *Nassarius miser* | (Dall, 1908) | | ● | | | | NHM |
| | *Nassarius moestus* | (Hinds, 1844) | ● | ● | | | ● | ANSP; IGL-UNAM; MCZ; NMR; SBMNH; SIO; UF; UCMP; USNM |
| | *Nassarius nodicinctus* | (A. Adams, 1852) | | | | | ● | ASDM; NHM |
| | *Nassarius onchodes* | (Dall, 1917) | ● | | | | | ASDM |
| | *Nassarius perpinguis* | (Hinds, 1844) | ● | | | | | UF |
| | *Nassarius shaskyi* | McLean, 1970 | ● | | | | | ASDM; ICMyL-UNAM |
| | *Nassarius taeniolatus* | (Philippi, 1845) | ● | | | | | ASDM; MCZ; NHM; USNM |
| | *Nassarius tiarula* | (Kiener, 1841) | ● | | | | ● | ANSP; ASDM; DMNS; IGL-UNAM; MCZ; NHM; PRI; NMR; SBMNH; UA; UF; UCMP; USNM |
| | *Northia northiae* | (Gray in Griffith & Pidgeon, 1833) | ● | | | | | OMNH; UCMP |
| | *Phrontis complanata* | (Powys, 1835) | ● | | | | | ANSP |
| | *Phrontis luteostoma* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | DMNS; ELMC; IGL-UNAM; SBMNH |
| | *Phrontis nassiformis* | (Lesson, 1842) | ● | | | | | NHM |
| | *Phrontis pagoda* | (Reeve, 1844) | ● | | | | | CAS; DMNS; MCZ; NHM; NMR; SBMNH; SIO |
| | *Phrontis versicolor* | (C. B. Adams, 1852) | ● | | | | ● | ANSP; IGL-UNAM; MCZ; NHM; NMR; SBMNH |
| | *Trajana perideris* | (Dall, 1910) | ● | | | | | ASDM; DMNS; NMR; SBMNH |
| Pisaniidae | *Bailya anomala* | (Hinds, 1844) | ● | | ● | | ● | ASDM |
| | *Cantharus rehderi* | Berry, 1962 | ● | | ● | | | ASDM |
| | *Hesperisternia jugosa* | (C. B. Adams, 1852) | | | | | ● | SBMNH |
| | *Solenosteira anomala* | (Reeve, 1847) | | ● | | | ● | DMNS; MCZ; SBMNH; UF |
| | *Solenosteira capitanea* | (Berry, 1957) | ● | ● | | | ● | DMNS; ELMC; IGL-UNAM; MCZ; SBMNH; UF |
| | *Solenosteira gatesi* | Berry, 1963 | ● | | | | ● | CAS; NMR; SBMNH |
| | *Solenosteira macrospira* | (Berry, 1957) | ● | ● | | | ● | DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NL; NMR; SBMNH; UA; UF |
| | *Solenosteira mendozana* | (Berry, 1959) | ● | | | | | DMNS; SBMNH; UF |
| | *Solenosteira pallida* | (Broderip & G. B. Sowerby, 1829) | ● | ● | | | ● | SBMNH; NRM; UA; UF |
| Clathurellidae | *Clathurella rava* | (Hinds, 1843) | ● | | | | | ASDM |
| | *Etrema maryae* | (McLean & Poorman, 1971) | ● | | | | | WORMS |
| | *Euclathurella acclivicallis* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Euclathurella carissima* | (Pilsbry & H. N. Lowe, 1932) | | | | | ● | ASDM; USNM |
| | *Glyphostoma candida* | (Hinds, 1843) | ● | | | ● | | ANSP; ASDM; SBMNH |
| | *Glyphostoma neglecta* | (Hinds, 1843) | | | | | ● | ASDM; SBMNH |
| | *Glyphostoma partefilosa* | Dall, 1919 | | | | ● | | USNM |
| | *Glyphostoma thalassoma* | Dall, 1908 | | | ● | | | ASDM; ICMyL-UNAM; USNM |
| | *Lienardia rigida* | (Hinds, 1843) | ● | | | | | ICMyL-UNAM |
| | *Nannodiella fraternalis* | (Dall, 1919) | ● | | | | | ANSP; ASDM |
| | *Nannodiella nana* | (Dall, 1919) | ● | | | | | ASDM |
| | *Strombinoturris crockeri* | Hertlein & A. M. Strong, 1951 | ● | | | | | ANSP; ASDM; DMNS; SBMNH |
| Cochlespiridae | *Cochlespira cedonulli* | (Reeve, 1843) | ● | ● | | | | ANSP; ASDM; SBMNH; SIO; USNM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Conidae | *Californiconus californicus* | (Reeve, 1844) | | | ● | | | IGL-UNAM |
| | *Conasprella emarginata* | (Reeve, 1844) | ● | | | | | NMR |
| | *Conasprella lucida* | (W. Wood, 1828) | | | | | ● | WORMS |
| | *Conasprella mahogani* | (Reeve, 1843) | ● | | | | | DMNS; NMR |
| | *Conasprella perplexa* | (G. B. Sowerby II, 1857) | ● | ● | | | ● | DMNS; NMR |
| | *Conasprella puncticulata* | (Hwass in Bruguière, 1792) | | | | | ● | NL |
| | *Conasprella tornata* | (G. B. Sowerby I, 1833) | ● | | | | | WORMS |
| | *Conasprella ximenes* | (Gray, 1839) | ● | | | | ● | CAS; DMNS; ELMC; IGL-UNAM; MCZ; NL; PRI; NMR; UF |
| | *Conus archon* | Broderip, 1833 | ● | | | | | ASDM; DMNS; MCZ; NMR; SBMNH; UF; USNM |
| | *Conus bartschi* | Hanna & A. M. Strong, 1949 | ● | | | | | ASDM; NMR; SBMNH |
| | *Conus brunneus* | W. Wood, 1828 | ● | | | | | ASDM; DMNS; NL; OMNH; PRI; SBMNH; UF; USNM |
| | *Conus dalli* | Stearns, 1873 | ● | ● | | | | ASDM; DMNS; NMR; SBMNH; UF; USNM |
| | *Conus diadema* | G. B. Sowerby I, 1834 | ● | | | | | ASDM; CAS; NL; SBMNH |
| | *Conus dispar* | G. B. Sowerby I, 1833 | ● | | | | | SBMNH |
| | *Conus fergusoni* | G. B. Sowerby II, 1873 | ● | ● | | | | ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; NL; NMR; SBMNH |
| | *Conus gladiator* | Broderip, 1833 | ● | | | | | ASDM; DMNS; NL; NMR; SBMNH; UF; USNM |
| | *Conus gradatulus* | Weinkauff, 1875 | | | | | ● | ELMC |
| | *Conus gradatus* | W. Wood, 1828 | ● | ● | | | ● | FMNH; NMR; SBMNH; UA; UF |
| | *Conus monilifer* | Broderip, 1833 | ● | | | | | DMNS; SBMNH |
| | *Conus nux* | Broderip, 1833 | ● | | | | | ANSP; ASDM; CAS; DMNS; IGL-UNAM; SBMNH; SIO; UF; USNM |
| | *Conus orion* | Broderip, 1833 | ● | | | | | ASDM; SBMNH |
| | *Conus patricius* | Hinds, 1843 | ● | ● | | ● | | ICMyL-UNAM; NL; UF |
| | *Conus poormani* | Berry, 1968 | ● | | | | ● | ASDM; NL; NMR; SBMNH |
| | *Conus princeps* | Linnaeus, 1758 | ● | | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; NL; NMR; SBMNH; SIO; UF; USNM |
| | *Conus purpurascens* | G. B. Sowerby I, 1833 | ● | | | | | ANSP; ASDM; CAS; DMNS; ELMC; NL; SBMNH; UF; USNM |
| | *Conus recurvus* | Broderip, 1833 | ● | | | | | ASDM; DMNS; MCZ; SBMNH; UF; USNM |
| | *Conus regularis* | G. B. Sowerby I, 1833 | ● | ● | | | ● | ASDM; CAS; DMNS; IGL-UNAM; MCZ; NHM; NL; OMNH; PBDB; PRI; NMR; SBMNH; UA; UF; USNM |
| | *Conus scalaris* | Valenciennes, 1832 | ● | | | | ● | DMNS; ICMyL-UNAM; NL; NMR; SBMNH |
| | *Conus scalarissimus* | da Motta, 1988 | | | | ● | | NL; SBMNH |
| | *Conus sponsalis* | Hwass in Bruguière, 1792 | ● | | | | | ELMC; UF |
| | *Conus tessulatus* | Born, 1778 | ● | | | | | ASDM; SBMNH |
| | *Conus tiaratus* | G. B. Sowerby I, 1833 | ● | | | | | ASDM; SBMNH |
| | *Conus virgatus* | Reeve, 1849 | ● | | | | | ANSP; ASDM; DMNS; NCSM; NL; SBMNH; UF; USNM |
| | *Conus vittatus* | Hwass in Bruguière, 1792 | ● | | | | | ASDM; DMNS; OMNH; SBMNH |
| | *Conus xanthicus* | Dall, 1910 | | ● | | | | ASDM; SBMNH; USNM |
| Drilliidae | *Bellaspira acclivicosta* | McLean & L. Poorman, 1970 | | | | ● | ● | ASDM; SBMNH; USNM |
| | *Bellaspira melea* | Dall, 1919 | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Brephodrillia ella* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | WORMS |
| | *Calliclava aegina* | (Dall, 1919) | ● | | | | | ASDM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Calliclava albolaqueata* | (Carpenter, 1865) | ● | | | | | DMNS |
| | *Calliclava alcmene* | (Dall, 1919) | ● | | ● | | ● | ANSP; ASDM |
| | *Calliclava palmeri* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Cerodrillia cybele* | (Pilsbry & H. N. Lowe, 1932) | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Clathrodrillia berryi* | (McLean & Poorman, 1971) | ● | | | | | WORMS |
| | *Clathrodrillia salvadorica* | (Hertlein & A. M. Strong, 1951) | | ● | | | | ANSP |
| | *Drillia acapulcana* | (H. N. Lowe, 1935) | ● | ● | | | | ANSP; ASDM; MCZ |
| | *Drillia aerope* | (Dall, 1919) | ● | | | | | ASDM |
| | *Drillia cunninghamae* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM |
| | *Drillia inornata* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM |
| | *Drillia roseola* | (Hertlein & A. M. Strong, 1955) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Drillia tumida* | McLean & Poorman, 1971 | | ● | | | | ASDM |
| | *Drillia valida* | McLean & Poorman, 1971 | ● | | | | | ANSP |
| | *Fusiturricula armilda* | (Dall, 1908) | ● | | ● | | | ANSP; ASDM; SBMNH; USNM |
| | *Globidrillia ferminiana* | (Dall, 1919) | | ● | | | | ASDM |
| | *Globidrillia micans* | (Hinds, 1843) | | | | | ● | ASDM; SBMNH; USNM |
| | *Globidrillia strohbeeni* | (Hertlein & A. M. Strong, 1951) | | ● | | | | ASDM |
| | *Imaclava pilsbryi* | Bartsch, 1950 | | | | | ● | ASDM; DMNS |
| | *Imaclava unimaculata* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; DMNS; SBMNH; UF |
| | *Kylix alcyone* | (Dall, 1919) | | | ● | | | ASDM; SBMNH; USNM |
| | *Kylix hecuba* | (Dall, 1919) | | | | | ● | ASDM; SBMNH |
| | *Kylix ianthe* | (Dall, 1919) | ● | | | ● | ● | ANSP; ASDM; DMNS; MCZ; USNM |
| | *Kylix paziana* | (Dall, 1919) | ● | ● | | | | ANSP; ASDM; USNM |
| | *Kylix zacae* | Hertlein & A. M. Strong, 1951 | | ● | | | | ASDM |
| | *Splendrillia bratcherae* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM; NHM; USNM |
| Mangeliidae | *Agathotoma alcippe* | (Dall, 1918) | ● | | | | | ASDM |
| | *Agathotoma klasmidia* | Shasky, 1971 | ● | | | | | ASDM |
| | *Agathotoma neglecta* | (C. B. Adams, 1852) | ● | | | | | ASDM |
| | *Agathotoma quadriseriata* | (Dall, 1919) | ● | ● | | ● | ● | ASDM |
| | *Agathotoma secalis* | Shasky, 1971 | ● | ● | | ● | ● | ASDM |
| | *Ithycythara penelope* | (Dall, 1919) | ● | | | | | ANSP; ASDM |
| | *Kurtzia aethra* | (Dall, 1919) | | | | ● | | ASDM |
| | *Kurtzia arteaga* | (Dall & Bartsch, 1910) | ● | | | | ● | ANSP; ASDM; USNM |
| | *Kurtzia granulatissima* | (Mörch, 1860) | | | | | ● | ASDM |
| | *Kurtziella antiochroa* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | ● | ANSP; ASDM |
| | *Kurtziella antipyrgus* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Kurtziella plumbea* | (Hinds, 1843) | | | | | ● | ASDM; SBMNH |
| | *Kurtzina cyrene* | (Dall, 1919) | ● | | | | | WORMS |
| | *Notocytharella phaethusa* | (Dall, 1919) | | | | ● | | USNM |
| | *Platycythara electra* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara angulosa* | McLean & Poorman, 1971 | ● | | | | | ASDM; SBMNH |
| | *Pyrgocythara danae* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara emersoni* | Shasky, 1971 | | | | | ● | ANSP; ASDM |
| | *Pyrgocythara helena* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara melita* | (Dall, 1919) | | | | | ● | ASDM; MCZ; USNM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Pyrgocythara scammoni* | (Dall, 1919) | | | | | ● | ASDM; SBMNH; USNM |
| | *Pyrgocythara subdiaphana* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Tenaturris merita* | (Hinds, 1843) | | | | ● | ● | ASDM; SBMNH; USNM |
| | *Tenaturris verdensis* | (Dall, 1919) | ● | | | | | ANSP; ASDM |
| Mitromorphidae | *Cymakra granata* | McLean & Poorman, 1971 | ● | | | | | WORMS |
| | *Mitromorpha mitriformis* | (Shasky, 1961) | ● | | | | | ASDM |
| Pseudomelatomidae | *Carinodrillia adonis* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | ● | ● | ANSP; ASDM; USNM |
| | *Carinodrillia dichroa* | Pilsbry & H. N. Lowe, 1932 | ● | ● | | ● | ● | ASDM |
| | *Carinodrillia halis* | (Dall, 1919) | ● | | | | | ANSP; ASDM; SBMNH; UF; USNM |
| | *Carinodrillia hexagona* | (Sowerby I, 1834) | ● | | | | ● | ASDM; ICMyL-UNAM; SBMNH; USNM |
| | *Carinodrillia lachrymosa* | (Sowerby I, 1834) | | | ● | | ● | ASDM |
| | *Compsodrillia albonodosa* | (Carpenter, 1857) | ● | | | | | ASDM; MCZ; SBMNH |
| | *Compsodrillia alcestis* | (Dall, 1919) | ● | | | | | ANSP; ASDM; DMNS; ICMyL-UNAM; MCZ; SBMNH; USNM |
| | *Compsodrillia bicarinata* | (Shasky, 1961) | ● | | | | | ANSP; ASDM; DMNS; UF; USNM |
| | *Compsodrillia duplicata* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; DMNS; SBMNH |
| | *Compsodrillia excentrica* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Compsodrillia haliplexa* | (Dall, 1919) | ● | | | | | ANSP; ASDM; SBMNH |
| | *Compsodrillia jaculum* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ANSP; ASDM |
| | *Compsodrillia olssoni* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Compsodrillia opaca* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Compsodrillia thestia* | (Dall, 1919) | | | | | ● | ASDM; MCZ; SBMNH; USNM |
| | *Crassispira adana* | (Bartsch, 1950) | ● | | | | | ANSP; ASDM |
| | *Crassispira bifurca* | (E. A. Smith, 1888) | | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Crassispira brujae* | Hertlein & A. M. Strong, 1951 | ● | | | | | ANSP; ASDM |
| | *Crassispira chacei* | Hertlein & A. M. Strong, 1951 | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Crassispira cortezi* | Shasky & G. B. Campbell, 1964 | ● | | | | | ASDM; SBMNH |
| | *Crassispira discors* | (Sowerby I, 1834) | | | | ● | | ASDM; SBMNH |
| | *Crassispira epicasta* | Dall, 1919 | ● | | | | | ASDM |
| | *Crassispira erigone* | Dall, 1919 | ● | | | | | ANSP; ASDM |
| | *Crassispira incrassata* | (Sowerby I, 1834) | | | | | ● | ASDM; MCZ; SBMNH; UF; USNM |
| | *Crassispira kluthi* | Jordan, 1936 | ● | | | | ● | ANSP; ASDM; CAS; MCZ; NMR; SBMNH |
| | *Crassispira maura* | (Sowerby I, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; SBMNH; USNM |
| | *Crassispira nigerrima* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; UF |
| | *Crassispira pluto* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | | ● | ANSP; ASDM; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Crassispira rudis* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira rugitecta* | (Dall, 1918) | ● | | | | | ASDM |
| | *Crassispira rustica* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira tepocana* | Dall, 1919 | ● | | | ● | | ANSP; ASDM; MCZ; USNM |
| | *Crassispira turricula* | (G. B. Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira unicolor* | (Sowerby I, 1834) | | | | | ● | ASDM; MCZ; SBMNH |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Crassispira xanti* | Hertlein & A. M. Strong, 1951 | ● | | | | | ASDM |
| | *Hindsiclava andromeda* | (Dall, 1919) | ● | | | | | ANSP; ASDM; MCZ; SBMNH; UF |
| | *Hindsiclava militaris* | (Reeve, 1843) | ● | | | | | ANSP; ASDM; SBMNH; UF |
| | *Hormospira maculosa* | (Sowerby I, 1834) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; MCZ; NMR; SBMNH; UA; UF |
| | *Knefastia dalli* | Bartsch, 1944 | ● | | | | ● | ANSP; ASDM; MCZ; SBMNH; UF; USNM |
| | *Knefastia funiculata* | (Kiener, 1840) | ● | | | | | ANSP; ASDM; SBMNH; USNM |
| | *Knefastia olivacea* | (Sowerby I, 1834) | ● | | | | | ASDM; NMR; SBMNH; UF |
| | *Knefastia tuberculifera* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; NMR; SBMNH; UF |
| | *Knefastia walkeri* | Berry, 1958 | ● | | | | ● | ASDM; DMNS; SBMNH |
| | *Lioglyphostoma ericea* | (Hinds, 1843) | ● | ● | | | | ANSP; ASDM; USNM |
| | *Lioglyphostoma rectilabrum* | McLean & Poorman, 1971 | ● | | | | | ANSP; ASDM; DMNS |
| | *Maesiella hermanita* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Maesiella maesae* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Maesiella punctatostriata* | (Carpenter, 1856) | ● | | | | | ASDM |
| | *Miraclathurella bicanalifera* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Miraclathurella mendozana* | Shasky, 1971 | | | | ● | | ICMyL-UNAM |
| | *Pilsbryspira aterrima* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Pilsbryspira bacchia* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM; MCZ |
| | *Pilsbryspira collaris* | (Sowerby I, 1834) | ● | | | | | DMNS |
| | *Pilsbryspira loxospira* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ICMyL-UNAM |
| | *Pilsbryspira nymphia* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | ● | ANSP; ASDM; ICMyL-UNAM; MCZ; SBMNH |
| | *Pyrgospira obeliscus* | (Reeve, 1845) | | ● | | | | ASDM; SBMNH; USNM |
| | *Strictispira ericana* | (Hertlein & A. M. Strong, 1951) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Thelecythara dushanae* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Tiariturris spectabilis* | Berry, 1958 | ● | ● | | | | ANSP; SBMNH |
| | *Zonulispira grandimaculata* | C. B. Adams, 1852 | | | | | ● | ASDM; MCZ |
| Raphitomidae | *Daphnella allemani* | (Bartsch, 1931) | ● | | | | | ASDM |
| | *Daphnella bartschi* | Dall, 1919 | ● | | | | | ASDM |
| | *Daphnella levicallis* | Poorman, 1983 | ● | | | | | ANSP; ASDM |
| | *Daphnella mazatlanica* | Pilsbry & H. N. Lowe, 1932 | | | | | ● | ASDM; ICMyL-UNAM; SBMNH |
| | *Daphnella retusa* | McLean & Poorman, 1971 | ● | | | | | ANSP; ASDM |
| | *Microdaphne trichodes* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM |
| | *Philbertia doris* | Dall, 1919 | | | | | ● | ASDM |
| | *Philbertia shaskyi* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| Terebridae | *Clathroterebra iola* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | WORMS |
| | *Bathyterebra benthalis* | (Dall, 1889) | ● | | | | | WORMS |
| | *Euterebra puncturosa* | (Berry, 1959) | ● | | | ● | | NHM |
| | *Hastula albula* | (Menke, 1843) | ● | | | | | ASDM |
| | *Oxymeris strigata* | (G. B. Sowerby I, 1825) | ● | | | | ● | DMNS |
| | *Pristiterebra glauca* | (Hinds, 1844) | ● | ● | | | ● | DMNS; MCZ |
| | *Pristiterebra petiveriana* | (Deshayes, 1857) | ● | | | ● | ● | ANSP |
| | *Pristiterebra tuberculosa* | (Hinds, 1844) | ● | ● | ● | | ● | WORMS |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Terebra argosyia* | Olsson, 1971 | ● | | | | | SBMNH |
| | *Terebra armillata* | Hinds, 1844 | ● | ● | ● | ● | ● | ASDM; CAS; MCZ; NHM; NMR; SBMNH; UA; UF |
| | *Terebra berryi* | G. B. Campbell, 1961 | ● | | | ● | ● | ASDM; MCZ; SBMNH |
| | *Terebra bridgesi* | Dall, 1908 | ● | | | ● | ● | ASDM; MCZ; SBMNH; USNM |
| | *Terebra churea* | G. B. Campbell, 1964 | ● | | | | ● | ASDM; MCZ; SBMNH |
| | *Terebra corintoensis* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | ● | | ASDM; SBMNH |
| | *Terebra crenifera* | Deshayes, 1859 | ● | | ● | ● | ● | ASDM; MCZ; NHM; SBMNH |
| | *Terebra elata* | Hinds, 1844 | ● | ● | ● | ● | ● | SBMNH; UF |
| | *Terebra formosa* | Deshayes, 1857 | ● | | ● | | | ASDM; SBMNH |
| | *Terebra intertincta* | Hinds, 1844 | ● | | | | | ASDM; NHM; SBMNH |
| | *Terebra larvaeformis* | Hinds, 1844 | ● | ● | ● | | ● | ASDM; CAS; ICMyL-UNAM; SBMNH; UA; UF |
| | *Terebra lucana* | Dall, 1908 | ● | | | | | ASDM; NHM; SBMNH |
| | *Terebra ornata* | Gray, 1834 | ● | ● | | ● | | ASDM; MCZ; SBMNH |
| | *Terebra panamensis* | Dall, 1908 | ● | | | | | ASDM; DMNS; NHM; SBMNH |
| | *Terebra polypenus* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; SBMNH |
| | *Terebra robusta* | Hinds, 1844 | ● | ● | | | ● | ASDM; DMNS; NHM; SBMNH; SIO; UA; UF |
| | *Terebra roperi* | Pilsbry & H. N. Lowe, 1932 | | ● | ● | ● | ● | ASDM; CAS; DMNS; MCZ; SBMNH |
| | *Terebra shyana* | Bratcher & R. D. Burch, 1970 | ● | | | | | ASDM; SBMNH |
