Zootaxa 4559 (2): 281–313
https://www.mapress.com/j/zt/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

https://doi.org/10.11646/zootaxa.4559.2.4
http://zoobank.org/urn:lsid:zoobank.org:pub:A6DEC6FF-25E2-4D57-A88C-28E0CEF603DC

The ichthyology collection at the Natural History Museum of El Salvador (MUHNES): Species checklist and new country records

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Abstract

The ichthyology collection at the Natural History Museum of El Salvador (MUHNES) was established in 1970. Herein, we provide the first quantitative and qualitative description of the collection; and the first public record of the specimens and taxa therein represented. The MUHNES fish collection is the largest and most important of El Salvador, hosting 3791 specimens in 1005 lots representing 26 orders, 75 families, 159 genera and 248 species from both marine and freshwater environments, including larval, juvenile and mainly adult specimens. MUHNES specimens include 39% of the 587 species reported in the official national checklist of fishes of El Salvador, and support the inclusion of 47 additional species for a new total of 634. Furthermore, MUHNES specimens support (1) the occurrence of *Cathorops fuerthii* along the coast of El Salvador, extending its distribution from northern Costa Rica; (2) the occurrence of *Atherinella starksi* in El Salvador, reducing a gap for records between Nicaragua and México and (3) the extension in the distribution range of *Profundulus kreiseri* to Morazán, El Salvador. This study represents an advance on the understanding of diversity and distribution of the national ichthyofauna.

Key words: Neotropical Fishes, Eastern Tropical Pacific, Central America, Fish Collection, Diversity, Taxonomy, Biogeography

Resumen

La colección ictiológica del Museo de Historia Natural de El Salvador (MUHNES) fue establecida en 1970. Aquí se presenta la primera descripción cuantitativa y cualitativa de la colección de peces en el MUHNES. La colección del MUHNES es la más grande e importante de El Salvador, albergando 3,791 especímenes en 1,005 lotes, los cuales representan 26 órdenes, 75 familias, 159 géneros y 248 especies, provenientes de ambientes marinos y dulceacuícolas, incluyendo estadios larvales, juveniles y, principalmente, adultos. Los especímenes del MUHNES incluyen cerca del 39% de las 587 especies de peces reportadas en el listado nacional oficial para El Salvador, respaldando, además, la inclusión de 47 especies adicionales, generando un nuevo total de 634 especies para El Salvador. Además, especímenes de la colección apoyan (1) la presencia de *Cathorops fuerthii* en la costa de El Salvador extendiendo su distribución desde el Norte de Costa Rica; (2) la presencia de *Atherinella starksi* en El Salvador, reduciendo la ausencia de registros entre Nicaragua y México y (3)

Accepted by E. Hilton: 21 Dec. 2018; published: 20 Feb. 2019

la extensión en el ámbito de distribución de *Profundulus kreiseri* hasta Morazán, El Salvador. Este estudio representa un avance para el entendimiento de la diversidad y distribución de la ictiofauna nacional.

Palabras clave: Peces Neotropicales, Pacífico Oriental Tropical, Centroamérica, Colección de Peces, Diversidad, Taxonomía, Biogeografía

Introduction

Natural history collections around the world play a key role in advancing the understanding of the diversity of life. The biological material contained in collections allow us (1) to have basic knowledge on species diversity and distribution patterns; (2) to answer questions on phylogenetic systematics; (3) to understand changes in distribution at different temporal and spatial scales, for example due to habitat loss; and (4) to understand patterns of introduction of invasive species, as well as the effects of climate change on species diversity and distribution, among others (see Shaffer *et al*. 1998; Sala *et al*. 2000; Ponder *et al*. 2001; Vörösmarty *et al*. 2003; Thiel *et al*. 2009; Vörösmarty *et al*. 2010; Hammer 2012). Furthermore, the biological specimens or material (e.g. skeletons, tissues, otoliths and DNA sequences), are usually the starting point that triggers top-of-the-line research in multiple scientific fields (Barber *et al*. 1972; Hammer 2012). In some cases, the outcomes of this research have produced results that are of significant interest for public health and safety, agriculture, and the conservation of species and ecosystems; or have allayed some misconceptions and fears in society (Suarez & Tsutsui 2004).