| | *Terebra specillata* | Hinds, 1844 | ● | ● | ● | | ● | ASDM; CAS; MCZ; NHM; SBMNH |
| | *Terebra variegata* | Gray, 1834 | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; IGL-UNAM; MCZ; NHM; SBMNH; UF |
| Turridae | *Gemmula hindsiana* | Berry, 1958 | ● | | | | | ASDM |
| | *Polystira nobilis* | (Hinds, 1843) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| | *Polystira oxytropis* | (G. B. Sowerby I, 1834) | ● | | | ● | | ANSP; ASDM; DMNS; MCZ; NL; SBMNH; UF; USNM |
| | *Polystira picta* | (Reeve, 1843) | ● | | | | | ANSP; ASDM; ICMyL-UNAM; NMR; SBMNH; UF; USNM |
| Mitridae | *Atrimitra idae* | (Melvill, 1893) | ● | | | | | WORMS |
| | *Isara swainsonii* | (Broderip, 1836) | ● | | | | ● | SBMNH |
| | *Mitra inca* | d'Orbigny, 1841 | ● | | | | | ASDM |
| | *Mitra muricata* | (Broderip, 1836) | | | | | ● | WORMS |
| | *Neotiara crenata* | (Broderip, 1836) | ● | | | | | SBMNH |
| | *Neotiara fultoni* | (E. A. Smith, 1892) | ● | | | | | SBMNH |
| | *Neotiara lens* | (W. Wood, 1828) | ● | | | | | DMNS; SBMNH |
| | *Neotiara sphoni* | (Shasky & G. B. Campbell, 1964) | ● | | | | | SBMNH |
| | *Strigatella tristis* | (Broderip, 1836) | ● | | | | ● | NHM; SBMNH |
| | *Subcancilla attenuata* | (Broderip, 1836) | ● | ● | | | ● | ASDM; SBMNH |
| | *Subcancilla belcheri* | (Hinds, 1843) | ● | | | | ● | DMNS; SBMNH |
| | *Subcancilla calodinota* | (S. S. Berry, 1960) | ● | | | | | ASDM; DMNS; MCZ |
| | *Subcancilla directa* | (S. S. Berry, 1960) | ● | | | | | WORMS |
| | *Subcancilla erythrogramma* | (Tomlin, 1931) | ● | ● | | ● | | ASDM; DMNS; MCZ; SBMNH; SIO |
| | *Subcancilla gigantea* | (Reeve, 1844) | ● | ● | | | | ASDM; DMNS; SBMNH |
| | *Subcancilla hindsii* | (Reeve, 1844) | ● | | ● | | | ASDM; MCZ; NMR; SIO |
| | *Subcancilla phorminx* | (S. S. Berry, 1969) | ● | ● | | | | ASDM; SBMNH |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Subcancilla sulcata* | (Swainson, 1825) | ● | ● | | ● | | ASDM; ICMyL-UNAM; MCZ; SBMNH |
| Muricidae | *Acanthais brevidentata* | (W. Wood, 1828) | ● | | | | | WORMS |
| | *Acanthais triangularis* | (Blainville, 1832) | ● | ● | | | | WORMS |
| | *Acanthotrophon carduus* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |
| | *Acanthotrophon sorenseni* | (Hertlein & A. M. Strong, 1951) | ● | ● | ● | ● | ● | ASDM; SBMNH |
| | *Aspella pollux* | Radwin & D'Attilio, 1976 | ● | | | | | ASDM |
| | *Aspella pyramidalis* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |
| | *Attiliosa nodulosa* | (A. Adams, 1855) | ● | | ● | | ● | ASDM; CAS; USNM |
| | *Austrotrophon cerrosensis* | (Dall, 1891) | ● | ● | | | | ASDM; MCZ; SBMNH |
| | *Babelomurex hindsi* | (Carpenter, 1857) | ● | | | | ● | WORMS |
| | *Bizetiella carmen* | (H. N. Lowe, 1935) | ● | ● | ● | ● | ● | ASDM; SBMNH |
| | *Calcitrapessa leeana* | (Dall, 1890) | ● | | | | | DMNS |
| | *Claremontiella nodulosa* | (C. B. Adams, 1845) | ● | ● | ● | ● | ● | WORMS |
| | *Coralliophila macleani* | Shasky, 1970 | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Coralliophila monodonta* | (Blainville, 1832) | ● | | | | | WORMS |
| | *Coralliophila orcuttiana* | Dall, 1919 | ● | | | | | ASDM; SBMNH |
| | *Coralliophila parva* | (E. A. Smith, 1877) | ● | | | | | ASDM; SBMNH; USNM |
| | *Dermomurex bakeri* | (Hertlein & A. M. Strong, 1951) | ● | | | | ● | WORMS |
| | *Dermomurex cunninghamae* | (Berry, 1964) | ● | | | | | ASDM; SBMNH |
| | *Dermomurex indentatus* | (Carpenter, 1857) | ● | | | | | ASDM |
| | *Eupleura muriciformis* | (Broderip, 1833) | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; OMNH; NMR; SBMNH; UA; UF; UCMP; USNM |
| | *Eupleura triquetra* | (Reeve, 1844) | ● | | | | ● | ANSP; ASDM; ELMC; SBMNH |
| | *Eupleura vokesorum* | Herbert, 2005 | ● | | | | | SBMNH |
| | *Favartia lappa* | (Broderip, 1833) | ● | | | | | ANSP; SBMNH |
| | *Favartia laurae* | (Vokes, 1970) | ● | | | | | WORMS |
| | *Favartia perita* | (Hinds, 1844) | ● | | | | | SBMNH |
| | *Hexaplex ambiguus* | (Reeve, 1845) | ● | | | | | ASDM; SBMNH |
| | *Hexaplex brassica* | Hexaplex brassica (Lamarck, 1822) | ● | | | | | ASDM; CAS; DMNS; ICMyL-UNAM; SBMNH |
| | *Hexaplex erythrostomus* | (Swainson, 1831) | ● | | | | ● | ANSP; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; OMNH; PBDB; SBMNH; SIO; UF; USNM |
| | *Hexaplex nigritus* | (Philippi, 1845) | | | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; IGL-UNAM; MCZ; PBDB; SBMNH |
| | *Hexaplex princeps* | (Broderip, 1833) | ● | | | ● | | ASDM; CAS; DMNS; NMR; UF |
| | *Hexaplex radix* | (Gmelin, 1791) | | | | | ● | ELMC; UF |
| | *Hexaplex regius* | (Swainson, 1821) | ● | | | | | WORMS |
| | *Mexacanthina angelica* | (Oldroyd, 1918) | | ● | ● | | ● | ANSP; CAS; ELMC; IGL-UNAM; MCZ; NHM; OMNH; SBMNH; UA |
| | *Mexacanthina lugubris* | (G. B. Sowerby I, 1822) | ● | ● | | | | DMNS; IGL-UNAM; NMR |
| | *Murexsul armatus* | (A. Adams, 1854) | ● | | | | | CAS; DMNS; SBMNH |
| | *Murexsul mildredae* | (Poorman, 1980) | ● | | | | | SBMNH |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Muricopsis zeteki* | Hertlein & A. M. Strong, 1951 | | | | | ● | ASDM; CAS; DMNS; SBMNH |
| | *Neorapana muricata* | (Broderip, 1832) | ● | | ● | | | ASDM; SBMNH; UA |
| | *Neorapana tuberculata* | (Sowerby I, 1835) | | ● | | | ● | CAS; DMNS; ELMC; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Pascula rufonotata* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Phyllocoma scalariformis* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |
| | *Phyllonotus peratus* | Keen, 1960 | ● | | | | | WORMS |
| | *Plicopurpura columellaris* | (Lamarck, 1816) | ● | ● | | | | ASDM; DMNS; NMR; UF |
| | *Plicopurpura patula* | (Linnaeus, 1758) | ● | | | | | ASDM |
| | *Pteropurpura centrifuga* | (Hinds, 1844) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; OMNH; NMR; SBMNH; UF; USNM |
| | *Pteropurpura erinaceoides* | (Valenciennes, 1832) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; MCZ; NHM; NL; NMR; SBMNH; UF |
| | *Purpurellus macleani* | (Emerson & D'Attilio, 1969) | ● | | | | | SBMNH |
| | *Purpurellus pinniger* | (Broderip, 1833) | ● | | | | | ANSP; DMNS; SBMNH |
| | *Pygmaepterys poormani* | (Radwin & D'Attilio, 1976) | ● | | | | | ASDM; SBMNH |
| | *Roperia poulsoni* | (Carpenter, 1864) | ● | | | | | NMR |
| | *Stramonita biserialis* | (Blainville, 1832) | ● | ● | | | ● | CAS; DMNS; ICMyL-UNAM; MCZ; NHM; NMR; SBMNH; UA |
| | *Stramonita haemastoma* | (Linnaeus, 1767) | ● | | ● | | | ASDM; PBDB; NMR |
| | *Thaisella kiosquiformis* | (Duclos, 1832) | ● | | | | | SBMNH |
| | *Trachypollia lugubris* | (C. B. Adams, 1852) | ● | | ● | | | AM; ASDM; UA |
| | *Tripterotyphis lowei* | (Pilsbry, 1931) | ● | | | | | ASDM; SBMNH |
| | *Typhisala clarki* | (Keen & G. B. Campbell, 1964) | | | | | ● | ASDM; MCZ; SBMNH |
| | *Typhisala grandis* | (A. Adams, 1855) | ● | | | | | ASDM; DMNS |
| | *Typhisopsis coronatus* | (Broderip, 1833) | ● | ● | | | ● | ANSP; ASDM; MCZ; SBMNH; USNM |
| | *Vasula speciosa* | (Valenciennes, 1832) | | | | | ● | CAS; DMNS; NHM; NL; SBMNH |
| | *Vitularia salebrosa* | (P. P. King, 1832) | ● | | | | ● | ASDM; CAS; DMNS; SBMNH |
| | *Vokesimurex elenensis* | (Dall, 1909) | ● | | ● | | ● | ANSP; DMNS; ELMC; MCZ |
| | *Vokesimurex lividus* | (Carpenter, 1857) | | | | | ● | DMNS |
| | *Vokesimurex recurvirostris* | (Broderip, 1833) | ● | | | | | DMNS; ELMC; MCZ |
| | *Vokesimurex ruthae* | (Vokes, 1988) | | | ● | | | ICMyL-UNAM; NRM |
| | *Vokesimurex tricoronis* | (Berry, 1960) | ● | | | | ● | DMNS; ICMyL-UNAM; SBMNH |
| | *Zacatrophon skoglundae* | Houart, 2010 | ● | | | | | SBMNH |
| Costellariidae | *Mitromica gratiosa* | (Reeve, 1845) | ● | | | | | SBMNH |
| | *Mitromica solitaria* | (C. B. Adams, 1852) | ● | | | | | SBMNH |
| Pseudolividae | *Triumphis distorta* | (Wood, 1828) | ● | | | | | NMR |
| Turbinellidae | *Vasum caestus* | (Broderip, 1833) | ● | | | | | ASDM; CAS; DMNS; SBMNH; UF |
| Cancellariidae | *Agatrix strongi* | (Shasky, 1961) | ● | ● | ● | ● | ● | ASDM |
| | *Aphera tessellata* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | ASDM |
| | *Axelella campbelli* | (Shasky, 1961) | ● | ● | | ● | ● | ASDM |
| | *Axelella funiculata* | (Hinds, 1843) | ● | | | | ● | WORMS |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Bivetiella pulchra* | (G. B. Sowerby I, 1832) | ● | | | | | NL |
| | *Euclia balboae* | (Pilsbry, 1931) | ● | | ● | ● | ● | WORMS |
| | *Euclia cassidiformis* | (G. B. Sowerby I, 1832) | ● | ● | ● | ● | ● | WORMS |
| | *Cancellaria cooperii* | Gabb, 1865 | ● | | | | ● | WORMS |
| | *Cancellaria corrosa* | Reeve, 1856 | ● | | | | | USNM |
| | *Cancellaria gemmulata* | G. B. Sowerby I, 1832 | | | ● | ● | ● | ASDM; SBMNH |
| | *Cancellaria indentata* | G. B. Sowerby I, 1832 | | | | | ● | ASDM; SBMNH |
| | *Cancellaria jayana* | Keen, 1958 | ● | | | ● | ● | ASDM; SBMNH |
| | *Cancellaria obesa* | G. B. Sowerby I, 1832 | ● | ● | ● | ● | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Cancellaria ovata* | G. B. Sowerby I, 1832 | ● | | ● | ● | ● | SBMNH; UF |
| | *Cancellaria urceolata* | Hinds, 1843 | ● | | | | | ANSP; ASDM; DMNS; MCZ; NL; SBMNH |
| | *Cancellaria ventricosa* | Hinds, 1843 | ● | | | | | ASDM; SBMNH |
| | *Massyla corrugata* | (Hinds, 1843) | ● | | | ● | | WORMS |
| | *Massyla cumingiana* | (Petit de la Saussaye, 1844) | ● | ● | | ● | | WORMS |
| | *Merica oblonga* | (G. B. Sowerby I, 1825) | ● | | | | | WORMS |
| | *Narona clavatula* | (G. B. Sowerby I, 1832) | ● | | | | | ASDM |
| | *Narona exopleura* | (Dall, 1908) | ● | | | | | ASDM |
| | *Sveltia centrota* | (Dall, 1896) | ● | | | | | ASDM |
| | *Trigonostoma bullatum* | (G. B. Sowerby I, 1832) | ● | ● | | | ● | ASDM; ICMyL-UNAM; SBMNH |
| | *Trigonostoma elegantulum* | M. Smith, 1947 | ● | | | | | ASDM |
| | *Trigonostoma goniostoma* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | ANSP; ASDM; CAS; MCZ; SBMNH; UA |
| | *Tritonoharpa siphonata* | (Reeve, 1844) | ● | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Tritonoharpa vexillata* | Dall, 1908 | ● | | | | | ASDM |
| Marginellidae | *Granulina margaritula* | (Carpenter, 1857) | ● | | | | | ASDM |
| | *Volvarina taeniolata* | Mörch, 1860 | ● | | | | ● | ASDM; ICMyL-UNAM; MCZ; SBMNH |
| Volutidae | *Enaeta barnesii* | (Gray, 1825) | ● | | | | | ASDM |
| | *Enaeta cumingii* | (Broderip, 1832) | ● | ● | | | | ASDM; CAS; NMR; SBMNH; UF; USNM |
| Cerithiidae | *Alabina excurvata* | (Carpenter, 1857) | | | | | ● | DMNS |
| | *Cerithium adustum* | Kiener, 1841 | ● | | | | ● | ASDM; ELMC; SBMNH; UF; USNM |
| | *Cerithium columna* | G. B. Sowerby I, 1834 | ● | | | | | ANSP |
| | *Cerithium gemmatum* | Hinds, 1844 | ● | | | | | WORMS |
| | *Cerithium maculosum* | Kiener, 1841 | ● | ● | ● | ● | | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NHM; NMR; SBMNH; UA; UF |
| | *Cerithium menkei* | Carpenter, 1857 | ● | ● | ● | | ● | ASDM; SBMNH |
| | *Cerithium muscarum* | Say, 1832 | ● | | | ● | | NCSM; PRI; SBMNH; UF |
| | *Cerithium stercusmuscarum* | Valenciennes, 1832 | ● | | | | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Cerithium uncinatum* | (Gmelin, 1791) | ● | | | | | ASDM; PRI; SBMNH |
| | *Liocerithium judithae* | Keen, 1971 | ● | ● | | | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| Cerithiopsidae | *Seila pulmoensis* | DuShane & Draper, 1975 | | | ● | | | UF |
| Modulidae | *Modulus cerodes* | A. Adams, 1851 | ● | | | | | ASDM; SBMNH |
| | *Modulus disculus* | (Philippi, 1846) | ● | | ● | | | ANSP; ASDM; MCZ; SBMNH |
| | *Trochomodulus catenulatus* | (Philippi, 1849) | ● | | | | | DMNS; NMR |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Potamididae | *Cerithideopsis californica* | (Haldeman, 1840) | ● | ● | | ● | ● | ANSP; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NCSM; NHM; PRI; NMR; SBMNH; UA; UF |
| | *Cerithideopsis montagnei* | (d'Orbigny, 1841) | ● | | | ● | | NMR |
| | *Pirenella incisa* | (Hombron & Jacquinot, 1848) | | | | | ● | WORMS |
| Provannidae | *Provanna goniata* | Warén & Bouchet, 1986 | ● | | | | | ASDM; USNM |
| | *Provanna laevis* | Warén & Ponder, 1991 | ● | | | | | ASDM; USNM |
| | *Provanna muricata* | Warén & Bouchet, 1986 | ● | | | | | ASDM |
| Turritellidae | *Turritella banksii* | Gray in Reeve, 1849 | ● | | | | ● | WORMS |
| | *Turritella clarionensis* | Hertlein & A. M. Strong, 1951 | ● | | | | | ASDM; SBMNH |
| | *Turritella gonostoma* | Valenciennes, 1832 | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; NHM; PBDB; NMR; NRM; SBMNH; UA; USNM |
| | *Turritella lentiginosa* | Reeve, 1849 | ● | | | | | ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; NHM; SBMNH |
| | *Turritella leucostoma* | Valenciennes, 1832 | ● | ● | ● | | ● | ASDM; CAS; DMNS; ELMC; MCZ; NHM; NL; NMR; SBMNH; SIO; UA; UF; USNM |
| | *Turritella nodulosa* | P. P. King, 1832 | ● | ● | | | | ASDM; ICMyL-UNAM; NHM; NMR; SBMNH |
| | *Turritella radula* | Kiener, 1843 | ● | | | | | DMNS; MCZ; NHM; NMR |
| | *Turritella rubescens* | Reeve, 1849 | ● | | | | | UF |
| | *Turritella willetti* | McLean, 1970 | ● | | | | | ASDM |
| | *Vermicularia frisbeyae* | McLean, 1970 | ● | ● | | | | ASDM; SBMNH |
| | *Vermicularia pellucida* | (Broderip & G. B. Sowerby I, 1829) | ● | ● | | | ● | ANSP; ASDM; MCZ; SBMNH; UF |
| Architectonicidae | *Architectonica karsteni* | Rutsch, 1934 | ● | | | | | UF |
| | *Architectonica nobilis* | Röding, 1798 | | | | ● | | ASDM; IGL-UNAM; NMR; SBMNH; SIO |
| | *Discotectonica placentalis* | (Hinds, 1844) | ● | | | | | ASDM; DMNS |
| | *Heliacus areola* | (Gmelin, 1791) | ● | | | | | AM; ANSP; ASDM |
| | *Heliacus areola* | (Valenciennes, 1832) | ● | | | | | AM; ANSP; ASDM |
| | *Heliacus mazatlanicus* | Pilsbry & H. N. Lowe, 1932 | ● | | | | ● | ASDM; MCZ |
| | *Heliacus planispira* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; MCZ |
| | *Pseudotorinia architae* | (O. G. Costa, 1841) | | | | | ● | ASDM; MCZ |
| Tornatinidae | *Acteocina carinata* | (Carpenter, 1857) | | | | | ● | DMNS; SBMNH |
| Amathinidae | *Iselica kochi* | A. M. Strong & Hertlein, 1939 | | | | | ● | ASDM |
| | *Iselica ovoidea* | (Gould, 1853) | | | | | ● | ASDM |
| Siphonariidae | *Siphonaria brannani* | Stearns, 1873 | ● | | | | | DMNS |
| | *Siphonaria gigas* | G. B. Sowerby I, 1825 | ● | | | | | ELMC |
| | *Siphonaria maura* | G. B. Sowerby I, 1835 | ● | | | | | NMR; SBMNH |
| | *Williamia peltoides* | (Carpenter, 1864) | | | | | ● | DMNS; UF |
| Retusidae | *Sulcoretusa paziana* | (Dall, 1919) | ● | | | | | DMNS; SBMNH |
| Neritidae | *Nerita funiculata* | Menke, 1850 | | ● | | | ● | ANSP; ASDM; CAS; ELMC; MCZ; NHM; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Nerita scabricosta* | Lamarck, 1822 | ● | ● | ● | | | ANSP; ASDM; CAS; DMNS; ELMC; NMR; SBMNH; SIO; UA; UF; USNM |
| | *Nerita undata* | Linnaeus, 1758 | ● | | ● | | ● | ANSP; USNM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Vitta luteofasciata* | (Miller, 1879) | | ● | | | ● | WORMS |
| Eoacmaeidae | *Eoacmaea semirubida* | (Dall, 1914) | ● | | | | | DMNS; SBMNH |
| Lottiidae | *Lottia acutapex* | (S. S. Berry, 1960) | | ● | | | ● | ASDM; DMNS; SBMNH; UA |
| | *Lottia atrata* | (Carpenter, 1857) | ● | ● | | | ● | ASDM; NMR; SBMNH; UA |
| | *Lottia dalliana* | (Pilsbry, 1891) | ● | | | | ● | ASDM; ELMC; IGL-UNAM; NMR; SBMNH |
| | *Lottia mesoleuca* | (Menke, 1851) | ● | ● | | | ● | ANSP; ASDM; SBMNH |
| | *Lottia mitella* | (Menke, 1847) | ● | | | | | DMNS |
| | *Lottia pelta* | (Rathke, 1833) | ● | | ● | | | WORMS |
| | *Lottia persona* | (Rathke, 1833) | ● | ● | ● | ● | ● | WORMS |
| | *Lottia stanfordiana* | (Berry, 1957) | | ● | | | ● | ANSP; ASDM; DMNS; ELMC; IGL-UNAM; MCZ; NMR; SBMNH; UA |
| | *Lottia strigatella* | (Carpenter, 1864) | ● | ● | ● | ● | | ASDM; NMR; SBMNH; UA |
| | *Lottia strongiana* | (Hertlein, 1958) | | ● | | | ● | ASDM; SBMNH; UA |
| | *Lottia turveri* | (Hertlein & A. M. Strong, 1951) | ● | ● | | | | ASDM; ICMyL-UNAM; SBMNH; UA |
| | *Tectura ubiquita* | (Lindberg & McLean, 1981) | ● | | | ● | | ASDM; SBMNH |
| Fissurellidae | *Diodora alta* | (C. B. Adams, 1852) | | | | | ● | ASDM; DMNS; MCZ; NHM; SBMNH; UF |
| | *Diodora digueti* | (Mabille, 1895) | ● | | | | | ASDM; DMNS; NHM; SBMNH; UF |
| | *Diodora inaequalis* | (G. B. Sowerby I, 1835) | ● | ● | | | ● | ANSP; ASDM; DMNS; NHM; NHDM; PBDB; SBMNH; UA; UF |
| | *Diodora pusilla* | Berry, 1959 | | | | | ● | ASDM; MCZ; SBMNH; UF |
| | *Diodora saturnalis* | (Carpenter, 1864) | | | | | ● | ASDM; MCZ; NHM; NHDM; SBMNH; UF |
| | *Fissurella gemmata* | Menke, 1847 | ● | | | | | NMR |
| | *Fissurella microtrema* | G. B. Sowerby, 1835 | ● | | | | | ASDM; DMNS; NMR; SBMNH |
| | *Fissurella rubropicta* | Pilsbry, 1890 | | ● | | | | ASDM; SBMNH; UF |
| | *Fissurella virescens* | G. B. Sowerby, 1835 | | ● | | | | SBMNH; UA |
| | *Fissurella volcano* | Reeve, 1849 | | | ● | | | IGL-UNAM; SBMNH |
| | *Fissurellidea bimaculata* | Dall, 1871 | | | | | ● | ASDM |
| | *Leurolepas roseola* | McLean, 1970 | ● | | | | | ASDM; SBMNH |
| | *Lucapinella callomarginata* | (Dall, 1871) | | | ● | | | IGL-UNAM; SBMNH |
| | *Lucapinella milleri* | Berry, 1959 | | | | | ● | ASDM; NHM; SBMNH |
| | *Montfortia hermosa* | (H. N. Lowe, 1935) | ● | | | | | SBMNH |
| | *Rimula mexicana* | S. S. Berry, 1969 | | ● | | | | ASDM |
| | *Stromboli beebei* | (Hertlein & A. M. Strong, 1951) | ● | ● | | ● | | ASDM; ICMyL-UNAM; SBMNH |
| Areneidae | *Arene fricki* | (Crosse, 1865) | | | ● | | | NHM; SBMNH |
| | *Arene socorroensis* | (A. M. Strong, 1934) | | | ● | | | ICMyL-UNAM |
| Calliostomatidae | *Calliostoma bonita* | A. M. Strong, Hanna & Hertlein, 1933 | ● | | | ● | ● | ASDM; DMNS; MCZ; SBMNH |
| | *Calliostoma eximium* | (Reeve, 1843) | | ● | | | | ASDM; DMNS; NHM; NMR; SBMNH |
| | *Calliostoma gordanum* | McLean, 1970 | ● | | | | | ICMyL-UNAM |
| | *Calliostoma leanum* | (C. B. Adams, 1852) | ● | | | | ● | ASDM; MCZ; NHM; SBMNH; UA |
| | *Calliostoma marshalli* | H. N. Lowe, 1935 | ● | ● | | | ● | ASDM; IGL-UNAM; MCZ; SBMNH |
| | *Calliostoma mcleani* | Shasky & G. B. Campbell, 1964 | ● | ● | | | | ASDM; NHM; SBMNH |
| | *Calliostoma nepheloide* | Dall, 1913 | ● | ● | | | ● | ASDM |
| | *Calliostoma palmeri* | Dall, 1871 | | | | | ● | ANSP; ASDM; CAS; ICMyL-UNAM; MCZ; NHM; SBMNH; UF; USNM |