Benefits generated by natural history collections far exceed the cost incurred in their maintenance (Suarez & Tsutsui 2004), since collections are data sources that support the dissemination of information among the scientific community and the general public. Thus, collections can help to identify locations where a species of interest might be present, or facilitate access to specimens from remote locations that can be hard to sample due to distance, political reasons and lack of financial resources (Suarez & Tsutsui 2004). Moreover, natural history collections can reduce the redundancy and duplication of collection efforts, whereas the associated online databases can diminish costs for many research purposes by giving access to basic information that can be readily employed in scientific publications. Indeed, many museums and collections loan specimens to researchers and exchange specimens with other institutions. Despite their valuable contribution to society and our broader understanding of global biodiversity, natural science collections have experienced a decline in funding in recent years (Dalton 2003). As in many Latin American countries, in El Salvador, funding has been redirected to solve problems relating to public health and agriculture (Horta-Duarte 2013), neglecting the importance of natural scientific collections.

Founded on 9 October 1883, the Natural History Museum of El Salvador (Museo de Historia Natural de El Salvador, MUHNES,) is a governmental institution that started as the house of multiple scientific collections including sections for natural resources, art objects, antiquities and geology. The MUHNES was relocated many times between 1883 and 1926; initially it was situated in the building of the University of El Salvador, in the city center of San Salvador, then it was relocated to: the National Library, the House "Villa España", the "Finca Modelo" and the Faculty of Pharmacy and Chemistry of the University of El Salvador. From 1927 to 1962 the MUHNES was placed next to the Presidential House, and in 1941 it was rearranged in two sections, the department of anthropology and the department of natural sciences (Echeverría 2013). In 1974 the department of anthropology became the National Museum of Anthropology "Dr. David J. Guzmán". In 1976 Mr. Saburo Hirao (CEO of the Japanese company Toyobo Co. LTD) provided financial support for the establishment of the Park Saburo Hirao, in San Jacinto, department of San Salvador. The main building in the park was assigned to the department of natural sciences and to house collections of vertebrates, fossils, minerals, rocks and plants.

The ichthyology collection of the MUHNES was formally established in 1970, but it was not until 1976 that the collection started to mature with the combined support of the first director of the museum, Mr. Víctor Hellebuyck, and the cooperation of researchers from the Service of National Parks and Wild Life of El Salvador (Servicio de Parques Nacionales y Vida Silvestre, PANAVIS) and the United States Peace Corps (Echeverría 2013). But the collection also suffered important losses of material after strong earthquakes in 1986 and 2001, with the latest event affecting almost 60% of the specimens when many glass jars containing specimens broke (Echeverría per. com. 30 March 2017). As a result, the registry book was rewritten and the collection was reorganized (Echeverría 2013). Since then, the goal of the MUHNES's ichthyology collection has been to increase its geographical and taxonomic scope with the support of national and international ichthyologists.

The information in the records of the MUHNES's ichthyology collection is considered an important research resource for understanding the biodiversity of fishes in El Salvador, particularly because in the last decade numerous efforts have increased the number of species in the country based on voucher specimens deposited at the collection (See Rojas *et al*. 2006; González-Murcia & Marín-Martínez 2011; González-Murcia *et al*. 2012; Álvarez *et al*. 2013; McMahan *et al*. 2013; González-Murcia *et al*. 2016). Nonetheless, until now a comprehensive assessment of the status of the MUHNES's ichthyology collection has not been carried out, nor has there been an updated digital format for the catalog book (registry), which limits access to its material. Therefore, this study pursued the following objectives: (1) to generate the first officially published records of the ichthyology collection of the MUHNES; (2) to characterize quantitatively and qualitatively the ichthyology collection; and (3) to update the metadata associated to the specimens in the collection catalog. To the knowledge of the authors, this is the first effort of this type conducted in the MUHNES, and, with this, we expect it to support research initiatives on fishes of El Salvador in the near future.

Material and methods

Since its establishment, the MUHNES ichthyology collection data was manually recorded in the registry book. For each taxonomic lot (rows) the book contains the following information (columns): a unique and continuous catalog number, with the number 40 as prefix code identifying the ichthyology collection; classification (*i.e*., order, family, genus and species); number of specimens; identification date; and collection data including locality, geographic coordinates, collection date, name of the collector, elevation and collection method. The collection localities and ecosystem types were categorized as freshwater (F; lakes or rivers), brackish waters (B; estuaries with variables levels of salinity) or marine (M; coastal areas or open waters, with salinities of 33 to 35mg/l). Inland species were categorized by salinity tolerance as primary (Pr), secondary (Se) or peripheral (Pe), following Myers (1949) and previous species occurrence records by McMahan *et al*. (2013). Additionally the ontogenetic stage of the specimens as larvae (L), juvenile (J) or adult (A) was determined using anatomical and morphological traits, coloration patterns and total length.