Table 2. Continued

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Calliostoma rema* | A. M. Strong, Hanna & Hertlein, 1933 | ● | | | | ● | ASDM; SBMNH |
| Phasianellidae | *Eulithidium cyclostoma* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Eulithidium substriatum* | (Carpenter, 1864) | | ● | | | | NHM |
| | *Eulithidium variegatum* | (Carpenter, 1864) | | | ● | ● | | DMNS; NHM |
| Skeneidae | *Haplocochlias concepcionensis* | (H. N. Lowe, 1933) | ● | | | | | WORMS |
| | *Haplocochlias erici* | (A. M. Strong & Hertlein, 1939) | ● | | | | | WORMS |
| | *Haplocochlias lucasensis* | (A. M. Strong, 1934) | ● | | | | | ASDM |
| Colloniidae | *Homalopoma clippertonense* | (Hertlein & Emerson, 1953) | ● | | | | | ASDM |
| Eucyclidae | *Parviturbo stearnsii* | (Dall, 1918) | | | | | ● | ASDM |
| | *Turcica admirabilis* | Berry, 1969 | ● | ● | | | | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| Solariellidae | *Solariella elegantula* | Dall, 1925 | ● | | | | | ASDM |
| | *Solariella triplostephanus* | Dall, 1910 | ● | ● | | | | ASDM; SBMNH |
| Tegulidae | *Tegula corteziana* | McLean, 1970 | ● | | | ● | ● | ASDM; DMNS; NHM; NMR; SBMNH; UF |
| | *Tegula eiseni* | Jordan, 1936 | | | ● | | | NHM |
| | *Tegula felipensis* | McLean, 1970 | ● | | | ● | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Tegula funebralis* | (A. Adams, 1855) | | | | | ● | UF |
| | *Tegula globulus* | (Carpenter, 1857) | ● | ● | ● | | ● | ANSP; NMR; SBMNH; SIO; UA; UF |
| | *Tegula ligulata* | (Menke, 1850) | ● | | | | ● | ASDM; SBMNH; UF |
| | *Tegula mariana* | (Dall, 1919) | ● | ● | ● | ● | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Tegula pellisserpentis* | (Wood, 1828) | | | | | ● | ELMC |
| | *Tegula rubroflammulata* | (Koch in Philippi, 1843) | ● | ● | ● | | ● | ANSP; ASDM; ICMyL-UNAM; SBMNH |
| | *Tegula rugosa* | (A. Adams, 1853) | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Turbo fluctuosus* | W. Wood, 1828 | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; OMNH; PBDB; NMR; SBMNH; UA; UF |
| | *Turbo saxosus* | W. Wood, 1828 | ● | | | | | ELMC; ICMyL-UNAM; IGL-UNAM; USNM |
| | *Turbo squamiger* | Reeve, 1843 | ● | | | | | ASDM |
| | *Uvanilla babelis* | (P. Fischer, 1874) | ● | | | | | WORMS |
| | *Uvanilla buschii* | (Philippi, 1844) | ● | ● | ● | | ● | WORMS |
| | *Uvanilla unguis* | (W. Wood, 1828) | ● | ● | | ● | | ANSP; CAS; DMNS; NMR |
| Total | *552* | 81 | 83 | 268 | | | | |

(3.9%) (Fig. 4). On the other hand, considering the synonyms for every one of the 713 valid names in WORMS (Table 3), 366 of them (51.33%) and members of 56 families (78.87% of the total families) had at least one synonym. The Muricidae families were the largest ones, with 207 synonym names distributed into 49 species (66 listed for the family) and Conidae with 143 synonyms in 36 valid species names (Fig. 5).

## Latitudinal distribution

The distribution analysis results for the central and northern coast of Sonora pointed out latitudes 27° N and 31° N as the ones with the greatest amount of latitudinal data. The first one with a total of 1899 records related to 553 names of different species, and the second one with 806 latitudinal records for 268 species names (Fig. 2). On the other hand, 458 species names had records of being found in only one degree

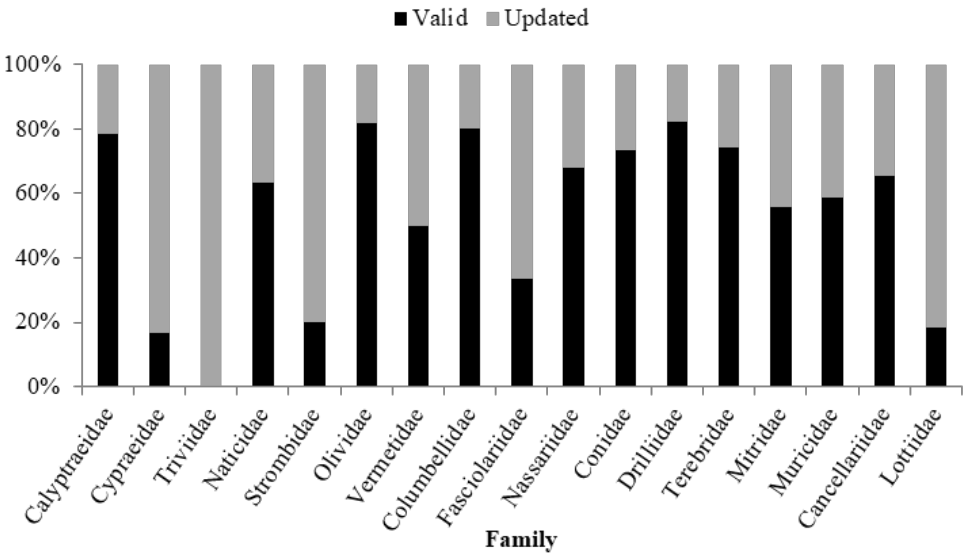


Figure 3. The proportion of species with updates in their nomenclature for gastropod families in the central and northern coast of Sonora; 54 families were not included in the chart to show three orfewer changes (76.05% of the total families) the x-axis follows a systematic arrangement according to WORMS (2022).

of latitude (64.23% of the examined species names) and barely 14 (1.96%) had a record in each of the five latitudinal studied sections (Fig. 6).

## Endemism

The endemic species were grouped in 580 records of species names with latitudinal reference and associated with 31 families (43.66 of the 71 families) and 95 species (13.32% of 713) (Fig. 7). The number of georeferenced records for the endemic species names in latitudes 27° N and 31° N showed the highest values compared to the remaining latitudes (28° N, 29° N, 30° N); the first one with 306 data of 75 species names and the second one with 159 observations of 41 species names (Fig. 8). Only two species-level taxa were found in every analyzed latitude: *Tegula rugosa* (A. Adams, 1853) and *Claremontiella nodulosa* (C. B. Adams, 1845), while 31.6% of the endemic gastro-

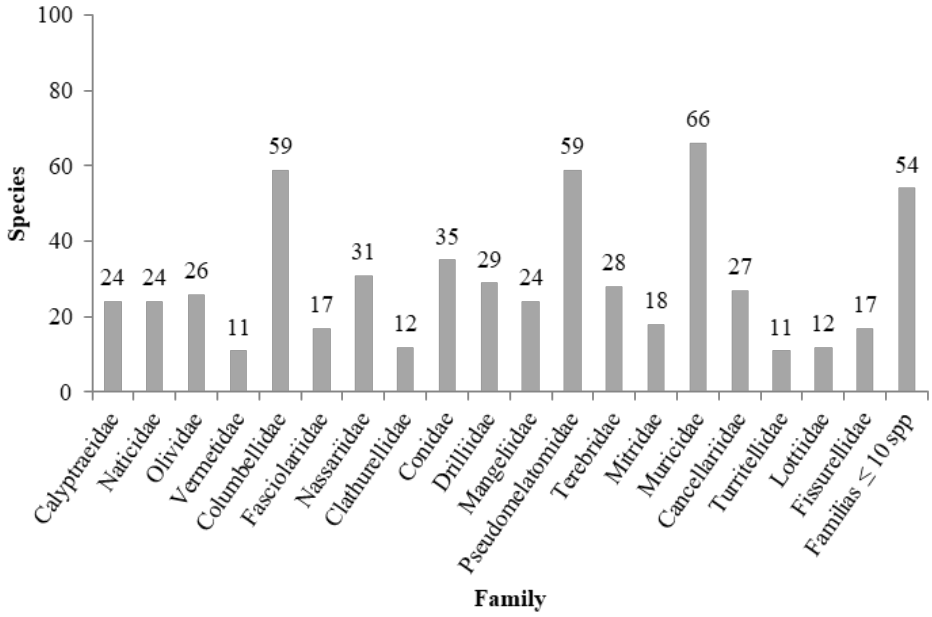


Figure 4. Species richness validated in the World Register of Marine Species platform (WORMS, 2022) for families with greater diversity in the central and northern coast of Sonora. The last bar represents 54 families with 10 or fewer species every (185 species in total) and the x-axis follows a systematic arrangement according to taxonomic tree of WORMS (2022).

Table 3. List of species of the class Gastropoda in the central and northern coast of Sonora with one or more synonyms validated with the World Registry of Marine Species (WORMS, 2022). See list of acronyms in Table 1.

| Family | Species | Author | Latitudinal presence | | | | | Source |
|---|---|---|---|---|---|---|---|---|
| | | | 27 | 28 | 29 | 30 | 31 | |
| Calyptraeidae | *Bostrycapulus aculeatus* | (Gmelin, 1791) | ● | | | | | NMR |
| | *Calyptraea conica* | Broderip, 1834 | ● | | | | | ANSP; ASDM; MCZ; SBMNH |
| | *Calyptraea mamillaris* | Broderip, 1834 | | ● | | ● | ● | AM; ANSP; ASDM; DMNS; ELMC; ICMyL-UNAM; MCZ; PBDB; SBMNH; UF |
| | *Calyptraea subreflexa* | (Carpenter, 1856) | ● | ● | | | ● | ASDM; MCZ |
| | *Crepidula adunca* | G. B. Sowerby I, 1825 | ● | ● | ● | | | ANSP; ICMyL-UNAM; UA |
| | *Crepidula arenata* | (Broderip, 1834) | ● | | ● | | | DMNS; MCZ; SBMNH; UA |
| | *Crepidula excavata* | (Broderip, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; IGL-UNAM; MCZ; SBMNH; SIO; UA; UF |
| | *Crepidula incurva* | (Broderip, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; SBMNH; UA; UF |
| | *Crepidula lessonii* | (Broderip, 1834) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Crepidula nummaria* | Gould, 1846 | | | | | ● | IGL-UNAM; MCZ; UF |
| | *Crepidula onyx* | G. B. Sowerby I, 1824 | ● | ● | | | | ASDM; DMNS; IGL-UNAM; MCZ; SBMNH; UA; UF |
| | *Crepidula perforans* | Valenciennes, 1846 | | | | | ● | SBMNH; UF |
| | *Crepidula rostrata* | C. B. Adams, 1852 | ● | | | | | ASDM; SBMNH |
| | *Crepidula striolata* | Menke, 1851 | | ● | ● | | ● | ANSP; ASDM; CAS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; SBMNH; UA; UF |
| | *Crepipatella dorsata* | (Broderip, 1834) | ● | | | | | WORMS |
| | *Crucibulum concameratum* | Reeve, 1859 | ● | | | | | ASDM; ICMyL-UNAM; SBMNH |
| | *Crucibulum lignarium* | (Broderip, 1834) | ● | | | | | ASDM; DMNS; SBMNH |
| | *Crucibulum monticulus* | Berry, 1969 | ● | | | | | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| | *Crucibulum pectinatum* | Carpenter, 1856 | ● | | | | | ASDM |
| | *Crucibulum personatum* | Keen, 1958 | ● | | | | | ASDM; DMNS; SBMNH; UF |
| | *Crucibulum scutellatum* | (Wood, 1828) | ● | | | | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Crucibulum spinosum* | (G. B. Sowerby I, 1824) | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; SBMNH; UA; UF; USNM |
| | *Crucibulum subactum* | Berry, 1963 | ● | | | | | SBMNH; UF |
| | *Crucibulum umbrella* | (Deshayes, 1830) | ● | | | | | ASDM; SBMNH; UF |
| Capulidae | *Capulus sericeus* | J. Q. Burch & R. L. Burch, 1961 | ● | ● | ● | ● | ● | ASDM; DMNS; SBMNH |
| Cypraeidae | *Luria isabellamexicana* | (Stearns, 1893) | ● | | | | | DMNS; SBMNH; USNM |
| | *Macrocypraea cervinetta* | (Kiener, 1844) | | | | | ● | CAS; DMNS; SBMNH |
| | *Mauritia arabica* | (Linnaeus, 1758) | ● | | | | | DMNS |
| | *Naria albuginosa* | (J. E. Gray, 1825) | ● | ● | | | | DMNS |
| | *Naria ostergaardi* | (Dall, 1921) | | | | | ● | ELMC |
| | *Pseudozonaria annettae* | (Dall, 1909) | ● | | ● | | ● | ANSP; CAS; DMNS; ELMC; MCZ; NHM; PBDB; SBMNH; UF; USNM |
| | *Pseudozonaria arabicula* | (Lamarck, 1810) | ● | | | | ● | DMNS; SBMNH |
| | *Pseudozonaria robertsi* | (Hidalgo, 1906) | ● | | | | | WORMS |
| Eratoidae | *Hespererato columbella* | (Menke, 1847) | | | | | ● | ANSP; ASDM |
| Ovulidae | *Cyphoma emarginatum* | (G. B. Sowerby I, 1830) | ● | | | | | DMNS; SBMNH; USNM |
| | *Jenneria pustulata* | (Lightfoot, 1786) | ● | | | | ● | ASDM; DMNS; NHM; SBMNH; UF |
| | *Simnia avena* | (G. B. Sowerby II, 1832) | ● | | | | ● | ANSP; MCZ; NHM; NMR; UF |
| | *Simnialena rufa* | (G. B. Sowerby I, 1832) | | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| Triviidae | *Dolichupis myrae* | (G. B. Campbell, 1961) | ● | | | | ● | WORMS |
| | *Pseudopusula californiana* | (Gray, 1827) | | | | | ● | ANSP; SBMNH |
| | *Pseudopusula geigeri* | Fehse & Grego, 2014 | ● | | | | | SBMNH |
| | *Pseudopusula sanguinea* | (Gray, 1832) | ● | | | | | CAS |
| | *Pusula radians* | (Lamarck, 1810) | ● | | | | | ANSP; SBMNH |
| | *Pusula solandri* | (Gray, 1832) | ● | | ● | ● | ● | ANSP; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| Naticidae | *Cryptonatica affinis* | (Gmelin, 1791) | ● | | | | | DMNS |
| | *Mammilla caprae* | (Philippi, 1852) | ● | | | | | WORMS |
| | *Natica broderipiana* | Récluz, 1844 | ● | | | | ● | ASDM; DMNS; NMR |
| | *Natica colima* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; SBMNH |
| | *Natica grayi* | Philippi, 1852 | ● | | | | | ASDM; ELMC; ICMyL-UNAM; SIO |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Natica idiopoma* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; SBMNH |
| | *Natica lunaris* | (S. S. Berry, 1964) | | ● | | | ● | ASDM |
| | *Natica marochiensis* | (Gmelin, 1791) | ● | | | | | ANSP; UF |
| | *Natica othello* | Dall, 1908 | | ● | | | | NHM |
| | *Natica scethra* | Dall, 1908 | ● | | | | | ASDM |
| | *Natica unifasciata* | Lamarck, 1822 | | | | | ● | NMR; UF |
| | *Natica vitellus* | (Linnaeus, 1758) | | | | | ● | ANSP; USNM |
| | *Naticarius alapapilionis* | (Röding, 1798) | ● | | | | | WORMS |
| | *Neverita aulacoglossa* | (Pilsbry & Vanatta, 1909) | | ● | | | ● | DMNS |
| | *Neverita reclusiana* | (Deshayes, 1839) | ● | ● | | | ● | ASDM; CAS; DMNS; MCZ; NHM; PBDB; PRI; UA; UF |
| | *Notocochlis chemnitzii* | (L. Pfeiffer, 1840) | ● | | ● | | ● | DMNS; MCZ; PBDB; PRI; SBMNH |
| | *Polinices bifasciatus* | (Gray in Griffith & Pidgeon, 1833) | ● | | | ● | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; SBMNH |
| | *Polinices cumingianus* | (Récluz, 1844) | | ● | | | | SIO |
| | *Polinices otis* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | DMNS; UF |
| | *Polinices panamaensis* | (Récluz, 1844) | ● | | | | | ASDM |
| | *Polinices uber* | (Valenciennes, 1832) | ● | | | | | ANSP; ASDM; DMNS; ELMC; IGL-UNAM; NHM; PBDB; NMR; SBMNH; UF; USNM |
| | *Sinum grayi* | (Deshayes, 1843) | | | | ● | | ASDM |
| | *Sinum sanctijohannis* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Stigmaulax elenae* | (Récluz, 1844) | ● | | | | | DMNS; NMR |
| Rissoinidae | *Zebinella dilatata* | (Faber, 2017) | ● | | | | | WORMS |
| Strombidae | *Lobatus galeatus* | (Swainson, 1823) | ● | | | | ● | CAS; DMNS; MCZ; PBDB; SBMNH |
| | *Lobatus gallus* | (Linnaeus, 1758) | ● | ● | | ● | ● | NMR |
| | *Lobatus peruvianus* | (Swainson, 1823) | ● | | | | | CAS; DMNS |
| | *Persististrombus granulatus* | (Swainson, 1822) | ● | ● | | ● | ● | CAS; DMNS; ICMyL-UNAM; NHM; SBMNH; UF |
| | *Strombus gracilior* | G. B. Sowerby I, 1825 | ● | | | | ● | AM; ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; NHM; PRI; SBMNH; SIO; UF; USNM |
| Cymatiidae | *Monoplex amictus* | (Reeve, 1844) | | | ● | ● | | ICMyL-UNAM; SBMNH |
| | *Monoplex corrugatus* | (Lamarck, 1816) | ● | | | | | WORMS |
| | *Monoplex keenae* | (Beu, 1970) | ● | | ● | | | DMNS; IGL-UNAM; SBMNH |
| | *Monoplex parthenopeus* | (Salis Marschlins, 1793) | ● | | | | | CAS |
| | *Monoplex wiegmanni* | (Anton, 1838) | ● | | | | | DMNS; SBMNH |
| | *Turritriton gibbosus* | (Broderip, 1833) | ● | | | | ● | ANSP; DMNS; IGL-UNAM; NHM; PBDB; USNM |
| Olividae | *Agaronia hiatula* | (Gmelin, 1791) | ● | | | ● | | ANSP |
| | *Agaronia testacea* | (Lamarck, 1811) | ● | | | | | ANSP; ASDM; CAS; DMNS; MCZ; PBDB; NMR; SBMNH; UA; USNM |
| | *Americoliva polpasta* | (Duclos, 1833) | ● | | | | | DMNS; IGL-UNAM; MCZ |
| | *Americoliva reticularis* | (Lamarck, 1811) | | | | | ● | WORMS |
| | *Felicioliva kaleontina* | (Duclos, 1835) | ● | | | | | WORMS |
| | *Oliva fulgurator* | (Röding, 1798) | ● | | | | | DMNS |
| | *Oliva incrassata* | (Lightfoot, 1786) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; IGL-UNAM; MCZ; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Oliva pindarina* | Duclos, 1840 | | ● | | | | USNM |
| | *Oliva porphyria* | (Linnaeus, 1758) | ● | | | | | ASDM; CAS; DMNS; OMNH; NRM; SBMNH; UF; USNM |
| | *Oliva spicata* | (Röding, 1798) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NMR; SBMNH; UA; UF; USNM |
| | *Oliva subangulata* | Philippi, 1848 | | | | | ● | NMR; USNM |
| | *Oliva undatella* | Lamarck, 1811 | | | | | ● | SBMNH; UF |
| | *Oliva venulata* | Lamarck, 1811 | | | | | ● | OMNH |
| | *Oliva violacea* | Marrat, 1867 | ● | | | | | NMR; USNM |
| | *Olivella anazora* | (Duclos, 1835) | ● | | | | | ASDM; SBMNH; UF; USNM |
| | *Olivella cymatilis* | Berry, 1958 | ● | | | | | DMNS; USNM |
| | *Olivella dama* | (Wood, 1828) | ● | | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; PBDB; SBMNH; SIO; UA; UF; USNM |
| | *Olivella fletcherae* | Berry, 1958 | | ● | | | ● | ANSP; ASDM; CAS; ICMyL-UNAM; MCZ; SBMNH; UF; USNM |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Olivella gracilis* | (Broderip & G. B. Sowerby I, 1829) | • | | | | | ANSP; ASDM; MCZ; SBMNH |
| | *Olivella sphoni* | J. Q. Burch & G. B. Campbell, 1963 | • | | | | | ASDM; USNM |
| | *Olivella steveni* | J. Q. Burch & G. B. Campbell, 1963 | • | | | | | ASDM |
| | *Olivella tergina* | (Duclos, 1835) | • | | | | | ANSP; UF; USNM |
| | *Olivella volutella* | (Lamarck, 1811) | | | | | • | ELMC; SBMNH; UF; USNM |
| | *Olivella walkeri* | Berry, 1958 | • | | | | | ASDM; SBMNH; USNM |
| | *Olivella zanoeta* | (Duclos, 1835) | | • | | | • | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF; USNM |
| | *Olivella zonalis* | (Lamarck, 1811) | | | | | • | DMNS; USNM |
| Bursidae | *Bursa corrugata* | (Perry, 1811) | • | • | | | • | ASDM; SBMNH |
| | *Crossata californica* | (Hinds, 1843) | • | | | • | • | ASDM |
| | *Crossata ventricosa* | (Broderip, 1833) | • | | | | | DMNS |
| | *Marsupina nana* | (Broderip & G. B. Sowerby I, 1829) | • | | | | | DMNS; NMR |
| Cassidae | *Casmaria erinaceus* | (Linnaeus, 1758) | • | | | • | • | WORMS |
| | *Cypraecassis coarctata* | (G. B. Sowerby I, 1825) | | | | | • | ANSP; ASDM; CAS; DMNS; NHM; SBMNH; UF |
| | *Cypraecassis tenuis* | (W. Wood, 1828) | | • | | | | CAS; SBMNH |
| | *Semicassis centiquadrata* | (Valenciennes, 1832) | • | | | | | ASDM; CAS; DMNS; MCZ; SBMNH |
| Littorinidae | *Echinolittorina albicarinata* | (McLean, 1970) | | | | | • | ASDM; SBMNH; UF |
| | *Echinolittorina aspera* | (Philippi, 1846) | • | • | | | • | ASDM; NHM; SBMNH; UA |
| | *Echinolittorina modesta* | (Philippi, 1846) | | | | • | | ANSP; ASDM; CAS; SBMNH; USNM |
| | *Littoraria aberrans* | (Philippi, 1846) | | | | | • | ASDM; DMNS; SBMNH; USNM |
| | *Littoraria pintado* Subspecies: *L. pintado pullata* | (Carpenter, 1864) | | | | | • | SBMNH |
| | *Littoraria rosewateri* | D. Reid, 1996 | | | | | • | ASDM |
| | *Littoraria scabra* | (Linnaeus, 1758) | • | | | | | ELMC |
| Hipponicidae | *Cenchritis muricatus* | (Linnaeus, 1758) | | | | | • | SBMNH |
| | *Cheilea cepacea* | (Broderip, 1834) | • | | | | • | ANSP; ASDM; MCZ; SBMNH |
| | *Cheilea corrugata* | (Broderip, 1834) | • | | | | | ASDM |
| | *Hipponix antiquatus* | (Linnaeus, 1767) | • | | | | | ASDM; SBMNH; UF |
| | *Hipponix grayanus* | Menke, 1853 | | | • | | | ANSP; IGL-UNAM |
| | *Pilosabia trigona* | (Gmelin, 1791) | • | | | | • | ANSP; ICMyL-UNAM; MCZ; NHM |
| Vermetidae | *Dendropoma lituella* | (Mörch, 1861) | • | | | | | ASDM; SBMNH |
| | *Eualetes centiquadrus* | (Valenciennes, 1846) | | | | | • | UF |
| | *Eualetes tulipa* | (Rousseau in Chenu, 1843) | • | | | | | DMNS; SBMNH |
| | *Petaloconchus complicatus* | Dall, 1908 | • | | | | | ASDM |
| | *Petaloconchus innumerabilis* | Pilsbry & Olsson, 1935 | • | | | | | ASDM; DMNS |
| | *Thylacodes eruciformis* | Mörch, 1862 | | | | | • | IGL-UNAM |
| | *Thylacodes margaritaceus* | (Rousseau in Chenu, 1844) | • | | | | | DMNS |
| | *Thylacodes oryzatus* | Mörch, 1862 | • | | | | | WORMS |
| | *Thylaeodus contortus* | (Carpenter, 1857) | | | | • | • | WORMS |
| | *Thylaeodus indentatus* | (Carpenter, 1857) | | • | • | | • | ICMyL-UNAM; UA |
| | *Tripsycha tripsycha* | (Pilsbry & H. N. Lowe, 1932) | • | • | | | • | ASDM; MCZ; SBMNH; UF |
| Personidae | *Distorsio constricta* | (Broderip, 1833) | | • | • | | | ASDM; NMR; SBMNH; UF |
| | *Distorsio decussata* | (Valenciennes, 1832) | • | | | • | | ASDM; SBMNH |
| | *Distorsio minoruohnishii* | Parth, 1989 | | • | | | | ASDM |
| | *Distorsio ridens* | (Reeve, 1844) | | • | | | | WORMS |
| Ficidae | *Ficus variegata* | Röding, 1798 | • | | | | | ANSP |
| | *Ficus ventricosa* | (G. B. Sowerby I, 1825) | • | | | | | ASDM; CAS; ICMyL-UNAM; SBMNH; SIO; USNM |
| Pterotracheidae | *Firoloida desmarestia* | Lesueur, 1817 | • | • | | | • | CICIMAR-IPN |
| | *Pterotrachea coronata* | Forsskål, 1775 | | • | | | | CICIMAR-IPN |
| | *Pterotrachea hippocampus* | Philippi, 1836 | | • | | | | CICIMAR-IPN |
| Harpidae | *Harpa crenata* | Swainson, 1822 | • | | | | | ASDM; DMNS; NMR; SBMNH; UF; USNM |
| | *Morum oniscus* | (Linnaeus, 1767) | • | | | | | DMNS |
| | *Morum tuberculosum* | (Reeve, 1842) | • | • | | | | CAS; DMNS; SBMNH |
| Tonnidae | *Malea ringens* | (Swainson, 1822) | | | | | • | ASDM; DMNS; SBMNH |
| Melongenidae | *Melongena patula* | (Broderip & Sowerby, 1829) | | | | | • | ASDM; DMNS; ELMC; IGL-UNAM; PBDB; SBMNH; UF; USNM |
| Caecidae | *Caecum liratocinctum* | Carpenter, 1857 | • | | | | | ANSP; BMNSM; DMNS; MCZ |
| Xenophoridae | *Xenophora conchyliophora* | (Born, 1780) | • | | | | • | ASDM; DMNS; NMR; YPM |
| Colubrariidae | *Colubraria lucasensis* | A. M. Strong & Hertlein, 1937 | • | | | | | ASDM |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Metula amosi* | Vanatta, 1913 | ● | | | | | ASDM; SBMNH |
| | *Aesopus chrysalloideus* | (Carpenter, 1864) | ● | | | ● | | WORMS |
| | *Anachis albonodosa* | Carpenter, 1857 | | | | | ● | DMNS |
| | *Anachis coronata* | (G. B. Sowerby I, 1832) | ● | ● | | | | ANSP; DMNS; IGL-UNAM; SBMNH; UA; UF |
| | *Anachis fayae* | Keen, 1971 | ● | | | | | SBMNH |
| | *Anachis fluctuata* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | WORMS |
| | *Anachis lentiginosa* | (Hinds, 1844) | ● | | | | | WORMS |
| | *Anachis lilliannae* | Whitney, 1978 | ● | | | | | ASDM |
| | *Anachis nigrofusca* | Carpenter, 1857 | ● | | ● | | | NMR; SBMNH |
| | *Anachis rugosa* | (G. B. Sowerby I, 1832) | ● | ● | | | | SBMNH; UF |
| | *Anachis sanfelipensis* | H. N. Lowe, 1935 | ● | | | | | NMR; SBMNH; UF |
| | *Anachis scalarina* | (G. B. Sowerby I, 1832) | | ● | ● | | ● | ANSP; ASDM; DMNS; MCZ; SBMNH; UF; USNM |
| | *Anachis varia* | (G. B. Sowerby I, 1832) | ● | | | | ● | ANSP; CAS; DMNS; MCZ; SBMNH; UA; UF |
| | *Anachis varicosa* | (Gaskoin, 1852) | ● | | | | | WORMS |
| | *Anachis vexillum* | (Reeve, 1858) | ● | ● | | | ● | NMR; SBMNH; UF |
| | *Bifurcium bicanaliferum* | (G. B. Sowerby I, 1832) | ● | | | | ● | ASDM |
| | *Columbella aureomexicana* | (Howard, 1963) | ● | | | | ● | ANSP; ASDM; CMN; DMNS; NMR; SBMNH; UF; USNM |
| | *Columbella fuscata* | G. B. Sowerby I, 1832 | ● | | | | | ANSP; ASDM; CAS; DMNS; IGL-UNAM; NRM; SBMNH; UA |
| | *Columbella haemastoma* | G. B. Sowerby I, 1833 | ● | | | | | ANSP; ASDM; DMNS; SBMNH |
| | *Columbella major* | G. B. Sowerby I, 1834 | ● | | | | | ASDM; CAS; DMNS; NRM |
| | *Columbella sonsonatensis* | (Mörch, 1860) | ● | | | | | ASDM; SBMNH |
| | *Columbella strombiformis* | Lamarck, 1822 | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; MCZ; NMR; NRM; SBMNH; UA; UF; USNM |
| | *Cosmioconcha palmeri* | (Dall, 1913) | | | | | ● | ASDM; DMNS; NHM; SBMNH; SIO |
| | *Cosmioconcha parvula* | (Dall, 1913) | ● | | | | | DMNS |
| | *Cosmioconcha pergracilis* | (Dall, 1913) | | | | ● | | ASDM; ICMyL-UNAM; NHM; USNM |
| | *Cotonopsis hirundo* | (Gaskoin, 1852) | | | | | ● | ASDM |
| | *Decipifus dictynna* | Dall, 1919 | ● | | | | | ASDM |
| | *Decipifus gracilis* | McLean, 1959 | ● | | | | | ASDM |
| | *Decipifus lyrta* | (F. Baker, Hanna & A. M. Strong, 1938) | | | | ● | | DMNS; SBMNH |
| | *Decipifus macleani* | Keen, 1971 | | | | | ● | ASDM |
| | *Glyptanachis hilli* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ANSP; MCZ; SBMNH; UA |
| | *Ithiaesopus arestus* | (Dall, 1919) | ● | | ● | ● | | WORMS |
| | *Mazatlania fulgurata* | (Philippi, 1846) | ● | | | | | ASDM; SBMNH |
| | *Mitrella baccata* | (Gaskoin, 1852) | ● | | | | | UF |
| | *Mitrella caulerpae* | Keen, 1971 | ● | | | | | ASDM |
| | *Mitrella dorma* | F. Baker, Hanna & A. M. Strong, 1938 | | | | | ● | ASDM; DMNS; SBMNH |
| | *Mitrella elegans* | (Dall, 1871) | ● | | | | | UF |
| | *Mitrella granti* | H. N. Lowe, 1935 | | | | | ● | ASDM; SBMNH |
| | *Mitrella guttata* | (G. B. Sowerby I, 1832) | ● | ● | | | ● | NMR; SBMNH; UA; USNM |
| | *Mitrella harfordi* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM |
| | *Mitrella lalage* | Pilsbry & Lowe, 1932 | ● | | | | | ASDM |
| | *Mitrella millepunctata* | (Carpenter, 1864) | | ● | | | | ASDM; DMNS |
| | *Mitrella ocellata* | (Gmelin, 1791) | | | | | ● | ASDM; SBMNH |
| | *Mitrella santabarbarensis* | (Carpenter, 1856) | ● | | | | | ASDM |
| | *Nassarina helenae* | Keen, 1971 | | | | | ● | ASDM |
| | *Parametaria dupontii* | (Kiener, 1846) | ● | | | | | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Parvanachis nigricans* | (G. B. Sowerby I, 1844) | ● | | ● | | | DMNS; SBMNH |
| | *Parvanachis pygmaea* | (G. B. Sowerby I, 1832) | ● | | | | | SBMNH; UA |
| | *Sincola dorsata* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; CAS |
| | *Sincola gibberula* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; DMNS; MCZ |
| | *Steironepion tinctum* | (Carpenter, 1864) | ● | | | | | WORMS |
| | *Strombina angularis* | (G. B. Sowerby I, 1832) | | ● | | | | ASDM; DMNS; NMR |
| | *Strombina bonita* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM |
| | *Strombina carmencita* | H. N. Lowe, 1935 | | ● | | | | ASDM |
| | *Strombina colpoica* | Dall, 1916 | ● | | | | | ASDM |
| | *Strombina maculosa* | (G. B. Sowerby I, 1832) | ● | | | | | ANSP; ASDM; DMNS; IGL-UNAM; SBMNH |
| | *Strombina pavonina* | (Hinds, 1844) | ● | | | | | ASDM |
| | *Strombina solidula* | (Reeve, 1859) | ● | | | | | ASDM; MCZ |
| | *Zafrona incerta* | (Stearns, 1892) | ● | | | | | ASDM |
| | *Zetekia gemmulosa* | (C. B. Adams, 1852) | ● | | | | | DMNS |
| Fasciolariidae | *Araiofusus colpoicus* | (Dall, 1915) | ● | | | | | SBMNH; USNM |
| | *Callifusus irregularis* | (Grabau, 1904) | ● | | | | | DMNS |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Fusinus boettgeri* | (Maltzan, 1884) | | | | | ● | ELMC |
| | *Fusinus sonorae* | Poorman, 1981 | ● | | | | | ASDM; SBMNH; USNM |
| | *Fusinus zacae* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; OMNH; SBMNH |
| | *Goniofusus dupetitthouarsi* | (Kiener, 1840) | | | | | ● | CAS; DMNS; ICMyL-UNAM; MCZ |
| | *Goniofusus spectrum* | (A. Adams & Reeve, 1848) | ● | | | | | WORMS |
| | *Hesperaptyxis ambustus* | (Gould, 1853) | ● | | | | | DMNS; ELMC; MCZ; OMNH; SBMNH; UF |
| | *Hesperaptyxis cinereus* | (Reeve, 1847) | ● | | ● | | ● | ANSP; NMR; SBMNH |
| | *Hesperaptyxis felipensis* | (H. N. Lowe, 1935) | ● | | | | | DMNS |
| | *Hesperaptyxis fredbakeri* | (H. N. Lowe, 1935) | | | | | ● | ANSP; SBMNH |
| | *Leucozonia cerata* | (W. Wood, 1828) | ● | | | | | ASDM; NMR |
| | *Opeatostoma pseudodon* | (Burrow, 1815) | | | | | ● | ASDM; DMNS |
| | *Polygona concentrica* | (Reeve, 1847) | ● | | | | | WORMS |
| | *Pustulatirus hemphilli* | (Hertlein & A. M. Strong, 1951) | ● | | | | | DMNS; SBMNH |
| | *Pustulatirus praestantior* | (Melvill, 1891) | ● | | | | | DMNS; NHM |
| | *Triplofusus princeps* | G. B. Sowerby I, 1825) | | | | | ● | CAS; DMNS; SBMNH |
| Nassariidae | *Antillophos elegans* | (Guppy, 1866) | | ● | | | ● | CAS; ELMC; UA |
| | *Antillophos veraguensis* | (Hinds, 1843) | ● | | | | | ASDM; DMNS; ELMC; ICMyL-UNAM; NMR; SBMNH; SIO |
| | *Metaphos articulatus* | (Hinds, 1844) | ● | | | | | DMNS |
| | *Metaphos gaudens* | (Hinds, 1844) | ● | | | | | WORMS |
| | *Metaphos minusculus* | (Dall, 1917) | | | ● | | | IGL-UNAM |
| | *Nassarius bailyi* | (Pilsbry & H. N. Lowe, 1932) | | | | | ● | UF |
| | *Nassarius brunneostoma* | (Stearns, 1893) | | ● | | | ● | ANSP; ASDM; NMR |
| | *Nassarius catallus* | (Dall, 1908) | ● | | | | | ASDM; DMNS; SBMNH; UF |
| | *Nassarius cerritensis* | (Arnold, 1903) | ● | | | | | ASDM; UF |
| | *Nassarius coppingeri* | (E. A. Smith, 1881) | ● | | | | | ASDM |
| | *Nassarius gallegosi* | A. M. Strong & Hertlein, 1937 | ● | | | | | ASDM; SBMNH |
| | *Nassarius guaymasensis* | (Pilsbry & H. N. Lowe, 1932) | | | | | ● | ASDM; MCZ; SBMNH |
| | *Nassarius howardae* | Chace, 1958 | ● | | | ● | | ASDM; ICMyL-UNAM; NMR; SBMNH |
| | *Nassarius insculptus* | (Carpenter, 1864) | ● | | | | | ASDM; NHM; UF |
| | *Nassarius iodes* | (Dall, 1917) | ● | ● | | | ● | ANSP; ASDM; DMNS; MCZ; NHM; NMR; SBMNH; UA; UF; UCMP |
| | *Nassarius limacinus* | (Dall, 1917) | | | | | ● | ASDM; USNM |
| | *Nassarius miser* | (Dall, 1908) | | ● | | | | NHM |
| | *Nassarius moestus* | (Hinds, 1844) | ● | ● | | | ● | ANSP; IGL-UNAM; MCZ; NMR; SBMNH; SIO; UF; UCMP; USNM |
| | *Nassarius nodicinctus* | (A. Adams, 1852) | | | | | ● | ASDM; NHM |
| | *Nassarius onchodes* | (Dall, 1917) | ● | | | | | ASDM |
| | *Nassarius perpinguis* | (Hinds, 1844) | ● | | | | | UF |
| | *Nassarius shaskyi* | McLean, 1970 | ● | | | | | ASDM; ICMyL-UNAM |
| | *Nassarius taeniolatus* | (Philippi, 1845) | ● | | | | | ASDM; MCZ; NHM; USNM |
| | *Nassarius tiarula* | (Kiener, 1841) | ● | | | | ● | ANSP; ASDM; DMNS; IGL-UNAM; MCZ; NHM; PRI; NMR; SBMNH; UA; UF; UCMP; USNM |
| | *Northia northiae* | (Gray in Griffith & Pidgeon, 1833) | ● | | | | | OMNH; UCMP |
| | *Phrontis complanata* | (Powys, 1835) | ● | | | | | ANSP |
| | *Phrontis luteostoma* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | | DMNS; ELMC; IGL-UNAM; SBMNH |
| | *Phrontis nassiformis* | (Lesson, 1842) | ● | | | | | NHM |
| | *Phrontis pagoda* | (Reeve, 1844) | ● | | | | | CAS; DMNS; MCZ; NHM; NMR; SBMNH; SIO |
| | *Phrontis versicolor* | (C. B. Adams, 1852) | ● | | | | ● | ANSP; IGL-UNAM; MCZ; NHM; NMR; SBMNH |
| | *Trajana perideris* | (Dall, 1910) | ● | | | | | ASDM; DMNS; NMR; SBMNH |
| Pisaniidae | *Bailya anomala* | (Hinds, 1844) | ● | | ● | | ● | ASDM |
| | *Cantharus rehderi* | Berry, 1962 | ● | | ● | | | ASDM |
| | *Hesperisternia jugosa* | (C. B. Adams, 1852) | | | | | ● | SBMNH |
| | *Solenosteira anomala* | (Reeve, 1847) | | ● | | | ● | DMNS; MCZ; SBMNH; UF |