The size of the collection (688 cataloged taxonomic lots, previous to this revision) allowed us to implement an intensive examination of each lot, followed by a meticulous taxonomic identification and verification based on the original descriptions and keys available: Fisher *et al.* (1995), Bussing (2002), Miller et al. (2009) and Robertson & Allen (2015). Uncataloged material also was examined, identified and incorporated into the collection. The resulting species list follows the systematic arrangement proposed by Nelson *et al*. (2016); species valid names, their authority(ies), and year of publication are provided according to Eschmeyer *et al*. (2018). Distribution ranges were contrasted with the ones reported in the literature (mainly McMahan *et al*. 2013 and Robertson & Allen 2015), as well as the Catalog of Fishes Online Database (Eschmeyer *et al*. 2018) and FishBase (Froese & Pauly 2017).

A description of the progress of the MUHNES ichthyology collection, in relation to the growth of its acquis and its taxonomic scope, since its establishment in 1970 was done using the catalog information; and a comparison between the list "Inventory of the Fishes from El Salvador" (MARN 2016) from the Ministry of Environment and Natural Resources of El Salvador (Ministerio de Medio Ambiente y Recursos Naturales, MARN), and those species cataloged and vouchered in the ichthyology collection of the MUHNES was performed.

In addition to the revision of the material, the following curatorial work was done on the collection: ethanol (70%) was replaced when necessary; labels, when appropriate were added to each lot, with the taxonomic and collection information (species name, collector, person who identified the specimen, date of identification, location, geographic coordinates and collection date); taxon names were updated and spelling mistakes corrected. Finally, an electronic updated database (Excel file) of the material hosted in the collection was produced, which can be accessed by request to the MUHNES staff.

Results

Development of MUHNES fish collection

Following our revision completed on December 2017, the MUHNES collection is composed of 3791 specimens in 1005 lots. This represents an increase of 46% (317 lots) compared to the number previously cataloged (688 lots accessioned between 1974 and April 2017) (Fig 1). The oldest cataloged lot dates from 1974 (MUHNES 40-198), contains two specimens of the Panamic Frillfin *Bathygobius ramosus* Ginsburg 1947, collected by L. Nylor in La Barra de Santiago, Ahuachapán. Overall, relevant contributions to the ichthyology collection were made by L. Nylor (1974–1980), P. Phillips (1976), E. León and S. Andino (1977–1989), J.J. Orellana (1983–1989), E. Barraza and M. Vázquez (1989–2017), R. Robertson and C. Baldwin, (2001), M. Méndez (2006), C. Marín (2009–2011), S. González-Murcia (2009–2017) and F. Álvarez (2011–2017). The specimens deposited by those researchers represent 85% of the specimens held in the collection (Fig. 1).