| | *Solenosteira capitanea* | (Berry, 1957) | ● | ● | | | ● | DMNS; ELMC; IGL-UNAM; MCZ; SBMNH; UF |
| | *Solenosteira gatesi* | Berry, 1963 | ● | | | | ● | CAS; NMR; SBMNH |
| | *Solenosteira macrospira* | (Berry, 1957) | ● | ● | | | ● | DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NL; NMR; SBMNH; UA; UF |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence | | | | | Source |
|---|---|---|---|---|---|---|---|---|
| | | | 27 | 28 | 29 | 30 | 31 | |
| | *Solenosteira mendozana* | (Berry, 1959) | • | | | | | DMNS; SBMNH; UF |
| | *Solenosteira pallida* | (Broderip & G. B. Sowerby, 1829) | • | • | | | • | SBMNH; NRM; UA; UF |
| Clathurellidae | *Clathurella rava* | (Hinds, 1843) | • | | | | | ASDM |
| | *Etrema maryae* | (McLean & Poorman, 1971) | • | | | | | WORMS |
| | *Euclathurella acclivicallis* | McLean & Poorman, 1971 | • | | | | | ASDM |
| | *Euclathurella carissima* | (Pilsbry & H. N. Lowe, 1932) | | | | | • | ASDM; USNM |
| | *Glyphostoma candida* | (Hinds, 1843) | • | | | • | | ANSP; ASDM; SBMNH |
| | *Glyphostoma neglecta* | (Hinds, 1843) | | | | | • | ASDM; SBMNH |
| | *Glyphostoma partefilosa* | Dall, 1919 | | | | • | | USNM |
| | *Glyphostoma thalassoma* | Dall, 1908 | | | • | | | ASDM; ICMyL-UNAM; USNM |
| | *Lienardia rigida* | (Hinds, 1843) | • | | | | | ICMyL-UNAM |
| | *Nannodiella fraternalis* | (Dall, 1919) | • | | | | | ANSP; ASDM |
| | *Nannodiella nana* | (Dall, 1919) | • | | | | | ASDM |
| | *Strombinoturris crockeri* | Hertlein & A. M. Strong, 1951 | • | | | | | ANSP; ASDM; DMNS; SBMNH |
| Cochlespiridae | *Cochlespira cedonulli* | (Reeve, 1843) | • | • | | | | ANSP; ASDM; SBMNH; SIO; USNM |
| Conidae | *Californiconus californicus* | (Reeve, 1844) | | | • | | | IGL-UNAM |
| | *Conasprella emarginata* | (Reeve, 1844) | • | | | | | NMR |
| | *Conasprella lucida* | (W. Wood, 1828) | | | | | • | WORMS |
| | *Conasprella mahogani* | (Reeve, 1843) | • | | | | | DMNS; NMR |
| | *Conasprella perplexa* | (G. B. Sowerby II, 1857) | • | • | | | • | DMNS; NMR |
| | *Conasprella puncticulata* | (Hwass in Bruguière, 1792) | | | | | • | NL |
| | *Conasprella tornata* | (G. B. Sowerby I, 1833) | • | | | | | WORMS |
| | *Conasprella ximenes* | (Gray, 1839) | • | | | | • | CAS; DMNS; ELMC; IGL-UNAM; MCZ; NL; PRI; NMR; UF |
| | *Conus archon* | Broderip, 1833 | • | | | | | ASDM; DMNS; MCZ; NMR; SBMNH; UF; USNM |
| | *Conus bartschi* | Hanna & A. M. Strong, 1949 | • | | | | | ASDM; NMR; SBMNH |
| | *Conus brunneus* | W. Wood, 1828 | • | | | | | ASDM; DMNS; NL; OMNH; PRI; SBMNH; UF; USNM |
| | *Conus dalli* | Stearns, 1873 | • | • | | | | ASDM; DMNS; NMR; SBMNH; UF; USNM |
| | *Conus diadema* | G. B. Sowerby I, 1834 | • | | | | | ASDM; CAS; NL; SBMNH |
| | *Conus dispar* | G. B. Sowerby I, 1833 | • | | | | | SBMNH |
| | *Conus fergusoni* | G. B. Sowerby II, 1873 | • | • | | | | ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; NL; NMR; SBMNH |
| | *Conus gladiator* | Broderip, 1833 | • | | | | | ASDM; DMNS; NL; NMR; SBMNH; UF; USNM |
| | *Conus gradatulus* | Weinkauff, 1875 | | | | | • | ELMC |
| | *Conus gradatus* | W. Wood, 1828 | • | • | | | • | FMNH; NMR; SBMNH; UA; UF |
| | *Conus monilifer* | Broderip, 1833 | • | | | | | DMNS; SBMNH |
| | *Conus nux* | Broderip, 1833 | • | | | | | ANSP; ASDM; CAS; DMNS; IGL-UNAM; SBMNH; SIO; UF; USNM |
| | *Conus orion* | Broderip, 1833 | • | | | | | ASDM; SBMNH |
| | *Conus patricius* | Hinds, 1843 | • | • | | • | | ICMyL-UNAM; NL; UF |
| | *Conus poormani* | Berry, 1968 | • | | | | • | ASDM; NL; NMR; SBMNH |
| | *Conus princeps* | Linnaeus, 1758 | • | | | | • | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; NL; NMR; SBMNH; SIO; UF; USNM |
| | *Conus purpurascens* | G. B. Sowerby I, 1833 | • | | | | | ANSP; ASDM; CAS; DMNS; ELMC; NL; SBMNH; UF; USNM |
| | *Conus recurvus* | Broderip, 1833 | • | | | | | ASDM; DMNS; MCZ; SBMNH; UF; USNM |
| | *Conus regularis* | G. B. Sowerby I, 1833 | • | • | | | • | ASDM; CAS; DMNS; IGL-UNAM; MCZ; NHM; NL; OMNH; PBDB; PRI; NMR; SBMNH; UA; UF; USNM |
| | *Conus scalaris* | Valenciennes, 1832 | • | | | | • | DMNS; ICMyL-UNAM; NL; NMR; SBMNH |
| | *Conus scalarissimus* | da Motta, 1988 | | | | • | | NL; SBMNH |
| | *Conus sponsalis* | Hwass in Bruguière, 1792 | • | | | | | ELMC; UF |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Conus tessulatus* | Born, 1778 | ● | | | | | ASDM; SBMNH |
| | *Conus tiaratus* | G. B. Sowerby I, 1833 | ● | | | | | ASDM; SBMNH |
| | *Conus virgatus* | Reeve, 1849 | ● | | | | | ANSP; ASDM; DMNS; NCSM; NL; SBMNH; UF; USNM |
| | *Conus vittatus* | Hwass in Bruguière, 1792 | ● | | | | | ASDM; DMNS; OMNH; SBMNH |
| | *Conus xanthicus* | Dall, 1910 | | ● | | | | ASDM; SBMNH; USNM |
| Drilliidae | *Bellaspira acclivicosta* | McLean & L. Poorman, 1970 | | | | ● | ● | ASDM; SBMNH; USNM |
| | *Bellaspira melea* | Dall, 1919 | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Brephodrillia ella* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | WORMS |
| | *Calliclava aegina* | (Dall, 1919) | ● | | | | | ASDM |
| | *Calliclava albolaqueata* | (Carpenter, 1865) | ● | | | | | DMNS |
| | *Calliclava alcmene* | (Dall, 1919) | ● | | ● | | ● | ANSP; ASDM |
| | *Calliclava palmeri* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Cerodrillia cybele* | (Pilsbry & H. N. Lowe, 1932) | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Clathrodrillia berryi* | (McLean & Poorman, 1971) | ● | | | | | WORMS |
| | *Clathrodrillia salvadorica* | (Hertlein & A. M. Strong, 1951) | | ● | | | | ANSP |
| | *Drillia acapulcana* | (H. N. Lowe, 1935) | ● | ● | | | | ANSP; ASDM; MCZ |
| | *Drillia aerope* | (Dall, 1919) | ● | | | | | ASDM |
| | *Drillia cunninghamae* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM |
| | *Drillia inornata* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM |
| | *Drillia roseola* | (Hertlein & A. M. Strong, 1955) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Drillia tumida* | McLean & Poorman, 1971 | | ● | | | | ASDM |
| | *Drillia valida* | McLean & Poorman, 1971 | ● | | | | | ANSP |
| | *Fusiturricula armilda* | (Dall, 1908) | ● | | ● | | | ANSP; ASDM; SBMNH; USNM |
| | *Globidrillia ferminiana* | (Dall, 1919) | | ● | | | | ASDM |
| | *Globidrillia micans* | (Hinds, 1843) | | | | | ● | ASDM; SBMNH; USNM |
| | *Globidrillia strohbeeni* | (Hertlein & A. M. Strong, 1951) | | ● | | | | ASDM |
| | *Imaclava pilsbryi* | Bartsch, 1950 | | | | | ● | ASDM; DMNS |
| | *Imaclava unimaculata* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; DMNS; SBMNH; UF |
| | *Kylix alcyone* | (Dall, 1919) | | | ● | | | ASDM; SBMNH; USNM |
| | *Kylix hecuba* | (Dall, 1919) | | | | | ● | ASDM; SBMNH |
| | *Kylix ianthe* | (Dall, 1919) | ● | | | ● | ● | ANSP; ASDM; DMNS; MCZ; USNM |
| | *Kylix paziana* | (Dall, 1919) | ● | ● | | | | ANSP; ASDM; USNM |
| | *Kylix zacae* | Hertlein & A. M. Strong, 1951 | | ● | | | | ASDM |
| | *Splendrillia bratcherae* | McLean & Poorman, 1971 | ● | ● | | | | ANSP; ASDM; NHM; USNM |
| Mangeliidae | *Agathotoma alcippe* | (Dall, 1918) | ● | | | | | ASDM |
| | *Agathotoma klasmidia* | Shasky, 1971 | ● | | | | | ASDM |
| | *Agathotoma neglecta* | (C. B. Adams, 1852) | ● | | | | | ASDM |
| | *Agathotoma quadriseriata* | (Dall, 1919) | ● | ● | | ● | ● | ASDM |
| | *Agathotoma secalis* | Shasky, 1971 | ● | ● | | ● | ● | ASDM |
| | *Ithycythara penelope* | (Dall, 1919) | ● | | | | | ANSP; ASDM |
| | *Kurtzia aethra* | (Dall, 1919) | | | | ● | | ASDM |
| | *Kurtzia arteaga* | (Dall & Bartsch, 1910) | ● | | | | ● | ANSP; ASDM; USNM |
| | *Kurtzia granulatissima* | (Mörch, 1860) | | | | | ● | ASDM |
| | *Kurtziella antiochroa* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | ● | ANSP; ASDM |
| | *Kurtziella antipyrgus* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Kurtziella plumbea* | (Hinds, 1843) | | | | | ● | ASDM; SBMNH |
| | *Kurtzina cyrene* | (Dall, 1919) | ● | | | | | WORMS |
| | *Notocytharella phaethusa* | (Dall, 1919) | | | | ● | | USNM |
| | *Platycythara electra* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara angulosa* | McLean & Poorman, 1971 | ● | | | | | ASDM; SBMNH |
| | *Pyrgocythara danae* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara emersoni* | Shasky, 1971 | | | | | ● | ANSP; ASDM |
| | *Pyrgocythara helena* | (Dall, 1919) | ● | | | | | ASDM |
| | *Pyrgocythara melita* | (Dall, 1919) | | | | | ● | ASDM; MCZ; USNM |
| | *Pyrgocythara scammoni* | (Dall, 1919) | | | | | ● | ASDM; SBMNH; USNM |
| | *Pyrgocythara subdiaphana* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Tenaturris merita* | (Hinds, 1843) | | | | ● | ● | ASDM; SBMNH; USNM |
| | *Tenaturris verdensis* | (Dall, 1919) | ● | | | | | ANSP; ASDM |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Mitromorphidae | *Cymakra granata* | McLean & Poorman, 1971 | ● | | | | | WORMS |
| | *Mitromorpha mitriformis* | (Shasky, 1961) | ● | | | | | ASDM |
| Pseudomelatomidae | *Carinodrillia adonis* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | ● | ● | ANSP; ASDM; USNM |
| | *Carinodrillia dichroa* | Pilsbry & H. N. Lowe, 1932 | ● | ● | | ● | ● | ASDM |
| | *Carinodrillia halis* | (Dall, 1919) | ● | | | | | ANSP; ASDM; SBMNH; UF; USNM |
| | *Carinodrillia hexagona* | (Sowerby I, 1834) | ● | | | | ● | ASDM; ICMyL-UNAM; SBMNH; USNM |
| | *Carinodrillia lachrymosa* | (Sowerby I, 1834) | | | ● | | ● | ASDM |
| | *Compsodrillia albonodosa* | (Carpenter, 1857) | ● | | | | | ASDM; MCZ; SBMNH |
| | *Compsodrillia alcestis* | (Dall, 1919) | ● | | | | | ANSP; ASDM; DMNS; ICMyL-UNAM; MCZ; SBMNH; USNM |
| | *Compsodrillia bicarinata* | (Shasky, 1961) | ● | | | | | ANSP; ASDM; DMNS; UF; USNM |
| | *Compsodrillia duplicata* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; DMNS; SBMNH |
| | *Compsodrillia excentrica* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Compsodrillia haliplexa* | (Dall, 1919) | ● | | | | | ANSP; ASDM; SBMNH |
| | *Compsodrillia jaculum* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ANSP; ASDM |
| | *Compsodrillia olssoni* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Compsodrillia opaca* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Compsodrillia thestia* | (Dall, 1919) | | | | | ● | ASDM; MCZ; SBMNH; USNM |
| | *Crassispira adana* | (Bartsch, 1950) | ● | | | | | ANSP; ASDM |
| | *Crassispira bifurca* | (E. A. Smith, 1888) | | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Crassispira brujae* | Hertlein & A. M. Strong, 1951 | ● | | | | | ANSP; ASDM |
| | *Crassispira chacei* | Hertlein & A. M. Strong, 1951 | ● | ● | | | | ANSP; ASDM; SBMNH |
| | *Crassispira cortezi* | Shasky & G. B. Campbell, 1964 | ● | | | | | ASDM; SBMNH |
| | *Crassispira discors* | (Sowerby I, 1834) | | | | ● | | ASDM; SBMNH |
| | *Crassispira epicasta* | Dall, 1919 | ● | | | | | ASDM |
| | *Crassispira erigone* | Dall, 1919 | ● | | | | | ANSP; ASDM |
| | *Crassispira incrassata* | (Sowerby I, 1834) | | | | | ● | ASDM; MCZ; SBMNH; UF; USNM |
| | *Crassispira kluthi* | Jordan, 1936 | ● | | | | ● | ANSP; ASDM; CAS; MCZ; NMR; SBMNH |
| | *Crassispira maura* | (Sowerby I, 1834) | ● | ● | | | | ANSP; ASDM; DMNS; SBMNH; USNM |
| | *Crassispira nigerrima* | (Sowerby I, 1834) | ● | | | | | ANSP; ASDM; UF |
| | *Crassispira pluto* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | | ● | ANSP; ASDM; ICMyL-UNAM; MCZ; NMR; SBMNH; UF |
| | *Crassispira rudis* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira rugitecta* | (Dall, 1918) | ● | | | | | ASDM |
| | *Crassispira rustica* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira tepocana* | Dall, 1919 | ● | | | ● | | ANSP; ASDM; MCZ; USNM |
| | *Crassispira turricula* | (G. B. Sowerby I, 1834) | ● | | | | | ASDM |
| | *Crassispira unicolor* | (Sowerby I, 1834) | | | | | ● | ASDM; MCZ; SBMNH |
| | *Crassispira xanti* | Hertlein & A. M. Strong, 1951 | ● | | | | | ASDM |
| | *Hindsiclava andromeda* | (Dall, 1919) | ● | | | | | ANSP; ASDM; MCZ; SBMNH; UF |
| | *Hindsiclava militaris* | (Reeve, 1843) | ● | | | | | ANSP; ASDM; SBMNH; UF |
| | *Hormospira maculosa* | (Sowerby I, 1834) | ● | ● | | | ● | ANSP; ASDM; CAS; DMNS; MCZ; NMR; SBMNH; UA; UF |
| | *Knefastia dalli* | Bartsch, 1944 | ● | | | | ● | ANSP; ASDM; MCZ; SBMNH; UF; USNM |
| | *Knefastia funiculata* | (Kiener, 1840) | ● | | | | | ANSP; ASDM; SBMNH; USNM |
| | *Knefastia olivacea* | (Sowerby I, 1834) | ● | | | | | ASDM; NMR; SBMNH; UF |
| | *Knefastia tuberculifera* | (Broderip & G. B. Sowerby I, 1829) | ● | | | | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; NMR; SBMNH; UF |
| | *Knefastia walkeri* | Berry, 1958 | ● | | | | ● | ASDM; DMNS; SBMNH |
| | *Lioglyphostoma ericea* | (Hinds, 1843) | ● | ● | | | | ANSP; ASDM; USNM |
| | *Lioglyphostoma rectilabrum* | McLean & Poorman, 1971 | ● | | | | | ANSP; ASDM; DMNS |
| | *Maesiella hermanita* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ASDM |
| | *Maesiella maesae* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Maesiella punctatostriata* | (Carpenter, 1856) | ● | | | | | ASDM |
| | *Miraclathurella bicanalifera* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Miraclathurella mendozana* | Shasky, 1971 | | | | ● | | ICMyL-UNAM |
| | *Pilsbryspira aterrima* | (Sowerby I, 1834) | ● | | | | | ASDM |
| | *Pilsbryspira bacchia* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM; MCZ |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence | | | | | Source |
|---|---|---|---|---|---|---|---|---|
| | | | 27 | 28 | 29 | 30 | 31 | |
| | *Pilsbryspira collaris* | (Sowerby I, 1834) | ● | | | | | DMNS |
| | *Pilsbryspira loxospira* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | ICMyL-UNAM |
| | *Pilsbryspira nymphia* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | ● | ANSP; ASDM; ICMyL-UNAM; MCZ; SBMNH |
| | *Pyrgospira obeliscus* | (Reeve, 1845) | | ● | | | | ASDM; SBMNH; USNM |
| | *Strictispira ericana* | (Hertlein & A. M. Strong, 1951) | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Thelecythara dushanae* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| | *Tiariturris spectabilis* | Berry, 1958 | ● | ● | | | | ANSP; SBMNH |
| | *Zonulispira grandimaculata* | C. B. Adams, 1852 | | | | | ● | ASDM; MCZ |
| Raphitomidae | *Daphnella allemani* | (Bartsch, 1931) | ● | | | | | ASDM |
| | *Daphnella bartschi* | Dall, 1919 | ● | | | | | ASDM |
| | *Daphnella levicallis* | Poorman, 1983 | ● | | | | | ANSP; ASDM |
| | *Daphnella mazatlanica* | Pilsbry & H. N. Lowe, 1932 | | | | | ● | ASDM; ICMyL-UNAM; SBMNH |
| | *Daphnella retusa* | McLean & Poorman, 1971 | ● | | | | | ANSP; ASDM |
| | *Microdaphne trichodes* | (Dall, 1919) | ● | | | | ● | ANSP; ASDM |
| | *Philbertia doris* | Dall, 1919 | | | | | ● | ASDM |
| | *Philbertia shaskyi* | McLean & Poorman, 1971 | ● | | | | | ASDM |
| Terebridae | *Clathroterebra iola* | (Pilsbry & H. N. Lowe, 1932) | ● | | | | | WORMS |
| | *Bathyterebra benthalis* | (Dall, 1889) | ● | | | | | WORMS |
| | *Euterebra puncturosa* | (Berry, 1959) | ● | | | ● | | NHM |
| | *Hastula albula* | (Menke, 1843) | ● | | | | | ASDM |
| | *Oxymeris strigata* | (G. B. Sowerby I, 1825) | ● | | | | ● | DMNS |
| | *Pristiterebra glauca* | (Hinds, 1844) | ● | ● | | | ● | DMNS; MCZ |
| | *Pristiterebra petiveriana* | (Deshayes, 1857) | ● | | | ● | ● | ANSP |
| | *Pristiterebra tuberculosa* | (Hinds, 1844) | ● | ● | ● | | ● | WORMS |
| | *Terebra argosyia* | Olsson, 1971 | ● | | | | | SBMNH |
| | *Terebra armillata* | Hinds, 1844 | ● | ● | ● | ● | ● | ASDM; CAS; MCZ; NHM; NMR; SBMNH; UA; UF |
| | *Terebra berryi* | G. B. Campbell, 1961 | ● | | | ● | ● | ASDM; MCZ; SBMNH |
| | *Terebra bridgesi* | Dall, 1908 | ● | | | ● | ● | ASDM; MCZ; SBMNH; USNM |
| | *Terebra churea* | G. B. Campbell, 1964 | ● | | | | ● | ASDM; MCZ; SBMNH |
| | *Terebra corintoensis* | Pilsbry & H. N. Lowe, 1932 | ● | | ● | ● | | ASDM; SBMNH |
| | *Terebra crenifera* | Deshayes, 1859 | ● | | ● | ● | ● | ASDM; MCZ; NHM; SBMNH |
| | *Terebra elata* | Hinds, 1844 | ● | ● | ● | ● | ● | SBMNH; UF |
| | *Terebra formosa* | Deshayes, 1857 | ● | | ● | | | ASDM; SBMNH |
| | *Terebra intertincta* | Hinds, 1844 | ● | | | | | ASDM; NHM; SBMNH |
| | *Terebra larvaeformis* | Hinds, 1844 | ● | ● | ● | | ● | ASDM; CAS; ICMyL-UNAM; SBMNH; UA; UF |
| | *Terebra lucana* | Dall, 1908 | ● | | | | | ASDM; NHM; SBMNH |
| | *Terebra ornata* | Gray, 1834 | ● | ● | | ● | | ASDM; MCZ; SBMNH |
| | *Terebra panamensis* | Dall, 1908 | ● | | | | | ASDM; DMNS; NHM; SBMNH |
| | *Terebra polypenus* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; SBMNH |
| | *Terebra robusta* | Hinds, 1844 | ● | ● | | | ● | ASDM; DMNS; NHM; SBMNH; SIO; UA; UF |
| | *Terebra roperi* | Pilsbry & H. N. Lowe, 1932 | | ● | ● | ● | ● | ASDM; CAS; DMNS; MCZ; SBMNH |
| | *Terebra shyana* | Bratcher & R. D. Burch, 1970 | ● | | | | | ASDM; SBMNH |
| | *Terebra specillata* | Hinds, 1844 | ● | ● | ● | | ● | ASDM; CAS; MCZ; NHM; SBMNH |
| | *Terebra variegata* | Gray, 1834 | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; IGL-UNAM; MCZ; NHM; SBMNH; UF |
| Turridae | *Gemmula hindsiana* | Berry, 1958 | ● | | | | | ASDM |
| | *Polystira nobilis* | (Hinds, 1843) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| | *Polystira oxytropis* | (G. B. Sowerby I, 1834) | ● | | | ● | | ANSP; ASDM; DMNS; MCZ; NL; SBMNH; UF; USNM |
| | *Polystira picta* | (Reeve, 1843) | ● | | | | | ANSP; ASDM; ICMyL-UNAM; NMR; SBMNH; UF; USNM |
| Mitridae | *Atrimitra idae* | (Melvill, 1893) | ● | | | | | WORMS |
| | *Isara swainsonii* | (Broderip, 1836) | ● | | | | ● | SBMNH |
| | *Mitra inca* | d'Orbigny, 1841 | ● | | | | | ASDM |
| | *Mitra muricata* | (Broderip, 1836) | | | | | ● | WORMS |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Neotiara crenata* | (Broderip, 1836) | ● | | | | | SBMNH |
| | *Neotiara fultoni* | (E. A. Smith, 1892) | ● | | | | | SBMNH |
| | *Neotiara lens* | (W. Wood, 1828) | ● | | | | | DMNS; SBMNH |
| | *Neotiara sphoni* | (Shasky & G. B. Campbell, 1964) | ● | | | | | SBMNH |
| | *Strigatella tristis* | (Broderip, 1836) | ● | | | | ● | NHM; SBMNH |
| | *Subcancilla attenuata* | (Broderip, 1836) | ● | ● | | | ● | ASDM; SBMNH |
| | *Subcancilla belcheri* | (Hinds, 1843) | ● | | | | ● | DMNS; SBMNH |
| | *Subcancilla calodinota* | (S. S. Berry, 1960) | ● | | | | | ASDM; DMNS; MCZ |
| | *Subcancilla directa* | (S. S. Berry, 1960) | ● | | | | | WORMS |
| | *Subcancilla erythrogramma* | (Tomlin, 1931) | ● | ● | | ● | | ASDM; DMNS; MCZ; SBMNH; SIO |
| | *Subcancilla gigantea* | (Reeve, 1844) | ● | ● | | | | ASDM; DMNS; SBMNH |
| | *Subcancilla hindsii* | (Reeve, 1844) | ● | | ● | | | ASDM; MCZ; NMR; SIO |
| | *Subcancilla phorminx* | (S. S. Berry, 1969) | ● | ● | | | | ASDM; SBMNH |
| | *Subcancilla sulcata* | (Swainson, 1825) | ● | ● | | ● | | ASDM; ICMyL-UNAM; MCZ; SBMNH |
| Muricidae | *Acanthais brevidentata* | (W. Wood, 1828) | ● | | | | | WORMS |
| | *Acanthais triangularis* | (Blainville, 1832) | ● | ● | | | | WORMS |
| | *Acanthotrophon carduus* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |
| | *Acanthotrophon sorenseni* | (Hertlein & A. M. Strong, 1951) | ● | ● | ● | ● | ● | ASDM; SBMNH |
| | *Aspella pollux* | Radwin & D'Attilio, 1976 | ● | | | | | ASDM |
| | *Aspella pyramidalis* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |
| | *Attiliosa nodulosa* | (A. Adams, 1855) | ● | | ● | | ● | ASDM; CAS; USNM |
| | *Austrotrophon cerrosensis* | (Dall, 1891) | ● | ● | | | | ASDM; MCZ; SBMNH |
| | *Babelomurex hindsi* | (Carpenter, 1857) | ● | | | | ● | WORMS |
| | *Bizetiella carmen* | (H. N. Lowe, 1935) | ● | ● | ● | ● | ● | ASDM; SBMNH |
| | *Calcitrapessa leeana* | (Dall, 1890) | ● | | | | | DMNS |
| | *Claremontiella nodulosa* | (C. B. Adams, 1845) | ● | ● | ● | ● | ● | WORMS |
| | *Coralliophila macleani* | Shasky, 1970 | ● | | | | ● | ANSP; ASDM; SBMNH |
| | *Coralliophila monodonta* | (Blainville, 1832) | ● | | | | | WORMS |
| | *Coralliophila orcuttiana* | Dall, 1919 | ● | | | | | ASDM; SBMNH |
| | *Coralliophila parva* | (E. A. Smith, 1877) | ● | | | | | ASDM; SBMNH; USNM |
| | *Dermomurex bakeri* | (Hertlein & A. M. Strong, 1951) | ● | | | | ● | WORMS |
| | *Dermomurex cunninghamae* | (Berry, 1964) | ● | | | | | ASDM; SBMNH |
| | *Dermomurex indentatus* | (Carpenter, 1857) | ● | | | | | ASDM |
| | *Eupleura muriciformis* | (Broderip, 1833) | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; OMNH; NMR; SBMNH; UA; UF; UCMP; USNM |
| | *Eupleura triquetra* | (Reeve, 1844) | ● | | | | ● | ANSP; ASDM; ELMC; SBMNH |
| | *Eupleura vokesorum* | Herbert, 2005 | ● | | | | | SBMNH |
| | *Favartia lappa* | (Broderip, 1833) | ● | | | | | ANSP; SBMNH |
| | *Favartia laurae* | (Vokes, 1970) | ● | | | | | WORMS |
| | *Favartia perita* | (Hinds, 1844) | ● | | | | | SBMNH |
| | *Hexaplex ambiguus* | (Reeve, 1845) | ● | | | | | ASDM; SBMNH |
| | *Hexaplex brassica* | Hexaplex brassica (Lamarck, 1822) | ● | | | | | ASDM; CAS; DMNS; ICMyL-UNAM; SBMNH |
| | *Hexaplex erythrostomus* | (Swainson, 1831) | ● | | | | ● | ANSP; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; OMNH; PBDB; SBMNH; SIO; UF; USNM |
| | *Hexaplex nigritus* | (Philippi, 1845) | | | | | ● | ANSP; ASDM; CAS; DMNS; ELMC; IGL-UNAM; MCZ; PBDB; SBMNH |
| | *Hexaplex princeps* | (Broderip, 1833) | ● | | | ● | | ASDM; CAS; DMNS; NMR; UF |
| | *Hexaplex radix* | (Gmelin, 1791) | | | | | ● | ELMC; UF |
| | *Hexaplex regius* | (Swainson, 1821) | ● | | | | | WORMS |
| | *Mexacanthina angelica* | (Oldroyd, 1918) | | ● | ● | | ● | ANSP; CAS; ELMC; IGL-UNAM; MCZ; NHM; OMNH; SBMNH; UA |
| | *Mexacanthina lugubris* | (G. B. Sowerby I, 1822) | ● | ● | | | | DMNS; IGL-UNAM; NMR |
| | *Murexsul armatus* | (A. Adams, 1854) | ● | | | | | CAS; DMNS; SBMNH |
| | *Murexsul mildredae* | (Poorman, 1980) | ● | | | | | SBMNH |
| | *Muricopsis zeteki* | Hertlein & A. M. Strong, 1951 | | | | | ● | ASDM; CAS; DMNS; SBMNH |
| | *Neorapana muricata* | (Broderip, 1832) | ● | | ● | | | ASDM; SBMNH; UA |
| | *Neorapana tuberculata* | (Sowerby I, 1835) | | ● | | | ● | CAS; DMNS; ELMC; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Pascula rufonotata* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Phyllocoma scalariformis* | (Broderip, 1833) | ● | | | | | ASDM; SBMNH |