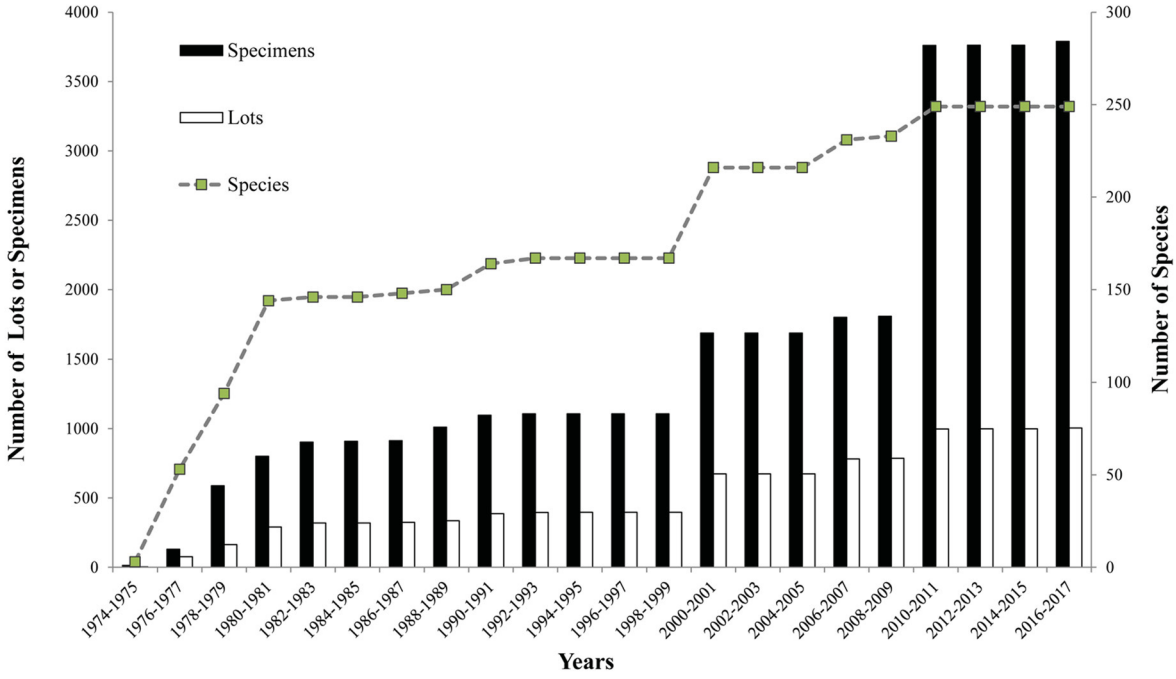

FIGURE 1. Cumulative number of accessioned specimens, lots and species from 1974 to 2017 by 2-year periods, at the MUHNES ichthyology collection.

During the period 1974–2017 the MUHNES acquisition of specimens was not constant (Fig. 1). Some periods showed remarkable increments in the number of specimens added to the collection, these include 1978–1979, 2000–2001 and 2010–2011, with a contribution of 12%, 15% and 52% respectively. These events represent research campaigns conducted by L. Nylor (1974–1980) along the coast of the departments of Ahuachapán, Sonsonate, La Libertad, La Paz and La Unión; the collections of R. Robertson and C. Baldwin (2001) during their exploration of the El Salvador coast (321 km) on the Research Vessel Urraca from the Smithsonian Institution; and multiple research initiatives in 2010–2011 that provided specimens from Sonsonate, La Libertad, San Vicente and La Unión. During the last period, important specimens were added to the collection, such as the first specimens of larval stages of fishes from marine origin collected by Marín-Martínez (2011), the first El Salvador records of the clingfish *Tomicodon zebra* (Jordan & Gilbert 1882) (González-Murcia & Marín-Martínez 2011), and the live-bearer *Pseudoxiphophorus anzuetoi* (Rosen & Bailey 1979) (Álvarez *et al.* 2013). Also, many freshwater specimens were added from an intensive collection campaign in several watersheds of El Salvador, which provided a better understanding of the distribution of the inland fishes of the country.

Regardless the relative short time of existence of the MUHNES ichthyology collection (about 4 decades), it has a strong historical and scientific significance by (1) holding specimens that represent relatively well the

biodiversity of fishes in El Salvador; (2) contributing towards the scientific development of the country by allowing researchers access to the specimens; and (3) supporting scientific records published in peer review papers. As previously mentioned, currently there is a digital copy of the catalog information that is expected to be the starting point to launch the information of the ichthyology collection on a digital open-access portal in the near future. To date, the collection continues to expand, with new material arriving and waiting to be processed and cataloged.

Geographic and taxonomic scope of the MUHNES fish collection

The MUHNES ichthyology collection is composed of 3791 specimens representing 26 orders, 75 families, 159 genera, and 248 species, plus 28 lots that remain without species-level identifications (Table 1). The most recent and complete inventory of the fish species occurring in El Salvador reported a total of 139 families and 587 species (MARN 2016). This revision supports the addition of 47 species, reaching 634 species. From these 634 species recorded in El Salvadorian waters, 248 (39%) have voucher specimens in the MUHNES ichthyology collection (Table 1).