Table 3. Continued.

| Family | Specie | Autor, year | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Phyllonotus peratus* | Keen, 1960 | ● | | | | | WORMS |
| | *Plicopurpura columellaris* | (Lamarck, 1816) | ● | ● | | | | ASDM; DMNS; NMR; UF |
| | *Plicopurpura patula* | (Linnaeus, 1758) | ● | | | | | ASDM |
| | *Pteropurpura centrifuga* | (Hinds, 1844) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; OMNH; NMR; SBMNH; UF; USNM |
| | *Pteropurpura erinaceoides* | (Valenciennes, 1832) | ● | | | | ● | ASDM; DMNS; ICMyL-UNAM; MCZ; NHM; NL; NMR; SBMNH; UF |
| | *Purpurellus macleani* | (Emerson & D'Attilio, 1969) | ● | | | | | SBMNH |
| | *Purpurellus pinniger* | (Broderip, 1833) | ● | | | | | ANSP; DMNS; SBMNH |
| | *Pygmaepterys poormani* | (Radwin & D'Attilio, 1976) | ● | | | | | ASDM; SBMNH |
| | *Roperia poulsoni* | (Carpenter, 1864) | ● | | | | | NMR |
| | *Stramonita biserialis* | (Blainville, 1832) | ● | ● | | | ● | CAS; DMNS; ICMyL-UNAM; MCZ; NHM; NMR; SBMNH; UA |
| | *Stramonita haemastoma* | (Linnaeus, 1767) | ● | | ● | | | ASDM; PBDB; NMR |
| | *Thaisella kiosquiformis* | (Duclos, 1832) | ● | | | | | SBMNH |
| | *Trachypollia lugubris* | (C. B. Adams, 1852) | ● | | ● | | | AM; ASDM; UA |
| | *Tripterotyphis lowei* | (Pilsbry, 1931) | ● | | | | | ASDM; SBMNH |
| | *Typhisala clarki* | (Keen & G. B. Campbell, 1964) | | | | | ● | ASDM; MCZ; SBMNH |
| | *Typhisala grandis* | (A. Adams, 1855) | ● | | | | | ASDM; DMNS |
| | *Typhisopsis coronatus* | (Broderip, 1833) | ● | ● | | | ● | ANSP; ASDM; MCZ; SBMNH; USNM |
| | *Vasula speciosa* | (Valenciennes, 1832) | | | | | ● | CAS; DMNS; NHM; NL; SBMNH |
| | *Vitularia salebrosa* | (P. P. King, 1832) | ● | | | | ● | ASDM; CAS; DMNS; SBMNH |
| | *Vokesimurex elenensis* | (Dall, 1909) | ● | | ● | | ● | ANSP; DMNS; ELMC; MCZ |
| | *Vokesimurex lividus* | (Carpenter, 1857) | | | | | ● | DMNS |
| | *Vokesimurex recurvirostris* | (Broderip, 1833) | ● | | | | | DMNS; ELMC; MCZ |
| | *Vokesimurex ruthae* | (Vokes, 1988) | | | ● | | | ICMyL-UNAM; NRM |
| | *Vokesimurex tricoronis* | (Berry, 1960) | ● | | | | ● | DMNS; ICMyL-UNAM; SBMNH |
| | *Zacatrophon skoglundae* | Houart, 2010 | ● | | | | | SBMNH |
| Costellariidae | *Mitromica gratiosa* | (Reeve, 1845) | ● | | | | | SBMNH |
| | *Mitromica solitaria* | (C. B. Adams, 1852) | ● | | | | | SBMNH |
| Pseudolividae | *Triumphis distorta* | (Wood, 1828) | ● | | | | | NMR |
| Turbinellidae | *Vasum caestus* | (Broderip, 1833) | ● | | | | | ASDM; CAS; DMNS; SBMNH; UF |
| Cancellariidae | *Agatrix strongi* | (Shasky, 1961) | ● | ● | ● | ● | ● | ASDM |
| | *Aphera tessellata* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | ASDM |
| | *Axelella campbelli* | (Shasky, 1961) | ● | ● | | ● | ● | ASDM |
| | *Axelella funiculata* | (Hinds, 1843) | ● | | | | ● | WORMS |
| | *Bivetiella pulchra* | (G. B. Sowerby I, 1832) | ● | | | | | NL |
| | *Euclia balboae* | (Pilsbry, 1931) | ● | | ● | ● | ● | WORMS |
| | *Euclia cassidiformis* | (G. B. Sowerby I, 1832) | ● | ● | ● | ● | ● | WORMS |
| | *Cancellaria cooperii* | Gabb, 1865 | ● | | | | ● | WORMS |
| | *Cancellaria corrosa* | Reeve, 1856 | ● | | | | | USNM |
| | *Cancellaria gemmulata* | G. B. Sowerby I, 1832 | | | ● | ● | ● | ASDM; SBMNH |
| | *Cancellaria indentata* | G. B. Sowerby I, 1832 | | | | | ● | ASDM; SBMNH |
| | *Cancellaria jayana* | Keen, 1958 | ● | | | ● | ● | ASDM; SBMNH |
| | *Cancellaria obesa* | G. B. Sowerby I, 1832 | ● | ● | ● | ● | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Cancellaria ovata* | G. B. Sowerby I, 1832 | ● | | ● | ● | ● | SBMNH; UF |
| | *Cancellaria urceolata* | Hinds, 1843 | ● | | | | | ANSP; ASDM; DMNS; MCZ; NL; SBMNH |
| | *Cancellaria ventricosa* | Hinds, 1843 | ● | | | | | ASDM; SBMNH |
| | *Massyla corrugata* | (Hinds, 1843) | ● | | | ● | | WORMS |
| | *Massyla cumingiana* | (Petit de la Saussaye, 1844) | ● | ● | | ● | | WORMS |
| | *Merica oblonga* | (G. B. Sowerby I, 1825) | ● | | | | | WORMS |
| | *Narona clavatula* | (G. B. Sowerby I, 1832) | ● | | | | | ASDM |
| | *Narona exopleura* | (Dall, 1908) | ● | | | | | ASDM |
| | *Sveltia centrota* | (Dall, 1896) | ● | | | | | ASDM |
| | *Trigonostoma bullatum* | (G. B. Sowerby I, 1832) | ● | ● | | | ● | ASDM; ICMyL-UNAM; SBMNH |
| | *Trigonostoma elegantulum* | M. Smith, 1947 | ● | | | | | ASDM |
| | *Trigonostoma goniostoma* | (G. B. Sowerby I, 1832) | ● | ● | | ● | ● | ANSP; ASDM; CAS; MCZ; SBMNH; UA |
| | *Tritonoharpa siphonata* | (Reeve, 1844) | ● | | | | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Tritonoharpa vexillata* | Dall, 1908 | ● | | | | | ASDM |
| Marginellidae | *Granulina margaritula* | (Carpenter, 1857) | ● | | | | | ASDM |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| | *Volvarina taeniolata* | Mörch, 1860 | ● | | | | ● | ASDM; ICMyL-UNAM; MCZ; SBMNH |
| Volutidae | *Enaeta barnesii* | (Gray, 1825) | ● | | | | | ASDM |
| | *Enaeta cumingii* | (Broderip, 1832) | ● | ● | | | | ASDM; CAS; NMR; SBMNH; UF; USNM |
| Cerithiidae | *Alabina excurvata* | (Carpenter, 1857) | | | | | ● | DMNS |
| | *Cerithium adustum* | Kiener, 1841 | ● | | | | ● | ASDM; ELMC; SBMNH; UF; USNM |
| | *Cerithium columna* | G. B. Sowerby I, 1834 | ● | | | | | ANSP |
| | *Cerithium gemmatum* | Hinds, 1844 | ● | | | | | WORMS |
| | *Cerithium maculosum* | Kiener, 1841 | ● | ● | ● | ● | | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; MCZ; NHM; NMR; SBMNH; UA; UF |
| | *Cerithium menkei* | Carpenter, 1857 | ● | ● | ● | | ● | ASDM; SBMNH |
| | *Cerithium muscarum* | Say, 1832 | ● | | | ● | | NCSM; PRI; SBMNH; UF |
| | *Cerithium stercusmuscarum* | Valenciennes, 1832 | ● | | | | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Cerithium uncinatum* | (Gmelin, 1791) | ● | | | | | ASDM; PRI; SBMNH |
| | *Liocerithium judithae* | Keen, 1971 | ● | ● | | | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| Cerithiopsidae | *Seila pulmoensis* | DuShane & Draper, 1975 | | | ● | | | UF |
| Modulidae | *Modulus cerodes* | A. Adams, 1851 | ● | | | | | ASDM; SBMNH |
| | *Modulus disculus* | (Philippi, 1846) | ● | | ● | | | ANSP; ASDM; MCZ; SBMNH |
| | *Trochomodulus catenulatus* | (Philippi, 1849) | ● | | | | | DMNS; NMR |
| Potamididae | *Cerithideopsis californica* | (Haldeman, 1840) | ● | ● | | ● | ● | ANSP; CAS; DMNS; ELMC; ICMyL-UNAM; IGL-UNAM; MCZ; NCSM; NHM; PRI; NMR; SBMNH; UA; UF |
| | *Cerithideopsis montagnei* | (d'Orbigny, 1841) | ● | | | ● | | NMR |
| | *Pirenella incisa* | (Hombron & Jacquinot, 1848) | | | | | ● | WORMS |
| Provannidae | *Provanna goniata* | Warén & Bouchet, 1986 | ● | | | | | ASDM; USNM |
| | *Provanna laevis* | Warén & Ponder, 1991 | ● | | | | | ASDM; USNM |
| | *Provanna muricata* | Warén & Bouchet, 1986 | ● | | | | | ASDM |
| Turritellidae | *Turritella banksii* | Gray in Reeve, 1849 | ● | | | | ● | WORMS |
| | *Turritella clarionensis* | Hertlein & A. M. Strong, 1951 | ● | | | | | ASDM; SBMNH |
| | *Turritella gonostoma* | Valenciennes, 1832 | ● | ● | ● | | ● | ANSP; ASDM; CAS; DMNS; ELMC; ICMyL-UNAM; MCZ; NHM; PBDB; NMR; NRM; SBMNH; UA; USNM |
| | *Turritella lentiginosa* | Reeve, 1849 | ● | | | | | ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; NHM; SBMNH |
| | *Turritella leucostoma* | Valenciennes, 1832 | ● | ● | ● | | ● | ASDM; CAS; DMNS; ELMC; MCZ; NHM; NL; NMR; SBMNH; SIO; UA; UF; USNM |
| | *Turritella nodulosa* | P. P. King, 1832 | ● | ● | | | | ASDM; ICMyL-UNAM; NHM; NMR; SBMNH |
| | *Turritella radula* | Kiener, 1843 | ● | | | | | DMNS; MCZ; NHM; NMR |
| | *Turritella rubescens* | Reeve, 1849 | ● | | | | | UF |
| | *Turritella willetti* | McLean, 1970 | ● | | | | | ASDM |
| | *Vermicularia frisbeyae* | McLean, 1970 | ● | ● | | | | ASDM; SBMNH |
| | *Vermicularia pellucida* | (Broderip & G. B. Sowerby I, 1829) | ● | ● | | | ● | ANSP; ASDM; MCZ; SBMNH; UF |
| Architectonicidae | *Architectonica karsteni* | Rutsch, 1934 | ● | | | | | UF |
| | *Architectonica nobilis* | Röding, 1798 | | | | ● | | ASDM; IGL-UNAM; NMR; SBMNH; SIO |
| | *Discotectonica placentalis* | (Hinds, 1844) | ● | | | | | ASDM; DMNS |
| | *Heliacus areola* | (Gmelin, 1791) | ● | | | | | AM; ANSP; ASDM |
| | *Heliacus areola* | (Valenciennes, 1832) | ● | | | | | AM; ANSP; ASDM |
| | *Heliacus mazatlanicus* | Pilsbry & H. N. Lowe, 1932 | ● | | | | ● | ASDM; MCZ |
| | *Heliacus planispira* | Pilsbry & H. N. Lowe, 1932 | ● | | | | | ASDM; MCZ |
| | *Pseudotorinia architae* | (O. G. Costa, 1841) | | | | | ● | ASDM; MCZ |
| Tornatinidae | *Acteocina carinata* | (Carpenter, 1857) | | | | | ● | DMNS; SBMNH |
| Amathinidae | *Iselica kochi* | A. M. Strong & Hertlein, 1939 | | | | | ● | ASDM |
| | *Iselica ovoidea* | (Gould, 1853) | | | | | ● | ASDM |
| Siphonariidae | *Siphonaria brannani* | Stearns, 1873 | ● | | | | | DMNS |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence | | | | | Source |
|---|---|---|---|---|---|---|---|---|
| | | | 27 | 28 | 29 | 30 | 31 | |
| | *Siphonaria gigas* | G. B. Sowerby I, 1825 | ● | | | | | ELMC |
| | *Siphonaria maura* | G. B. Sowerby I, 1835 | ● | | | | | NMR; SBMNH |
| | *Williamia peltoides* | (Carpenter, 1864) | | | | | ● | DMNS; UF |
| Retusidae | *Sulcoretusa paziana* | (Dall, 1919) | ● | | | | | DMNS; SBMNH |
| Neritidae | *Nerita funiculata* | Menke, 1850 | | ● | | | ● | ANSP; ASDM; CAS; ELMC; MCZ; NHM; PBDB; NMR; SBMNH; UA; UF; USNM |
| | *Nerita scabricosta* | Lamarck, 1822 | ● | ● | ● | | | ANSP; ASDM; CAS; DMNS; ELMC; NMR; SBMNH; SIO; UA; UF; USNM |
| | *Nerita undata* | Linnaeus, 1758 | ● | | ● | | ● | ANSP; USNM |
| | *Vitta luteofasciata* | (Miller, 1879) | | ● | | | ● | WORMS |
| Eoacmaeidae | *Eoacmaea semirubida* | (Dall, 1914) | ● | | | | | DMNS; SBMNH |
| Lottiidae | *Lottia acutapex* | (S. S. Berry, 1960) | | ● | | | ● | ASDM; DMNS; SBMNH; UA |
| | *Lottia atrata* | (Carpenter, 1857) | ● | ● | | | ● | ASDM; NMR; SBMNH; UA |
| | *Lottia dalliana* | (Pilsbry, 1891) | ● | | | | ● | ASDM; ELMC; IGL-UNAM; NMR; SBMNH |
| | *Lottia mesoleuca* | (Menke, 1851) | ● | ● | | | ● | ANSP; ASDM; SBMNH |
| | *Lottia mitella* | (Menke, 1847) | ● | | | | | DMNS |
| | *Lottia pelta* | (Rathke, 1833) | ● | | ● | | | WORMS |
| | *Lottia persona* | (Rathke, 1833) | ● | ● | ● | ● | ● | WORMS |
| | *Lottia stanfordiana* | (Berry, 1957) | | ● | | | ● | ANSP; ASDM; DMNS; ELMC; IGL-UNAM; MCZ; NMR; SBMNH; UA |
| | *Lottia strigatella* | (Carpenter, 1864) | ● | ● | ● | ● | | ASDM; NMR; SBMNH; UA |
| | *Lottia strongiana* | (Hertlein, 1958) | | ● | | | ● | ASDM; SBMNH; UA |
| | *Lottia turveri* | (Hertlein & A. M. Strong, 1951) | ● | ● | | | | ASDM; ICMyL-UNAM; SBMNH; UA |
| | *Tectura ubiquita* | (Lindberg & McLean, 1981) | ● | | | ● | | ASDM; SBMNH |
| Fissurellidae | *Diodora alta* | (C. B. Adams, 1852) | | | | | ● | ASDM; DMNS; MCZ; NHM; SBMNH; UF |
| | *Diodora digueti* | (Mabille, 1895) | ● | | | | | ASDM; DMNS; NHM; SBMNH; UF |
| | *Diodora inaequalis* | (G. B. Sowerby I, 1835) | ● | ● | | | ● | ANSP; ASDM; DMNS; NHM; NHDM; PBDB; SBMNH; UA; UF |
| | *Diodora pusilla* | Berry, 1959 | | | | | ● | ASDM; MCZ; SBMNH; UF |
| | *Diodora saturnalis* | (Carpenter, 1864) | | | | | ● | ASDM; MCZ; NHM; NHDM; SBMNH; UF |
| | *Fissurella gemmata* | Menke, 1847 | ● | | | | | NMR |
| | *Fissurella microtrema* | G. B. Sowerby, 1835 | ● | | | | | ASDM; DMNS; NMR; SBMNH |
| | *Fissurella rubropicta* | Pilsbry, 1890 | | ● | | | | ASDM; SBMNH; UF |
| | *Fissurella virescens* | G. B. Sowerby, 1835 | | ● | | | | SBMNH; UA |
| | *Fissurella volcano* | Reeve, 1849 | | | ● | | | IGL-UNAM; SBMNH |
| | *Fissurellidea bimaculata* | Dall, 1871 | | | | | ● | ASDM |
| | *Leurolepas roseola* | McLean, 1970 | ● | | | | | ASDM; SBMNH |
| | *Lucapinella callomarginata* | (Dall, 1871) | | | ● | | | IGL-UNAM; SBMNH |
| | *Lucapinella milleri* | Berry, 1959 | | | | | ● | ASDM; NHM; SBMNH |
| | *Montfortia hermosa* | (H. N. Lowe, 1935) | ● | | | | | SBMNH |
| | *Rimula mexicana* | S. S. Berry, 1969 | | ● | | | | ASDM |
| | *Stromboli beebei* | (Hertlein & A. M. Strong, 1951) | ● | ● | | ● | | ASDM; ICMyL-UNAM; SBMNH |
| Areneidae | *Arene fricki* | (Crosse, 1865) | | | ● | | | NHM; SBMNH |
| | *Arene socorroensis* | (A. M. Strong, 1934) | | | ● | | | ICMyL-UNAM |
| Calliostomatidae | *Calliostoma bonita* | A. M. Strong, Hanna & Hertlein, 1933 | ● | | | ● | ● | ASDM; DMNS; MCZ; SBMNH |
| | *Calliostoma eximium* | (Reeve, 1843) | | ● | | | | ASDM; DMNS; NHM; NMR; SBMNH |
| | *Calliostoma gordanum* | McLean, 1970 | ● | | | | | ICMyL-UNAM |
| | *Calliostoma leanum* | (C. B. Adams, 1852) | ● | | | | ● | ASDM; MCZ; NHM; SBMNH; UA |
| | *Calliostoma marshalli* | H. N. Lowe, 1935 | ● | ● | | | ● | ASDM; IGL-UNAM; MCZ; SBMNH |
| | *Calliostoma mcleani* | Shasky & G. B. Campbell, 1964 | ● | ● | | | | ASDM; NHM; SBMNH |
| | *Calliostoma nepheloide* | Dall, 1913 | ● | ● | | | ● | ASDM |
| | *Calliostoma palmeri* | Dall, 1871 | | | | | ● | ANSP; ASDM; CAS; ICMyL-UNAM; MCZ; NHM; SBMNH; UF; USNM |
| | *Calliostoma rema* | A. M. Strong, Hanna & Hertlein, 1933 | ● | | | | ● | ASDM; SBMNH |
| Phasianellidae | *Eulithidium cyclostoma* | (Carpenter, 1864) | ● | | | | | ASDM |
| | *Eulithidium substriatum* | (Carpenter, 1864) | | ● | | | | NHM |
| | *Eulithidium variegatum* | (Carpenter, 1864) | | | ● | ● | | DMNS; NHM |

Table 3. Continued.

| Family | Species | Author | Latitudinal presence 27 | 28 | 29 | 30 | 31 | Source |
|---|---|---|---|---|---|---|---|---|
| Skeneidae | *Haplocochlias concepcionensis* | (H. N. Lowe, 1933) | ● | | | | | WORMS |
| | *Haplocochlias erici* | (A. M. Strong & Hertlein, 1939) | ● | | | | | WORMS |
| | *Haplocochlias lucasensis* | (A. M. Strong, 1934) | ● | | | | | ASDM |
| Colloniidae | *Homalopoma clippertonense* | (Hertlein & Emerson, 1953) | ● | | | | | ASDM |
| Eucyclidae | *Parviturbo stearnsii* | (Dall, 1918) | | | | | ● | ASDM |
| | *Turcica admirabilis* | Berry, 1969 | ● | ● | | | | ASDM; DMNS; ICMyL-UNAM; SBMNH |
| Solariellidae | *Solariella elegantula* | Dall, 1925 | ● | | | | | ASDM |
| | *Solariella triplostephanus* | Dall, 1910 | ● | ● | | | | ASDM; SBMNH |
| Tegulidae | *Tegula corteziana* | McLean, 1970 | ● | | | ● | ● | ASDM; DMNS; NHM; NMR; SBMNH; UF |
| | *Tegula eiseni* | Jordan, 1936 | | | ● | | | NHM |
| | *Tegula felipensis* | McLean, 1970 | ● | | | ● | ● | ANSP; ASDM; MCZ; SBMNH |
| | *Tegula funebralis* | (A. Adams, 1855) | | | | | ● | UF |
| | *Tegula globulus* | (Carpenter, 1857) | ● | ● | ● | | ● | ANSP; NMR; SBMNH; SIO; UA; UF |
| | *Tegula ligulata* | (Menke, 1850) | ● | | | | ● | ASDM; SBMNH; UF |
| | *Tegula mariana* | (Dall, 1919) | ● | ● | ● | ● | ● | ANSP; ASDM; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Tegula pellisserpentis* | (Wood, 1828) | | | | | ● | ELMC |
| | *Tegula rubroflammulata* | (Koch in Philippi, 1843) | ● | ● | ● | | ● | ANSP; ASDM; ICMyL-UNAM; SBMNH |
| | *Tegula rugosa* | (A. Adams, 1853) | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; NHM; NMR; SBMNH; UA; UF; USNM |
| | *Turbo fluctuosus* | W. Wood, 1828 | ● | ● | ● | ● | ● | ANSP; ASDM; CAS; DMNS; ICMyL-UNAM; IGL-UNAM; MCZ; NHM; OMNH; PBDB; NMR; SBMNH; UA; UF |
| | *Turbo saxosus* | W. Wood, 1828 | ● | | | | | ELMC; ICMyL-UNAM; IGL-UNAM; USNM |
| | *Turbo squamiger* | Reeve, 1843 | ● | | | | | ASDM |
| | *Uvanilla babelis* | (P. Fischer, 1874) | ● | | | | | WORMS |
| | *Uvanilla buschii* | (Philippi, 1844) | ● | ● | ● | | ● | WORMS |
| | *Uvanilla unguis* | (W. Wood, 1828) | ● | ● | | ● | | ANSP; CAS; DMNS; NMR |
| Total | *552* | 81 | 83 | 268 | | | | |

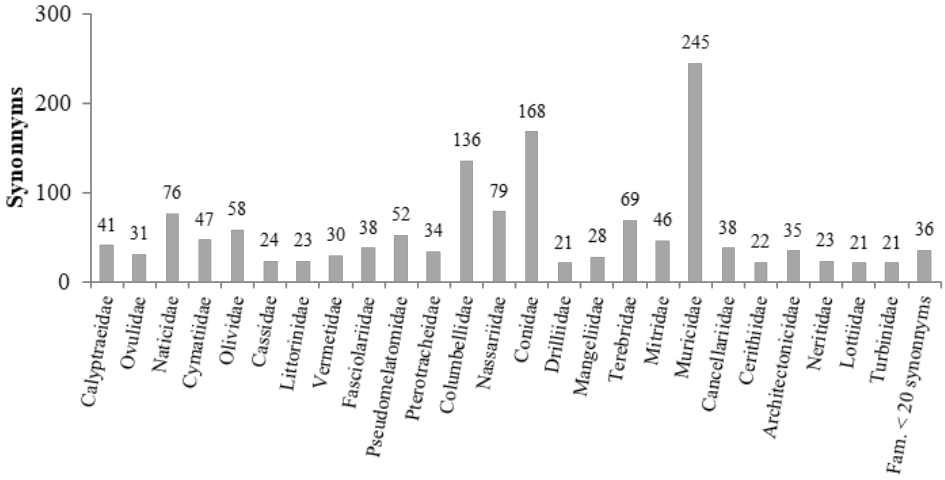


Figure 5. Families with the highest number of registered synonyms from the central and northern coast of Sonora. The last bar represents 36 families that showed less than 20 synonyms and the x-axis follows a systematic arrangement according to WORMS (2022).

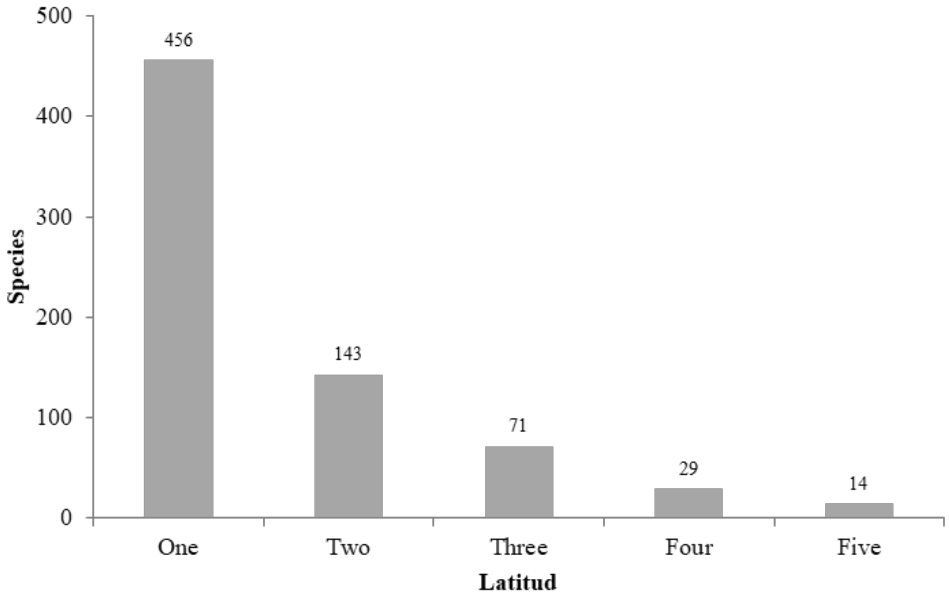


Figure 6. A number of species recorded in one or more latitudinal sections in the central and northern coast of Sonora (latitudes 27° N – 31° N).

pods were found in three latitudinal sections (Fig. 9).

## DISCUSSION

### Synonyms

According to the literature review, taxonomic conflicts exist for species of several genera and gastropod families that inhabit the Mexican Pacific, especially if the authors have only used keys and classic identification methods that are not updated and specific to the region. (Sturm *et al.,* 2006; Arias-Rodríguez *et al.,* 2007). Besides, there is a general tendency to group North and South Mexican Pacific populations as unique species (Keen 1971; Vermeij & Dudley, 1991; Vermeij, 2001), which is reflected in the broad synonym heritage of this research for valid species (Table 3).

Furthermore, this study demonstrated the need for homogenous follow-up in sampling efforts that considers family or species distribution in the conflict punctually and geographically. The Muricidae family is an example that stands out with the most significant number of synonyms in this study (Fig. 5). Muricidae is well represented in rocky zones (Vermeij, 2001), and in this type of substrate, it is characterized by ha-

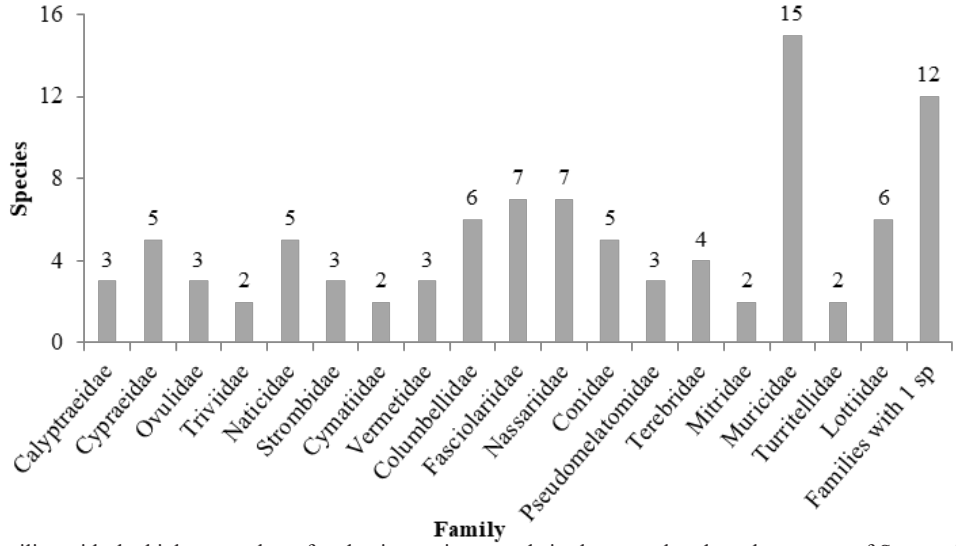


Figure 7. Families with the highest number of endemic species records in the central and northern coast of Sonora. The last bar represents 12 families that have only one representative species, and the x-axis follows a systematic arrangement according to WORMS (2022).

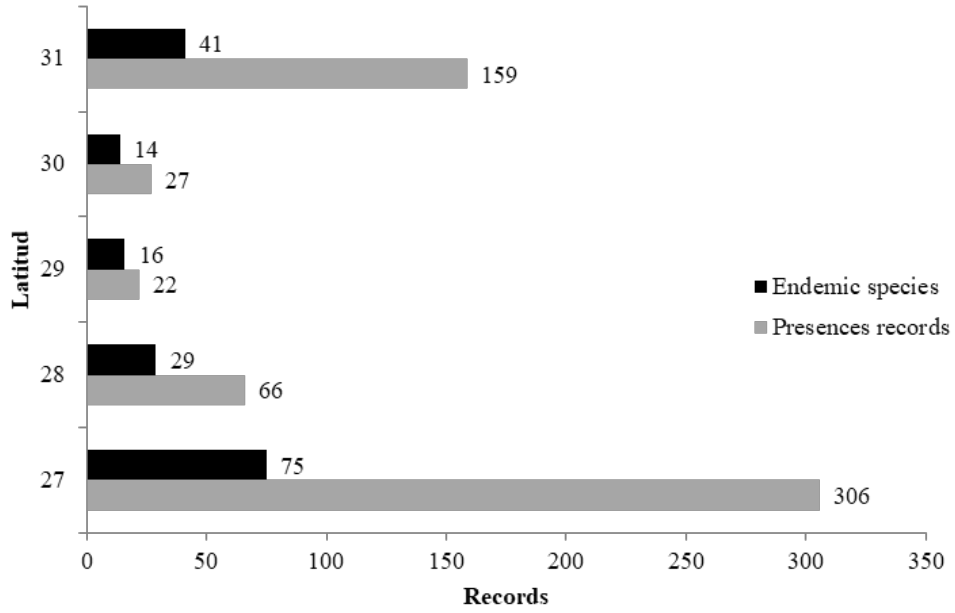


Figure 8. Latitudinal distribution of the number of endemic species and their presence records in the central and northern coast of Sonora (latitudes 27° N – 31° N).

ving a discontinuous patch distribution on the central and northern coast of Sonora. However, heterogeneity in abiotic dynamics of the Northeast Gulf and the rest of the Mexican Pacific for that taxon is associated with morphologic changes that lead to confusion, such as the case of the genera members, *Plicopurpura* Cossmann, 1903; *Thais* Röding, 1798; and *Stramonita* Schumacher, 1817 (Castillo-Rodríguez 1992; Arias-Rodríguez *et al.,* 2007). The previous information matches the high number of nomenclatures considered synonyms for the Muricidae *Stramonita haemastoma* (Linnaeus, 1767), with 35 synonyms (Table 3).

Finally, it is important to mention that extensive lists about the presence of gastropod species in the Gulf of California exist (Skoglund, 2002; Hendrickx *et al.,* 2007), but they do not include a greater part of synonyms that every taxon shows at the species level. The previous information highlights the importance of the taxonomic list for the class Gastropod (Appendices 1, 2) that generates the first detailed record of these abundant benthic invertebrates.