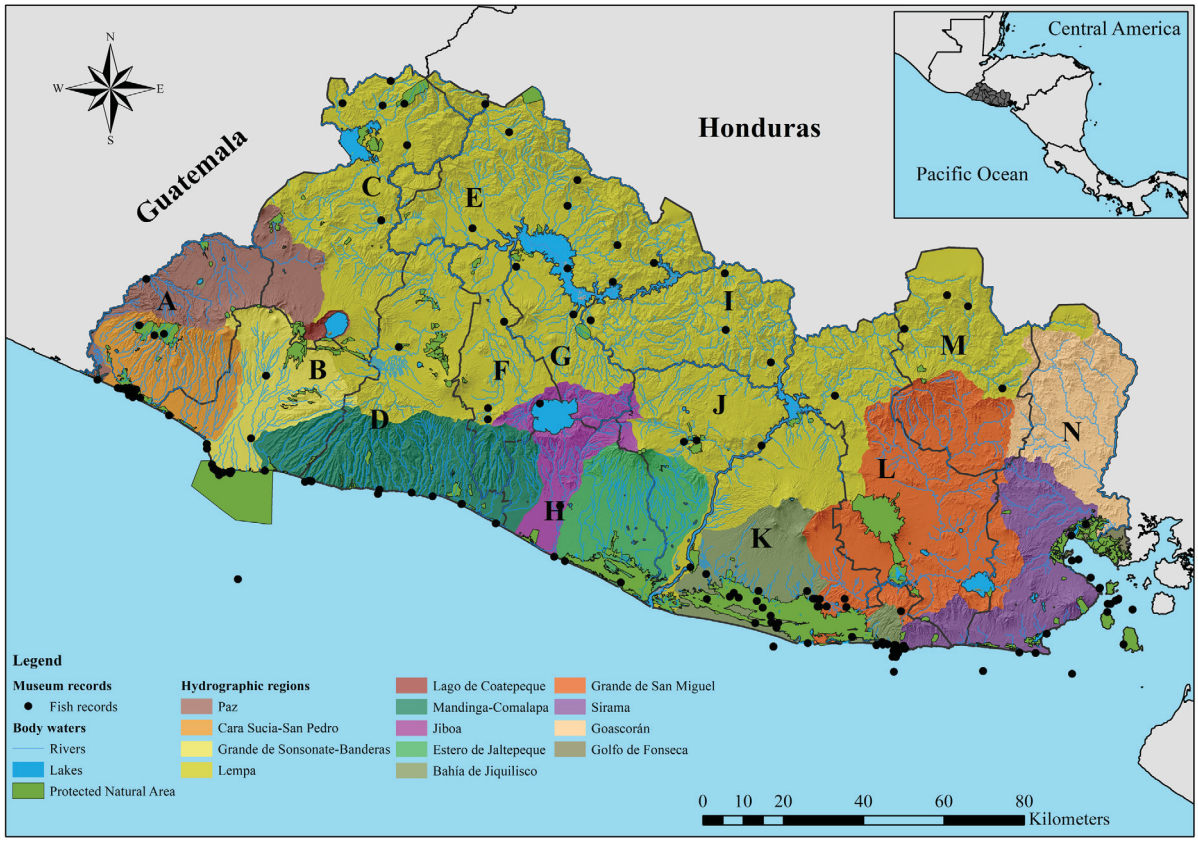

FIGURE 2. Collection localities represented at the MUHNES Ichthyology collection. Inland aquatic ecosystems, divided by hydrogeographic regions, marine environments, protected areas and the political division of El Salvador are illustrated. A = Ahuachapán, B = Sonsonate, C = Santa Ana, D = La Libertad, E = Chalatenango, F =San Salvador, G = Cuscatlán, H = La Paz, I = Cabañas, J = San Vicente, K = Usulután, L = San Miguel, M = Morazán N = La Unión.

The MUHNES collection is focused on local fish fauna and there are specimens from multiple regions, watersheds and ecosystems in El Salvador (Fig. 2). Biogeographically, all freshwater specimens and species hosted by the collection belong to the Chiapas-Nacaome area, within the Nuclear Middle America region (Matamoros *et al.* 2012a; Matamoros *et al*. 2015), previously considered the Chiapas-Fonseca province of the Central America region by Abell *et al*. (2008). Marine specimens belong to the Panamic zoogeographic province, which spans from

Mazatlán bay, approximately ~23°N, to the Gulf of Guayaquil, Ecuador-Peru, approximately ~4°S, within the Tropical Eastern Pacific (TEP) (Robertson & Cramer 2009). Currently, the collection does not host material from other biogeographical areas within the TEP, nor other parts of the world.