**Species richness in the latitudinal gradient**

Brusca *et al.* (2005) considered three fauna regions for the Gulf of California (North, Central, and

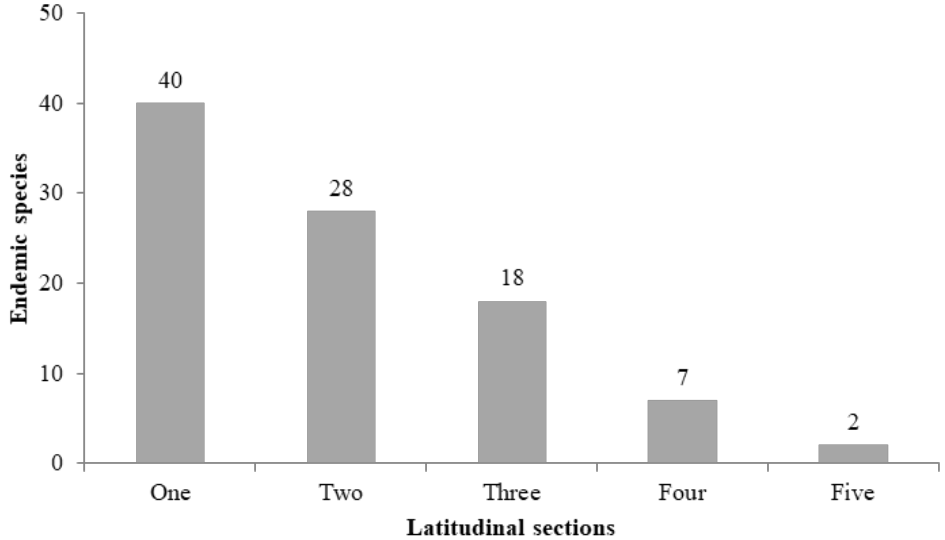


Figure 9. A number of records of endemic species present in one or more latitudinal sections of the central and northern coast of Sonora (latitudes 27° N – 31° N).

South). They also mentioned that general invertebrate diversity within the Gulf of California decreased from north to south; nevertheless, specifically for the class Gastropoda, the Central zone has the major diversity with 1073 species, followed by the South zone with 938, and the smallest one in the North zone with 656 species. The result of this review for the central and northern coast of Sonora confirmed that the (Fig. 2) highest number of species are found from the 27° N latitude located in the central zone of the Gulf (553 species names). However, at 31° N latitude, the number of species is also considered high (268 taxa) compared to 28° N, 29° N, and 30° N latitudes (Fig. 2). This result suggests that the pattern does not reflect assembly conditions for gastropods. In contrast, it implies a sample bias because of the easy access to the populational coastal nucleus in latitudes (31° N and 27° N) of the North Gulf of California: Puerto Peñasco and its surroundings are found at 31º N latitude where extensive studies have been conducted (Cadée *et al.,* 1997; Brusca, 1980; Skoglund, 2002; Brusca *et al.,* 2004; Cintra-Buenrostro & Flessa, 2004; Brusca *et al.,* 2005; Brusca & Hendrickx, 2008), while in the extreme southeast (latitudes 27° N – 28° N) the city of Guaymas and Bahia de Kino have great fishing importance, and multiple malacology studies have been conducted because of their easy access by land and sea (Hendrickx *et al.,* 2007; Marlett & Felger, 2014; Bertsch & Aguilar-Rosas, 2016).

### Distribution of latitudinal records of species names

Hendrickx *et al.* (2007) defined 1530 species for the class Gastropoda distributed widely across the Gulf of California. Specifically in the northern part of the Gulf, which indicated 653 species, and 1029 in the central region. It is relevant to highlight that these results included a total of three defined faunal areas for the Gulf of California (North, Central and South) which contrasted with the latitudinal species records for this study where the diversity of macrogasteropods (≥1 cm) with shell explicitly located in the central and northern coast of Sonora stand out. The results of our investigation demonstrated 41.04% (268 species names) of the global species recorded in the north portion by Hendrickx *et al.,* (2007) and 53.74% (553 species names) more than that stipulated for the central fauna region (Table 1); thus, 46.60% of the total diversity for this class is grouped in the latitudinal interval (27° N – 31°N in the coast of Sonora) (Fig. 2). These results confirm the importance of the central and northern coast of Sonora for gastropod mollusks. The region stands out for the interspersed presence of ideal substrates for invertebrates and is appropriate to the biological importance that authors have awarded to this coastal zone. (Brusca *et al.,* 2004; Turk-Boyer *et al.,* 2014).

On the other hand, Hendrickx *et al.* (2007) indicated that 29% of these gastropod families of the Gulf of California form only one species while 15.55% accumulated 20 or more; the authors also pointed out Turridae families (12% of the total) and Pyramidellidae (9.9% of the total) as those with greater diversity. Nevertheless, this Northeast Gulf of California review did not consider the Pyramidellidae representatives because they appeared as snails of sizes smaller than 1 cm (Keen, 1971; Skoglund, 2002). On the other hand, Turridae showed a sufficient size to be included in this research, but it only registered 11 species names (1.54% of 713 for the coast of Sonora).

Finally, this study's three most diverse families were Columbellidae, Pseudomelatomidae, and Muricidae. This taxa associated with rocky substrates are predominant in the coastal margin of the 27° N – 31° N latitudes of Sonora's central and northern coast, where abundant rocky substrates alternate with sandy patches extending across coastal kilometers.

### Endemism

In the invertebrate database of the Gulf of California from the Arizona-Sonora Desert Museum, 45 endemic species appeared as referenced to 18 families of the class Gastropod Class to the region in the central and northern coast of Sonora (latitudinal range of 27° N – 31° N) (Brusca & Hendrickx, 2008). The results of this study indicated 30 families with at least one endemic member to the Gulf of California (Table 1). Moreover, the number of species increased in the study area with a total of 95 species, equivalent to 23.9% of the total global species of endemic gastropods (397 species) registered for the Gulf by Brusca & Hendrickx (2008). These values are important when contrasted with the group of Arthropods that have a record of 118 endemic species for the Gulf of California (Brusca *et al.,* 2005).

Although this list showed an increase in the number of species names for the region of interest, it is important to clarify that the mentioned authors did not distinguish between the presence and shell size of the gastropods they registered. Thus, they include families usually abundant in the marine benthos, such as hares and sea slugs. (Aplysiidae Lamarck, 1809, Aglajidae Pilsbry, 1895 (1847)) and abundant micromollusk families <1 cm (Eulimidae Philippi, 1853, Rissooidea Gray, 1847, Triphoridae Gray, 1847) that are reflected in significant values in terms of species number and families compared to shell macrogasteropods. Therefore, this data collection shows evidence, knowledge, and description, specifically of the composition and latitudinal distribution of endemic taxa to the coast of Sonora, in an accurate and updated manner.

Regarding the latitudinal distribution of endemic species in this study (Fig. 8), it reacts similarly to the latitudinal distribution of general abundance (Fig. 2), with the peripheral latitudes 27° N and 31° N containing the largest number of records and species. Although the analysis for the endemic records of presence and species, in general, achieved their greater

value in extreme latitudes, particularly in the case of endemics, high endemism levels are most likely to be found in the northern region of the Gulf of California, according to Brusca *et al.,* (2007). However, for this list, the southern latitude obtained the highest values in presence and species (Fig. 8), which allowed us to contemplate the existence of a possible sampling effort in the southern latitude due to the presence of the port of Guaymas, Sonora.

## CONCLUSION

A total of 713 gastropod species were found in the eastern coastal margin of the Gulf of California between 27° N – 31º N latitude (a range that includes more than 70% of the coast of the state of Sonora) (Fig. 1). The major species abundance and the number of records appeared in the extreme latitudes of the region (27°N and 31°N) Fig. 2, possibly because the presence of important population centers (Puerto Peñasco and Guaymas) has favored the access to work zones, recollection, and transportation of specimens to different malacological collections in Mexico and out of the country.

The updated gastropod list for this region on the eastern coast of the Gulf of California is a tool that allows showing in a detailed manner malacological abundance to be used for future research about ecology and taxa biogeography.

Nevertheless, future research studies should be conducted to compare species richness between latitudinal sections that had difficult access to the northeastern coast of the Gulf of California. Consequently, homogeneous methodologies should be implemented for data collection to clarify if the mentioned latitudinal pattern for this study and diverse authors is real or represents a sampling bias.

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## REFERENCES

Academy of Natural Sciences of Philadelphia. (November 8, 2018). General Invertebrates Collection. http://streamsurvey.ansp.org/search.php

Arias Rodríguez, L., P. González Hermoso, J., Fletes Regalado, H., Estela Rodríguez Ibarra, L., & Del Valle Pignataro, G. (2007). Cariotipos de los caracoles de tinte *Plicopurpura pansa* y *Plicopurpura columellaris* (Gastropoda: Muricidae). *Revista de biologia tropical*, *55*(3–4). https://doi.org/10.15517/rbt.v55i3-4.5961

Bertsch, H., & Aguilar-Rosas, L. E. (2016). *Invertebrados Marinos del Noroeste de México/Marine Invertebrates of Northwest Mexico*. Universidad Autonoma de Baja California.

Bouchet, P., Rocroi, J.-P., Hausdorf, B., Kaim, A., Kano, Y., Nützel, A., Parkhaev, P., Schrödl, M., & Strong, E. E. (2017). Revised classification, nomenclator and typification of gastropod and monoplacophoran families. *Malacologia*, *61*(1–2), 1–526. https://doi.org/10.4002/040.061.0201

Brusca, R. C. (1980). *Common intertidal invertebrates of the gulf of California* (2a ed.). University of Arizona Press.

Brusca, R. C., & Brusca, G. J. (2003). *Invertebrates* (2a ed.). Sinauer Associates.

Brusca, R. C. & Hendrickx, M. E. (2008). The Gulf of California invertebrate database: the invertebrate portion of the Macrofauna Golfo Database.

Brusca, R. C., Kimrey, E. & Moore, W. (2004). *A seashore guide to the northern Gulf of California*. Arizona-Sonora Desert Museum.

Brusca, R. C., Findley L. T., Hastings P. A., Hendrickx, M. E., Cosio, J. T. & Van der Heiden, A. M. (2005). *Macrofaunal diversity in the Gulf of California*. In: Cartron, J. L. E., Ceballos, G. & Felger, R. S. (Eds.), *Biodiversity, ecosystems, and conservation in northern Mexico*. (pp. 179-205). Oxford University Press.

Cadée, G. C., Walker, S. E., & Flessa, K. W. (1997). Gastropod shell repair in the intertidal of Bahía la Choya (N. Gulf of California). *Palaeogeography, Palaeoclimatology, Palaeoecology, 136*(1–4), 67–78. https://doi.org/10.1016/s0031-0182(97)00041-2

British Museum (Natural History)., & Carpenter, P. P. (1857). *Catalogue of the collection of Mazatlan shells in the British Museum, collected by Frederick Reigen / described by Philip P. Carpenter*. Printed by order of the Trustees,.

Castillo-Rodríguez, Z. G. & Amezcua-Linares, F. (1992). Biología y aprovechamiento del caracol morado *Plicopurpura pansa* (Gould, 1853) (Gastropoda: Neogastropoda) en la costa de Oaxaca, México. *Anales del Instituto de Cienciencias del Mar y Limnologia de la Universidad Nacional Autónoma de México*, *19*(2), 223–234.

Cintra-Buenrostro, C. E. & Flessa, K. W. (2004). Cavidades, mordiscos y peladas: herramientas para determinar la importancia trófica de una especie en desvanecimiento dentro del Delta del Río Colorado, México. *Ciencia y Mar*, *8*(24), 3–19.

Claremont, M., Vermeij, G. J., Williams, S. T., & Reid, D. G. (2013). Global phylogeny and new classification of the Rapaninae (Gastropoda: Muricidae), dominant molluscan predators on tropical rocky seashores. *Molecular Phylogenetics and Evolution*, *66*(1), 91–102. https://doi.org/10.1016/j.ympev.2012.09.014

Cudney-Bueno, R., & Rowell, K. (2008). The black murex snail, *Hexaplex nigritus* (Mollusca, Muricidae), in the Gulf of California, Mexico: II. Growth, longevity, and morphological variations with implications for management of a rapidly declining fishery. *Bulletin of Marine Science, 83*(2), 299-313.

Demaintenon, M. J. (2019). The Columbellid species of the northeast Pacific coast from the Aleutian Islands to Cedros Island, Baja California (Neogastropoda: Columbellidae). *Zoosymposia*, *13*(1), 160–183. https://doi.org/10.11646/zoosymposia.13.1.19

Emerson, W. K., Puffer, E. L. & Scripps, E. W. (1957). *Recent mollusks of the 1940 "EW Scripps" cruise to the Gulf of California*. American Museum novitates.

Florida Museum. (April 22, 2018). Invertebrates Zoology Collection. http://specifyportal.flmnh.ufl.edu/iz/.

Góngora-Gómez, A. M., Gómez, M. G. U., Domínguez-Orozco, A. L., & Camacho-Sánchez, F. Y. (2011). Aspectos reproductivos cuantitativos del caracol murex negro, *Hexaplex nigritus* (Phillippi, 1845) en condiciones de laboratorio. *Ciencia y Mar*, *15*(44), 31–34.

Global Biodiversity Information Facility. (May 14, 2019). GBIF Occurrence Download. https://doi.org/10.15468/dl.azr7s7.

Halford, Z. A., Yu, P. Y., Likeman, R. K., Hawley-Molloy, J. S., Thomas, C. & Bingham, J. P. (2015). Cone shell envenomation: epidemiology, pharmacology and medical care. *Diving and Hyperbaric Medicine, 45*(3), 200–207.

Hendrickx, M. E., Brusca, R. C. & Findley, L. T. (2005). *A distributional checklist of the Macrofauna of the Gulf of California, Mexico: Invertebrates*. Arizona-Sonora Desert Museum.

Hendrickx, M. E., Salgado-Barragán, J., Toledano-Granados, A., & Cordero-Ruiz, M. (2014). Los moluscos (Pelecypoda, Gastropoda, Cephalopoda, Polyplacophora y Scaphopoda) recolectados en el SE del golfo de California durante las campañas SIPCO a bordo del B/O "El Puma". Elenco faunístico. *Revista mexicana de biodiversidad*, *85*(3), 682–722. https://doi.org/10.7550/rmb.43077

Hendrickx, M. E., Brusca, R. C., Cordero, M., & Ramírez R., G. (2007). Marine and brackish-water molluscan biodiversity in the Gulf of California, Mexico. *Scientia Marina, 71*(4), 637–647. https://doi.org/10.3989/scimar.2007.71n4637

Hendrickx, M. E., Salgado-Barragán, J., Toledano-Granados, A., & Cordero-Ruiz, M. (2014). Los moluscos (Pelecypoda, Gastropoda, Cephalopoda, Polyplacophora y Scaphopoda) recolectados en el SE del golfo de California durante las campañas SIPCO a bordo del B/O "El Puma". Elenco faunístico. *Revista mexicana de biodiversidad, 85*(3), 682–722. https://doi.org/10.7550/rmb.43077

Hurtado, L. A., Frey, M., Gaube, P., Pfeiler, E., & Markow, T. A. (2007). Geographical subdivision, demographic history and gene flow in two sympatric species of intertidal snails, *Nerita scabricosta* and *Nerita funiculata*, from the tropical eastern Pacific. *Marine Biology, 151*(5), 1863–1873. https://doi.org/10.1007/s00227-007-0620-5

Hupp, B. & Malone, M. (2016). *The Edge of the Sea of Cortez: Tidewalkers' Guide to the Upper Gulf of California, Second Edition*. Edge of the Sea, LLC.

Keen, A. M. (1971). *Sea shells of tropical West America, Second Edition*. Stanford University Press.

Lluch-Cota, S. E., Aragón-Noriega, E. A., Arreguín-Sánchez, F., Aurioles-Gamboa, D., Jesús Bautista-Romero, J., Brusca, R. C., Cervantes-Duarte, R., Cortés-Altamirano, R., Del-Monte-Luna, P., Esquivel-Herrera, A., Fernández, G., Hendrickx, M. E., Hernández-Vázquez, S., Herrera-Cervantes, H., Kahru, M., Lavín, M., Lluch-Belda, D., Lluch-Cota, D. B., López-Martínez, J., … Sierra-Beltrán, A. P. (2007). The Gulf of California: Review of ecosystem status and sustainability challenges. *Progress in Oceanography, 73*(1), 1–26. https://doi.org/10.1016/j.pocean.2007.01.013

López-Martínez, J. (2010). Population dynamics of the jumbo squid (*Dosidicus gigas*) in the 2002–2008 fishing seasons off Guaymas, Mexico. *Fisheries Research, 106*(2), 132–140. https://doi.org/10.1016/j.fishres.2010.08.003.

López-Uriarte, E., Ríos-Jara, E., Galván-Villa, C. M., Juárez-Carrillo, E., Enciso-Padilla, I., Robles-Jarero, E. G. & Pérez-Peña, M. (2009). Macroinvertebrados bénticos del litoral somero de punta

La Rosada, Bahía Chamela, Jalisco. *Scientia-CUCBA, 11*(1–2):57–68.

Marlett, C. M. (2014). *Shells on a desert shore: mollusks in the Seri world*. University of Arizona Press. https://doi.org/10.1111/aman.12616.

Martínez-Córdova, L. R. (1996). Contribución al conocimiento de la fauna malacológica de cuatro lagunas costeras del Estado de Sonora, México. *Ciencias Marinas, 22*(2), 191–203.

Nevárez-Martínez, M. O., Morales-Bojórquez, E., Cervantes-Valle, C., Santos-Molina, J. P. &

National Oceanic and Atmospheric Administration (NOAA). (November 27, 2022). Bathymetric Data Viewer. https://www.ncei.noaa.gov/maps/bathymetry/

Ocean Biogeographic Information System. (November 07, 2019). Intergovernmental Oceanographic Commission of UNESCO. https://mapper.obis.org/.

PANGAS. (2012). Caracol Chino (Familia Muricidae): Ficha Informativa de la Pesca Ribereña del Norte del Golfo de California. Centro Intercultural de Estudios de Desiertos y Océanos, A.C., Puerto Peñasco.

Parker, R. H. (1964). Zoogeography and ecology of some macroinvertebrates, particularly mollusks, in the Gulf of California and the continental slope off Mexico. *Vidensk Meddr Dansk Naturn Foren, 126*(1), 178. https://doi.org/10.5962/bhl.title.6862.

Ríos-Jara, E. (2015). Diversidad de moluscos marinos en el Pacífico mexicano. *Biodiversitas*, 118, 12–16.

Ríos-Jara, E., Cedillo, C. C. H., Carrillo, E. J., & Padilla, I. E. (2004). Variations in density, shell-size and growth with shore height and wave exposure of the rocky intertidal snail, *Calyptraea spirata* (Forbes, 1852), in the tropical Mexican Pacific. *Journal of Shellfish Research, 23*(2);545–553.

Sagarin, R. D., Gilly, W. F., Baxter, C. H., Burnett, N. & Christensen, J. (2008). Remembering the Gulf: changes to the marine communities of the Sea of Cortez since the Steinbeck and Ricketts expedition of 1940. *Frontiers in Ecology and the Environment, 6*(7), 372–379. https://doi.org/10.1890/070067.

Santa Barbara Museum of Natural History. (September 12, 2018). Department of Invertebrate Zoology; Invertebrate Zoology Collections. http://www.sbcollections.org/iz/search_advanced.php.

SCRIPPS. (October 24, 2018). Scripps Institution of Oceanography, UC San Diego; Benthic Invertebrate Collection. https://sioapps.ucsd.edu/collections/bi/.

Sierwald, P., Bieler, R., Shea, E. K. & Rosenberg, G. (2018). Mobilizing mollusks: Status update on mollusk collections in the USA and Canada. *American Malacological Bulletin, 36*(2), 177–215. https://doi.org/10.4003/006.036.0202.

Skoglund, C. (2002). Panamic province molluscan literature: additions and changes from 1971 through 2000. III Gastropoda. *The Festivus*, 33, 1–286.

Sturm, C. F., Pearce, T. A. & Valdés, Á. (2006). *The mollusks: a guide to their study, collection, and preservation*. Universal Publishers.

Tripp-Quezada, A., Tripp-Valdez, A., Tripp-Valdez, M. A., Capetillo-Piñar, N. & Villalejo-Fuerte, M. (2018). Composición y estructura de la comunidad de moluscos de fondos blandos de la isla Santa Cruz, Golfo de California, México. *Hidrobiológica, 28*(1), 51–59. https://doi.org/10.24275/uam/izt/dcbs/hidro/2018v28n1/Tripp.

Turk-Boyer, P. J., Morzaria-Luna, H. N., Martinez-Tovar, I., Downton-Hoffmann, C. & Munguia-Vega, A. (2014). *Ecosystem-based fisheries management of a biological corridor along the northern Sonora coastline* (NE Gulf of California). In: Amezcua-Martinez, F., Bellgraph, B. J. (2014). *Fisheries Management of Mexican and Central American Estuaries. Pacific Northwest National Laboratory*. (pp. 125-124). Springer Dordrecht. https://doi.org/10.1007/978-94-017-8917-2_9.

National Museum of Natural History. (May 20, 2018). Department of Invertebrate Zoology Collections. https://collections.nmnh.si.edu/search/.

Vermeij, G. J. (2001). Distribution, history, and taxonomy of the Thais clade (Gastropoda: Muricidae) in the Neogene of tropical America. *Journal of Paleontology, 75*(3), 697–705. https://doi.org/10.1017/S0022336000039731.

Vermeij, G. J. & Dudley, E. C. (1991). *Marine extinctions and their implications for conservation and biogeography*. In: Dudley, E. C., (Ed.) *The unity of evolutionary biology: Proceedings of the Fourth International Congress of Systematic and Evolutionary Biology*. (pp. 143-148) Dioscorides Press.

WORMS Editorial Board. (November 17, 2022). World Register of Marine Species. http://www.marinespecies.org/aphia.php?p=search.