A total of 210 lots (21%) belong to freshwater environments, whereas 291 (29%) and 504 (50%) belong to brackish and marine ecosystems, respectively (Table 1). Most species were collected exclusively in one environment, marine (170, 61%), brackish (16, 6%) or freshwater (27, 10%), while few species were collected in two or three different environments: marine/brackish (49, 17%), brackish/freshwater (9, 3%) and marine/brackish/freshwater environments (9, 3%) (Table 1). Based on the categorization of Myers (1949) and previous records presented by McMahan *et al*. (2013), Alda *et al.* (2013), Palacios *et al.* (2016) and Álvarez *et al*. (2017) for inland fishes of El Salvador, there are four primary freshwater species (3%), 24 secondary species (23%) and 73 peripheral species (73%). All the primary species, 87% (21/24) of the secondary species [excluding *Amatitlania coatepeque* Schmitter-Soto 2007, synonymized with *A. nigrofasciata* (Günther 1867) by McMahan *et al*. (2014); *Poecilia butleri* Jordan 1889 and *P. gillii* (Kner 1863) reported by McMahan *et al.* (2013), because molecular evidence suggest that these species do not occur in El Salvador (Alda *et al.* 2013; Palacios *et al.* 2016)] and 68% (50/73) of the peripheral species reported by McMahan *et al*. (2013) have voucher specimens deposited at the MUHNES collection. In addition, 23 new records of peripheral species were added to the list of McMahan *et al*. (2013), increasing the number of peripheral fishes to 96 and the number of inland fishes for the country to 124 (Table 1). There are 1358 species of shore fishes reported for the TEP biogeographic area (Zapata & Robertson 2007; Robertson & Allen 2015) and the MUHNES houses representatives of about 16% (227) of those species. The collection hosts fishes in larval (92 individuals, 2%), juvenile (443, 12%) and adult (3265) stages (Table 1).

In this contribution, we extend the known distribution range of the Kreiser's Killifish *Profundulus kreiseri* Matamoros, Schaefer, Hernández & Chakrabarty 2012 (Profundulidae). Records for this species were restricted to Chamelecón and Ulúa rivers in Honduras (Matamoros *et al*. 2012b) and the department of Santa Ana and Chalatenango, El Salvador (McMahan *et al*. 2013; Salgado Maldonado *et al.* 2014; Mendoza-Franco *et al.* 2015; Pinacho *et al*. 2015). The new records are from Morazán, northeast El Salvador. At the regional scale, we also recommend extending the distribution range of the Congo Sea-Catfish *Cathorops fuerthii* (Steindachner 1876) (Ariidae) to the coast of El Salvador, as it previously was reported to occur from Panama Bay to Costa Rica (Robertson & Allen 2015). Finally, the Star Silverside *Atherinella starksi* (Meek & Hildebrand 1923) (Atherinopsidae) is herein reported for locations in the departments of La Unión and La Libertad, complementing its previously reported distribution range, *sensu* Robertson & Allen (2015), from Ecuador to Nicaragua, and further to Mexico. The El Salvador records reduce the large gap in distribution records for this species that existed between the latter two countries.

Discussion

The MUHNES ichthyology collection hosts a modest, but relevant number of specimens to the scientific community. They constitute a reference for the taxonomic identification and occurrence record of species in El Salvador. In this regard, the collection represents a potential source of information regarding to the ecological and biological traits of each species by providing information about temporal and spatial changes on species distributions within the country. For El Salvador, the MARN (2016) reported a total of 587 species. Our assessment supports the occurrence of 47 additional species, reaching a total of 634 species, for which 248 species (39%) have voucher specimens in the MUHNES ichthyology collection. This contribution fills gaps about the knowledge of fish biodiversity in the country, and offers a new perspective about distribution patterns of fish species, at both local and regional scales. Both are of paramount importance considering that effective strategies for management and species conservation must be based on accurate information.

The MUHNES ichthyology collection is the largest in El Salvador with 248 species and 3791 specimens. The Instituto de Ciencias del Mar y Limnología (ICMARES) of the Universidad de El Salvador has the second largest collection of the country with about 2372 specimens and 212 species (Chicas-Batres & González-Leiva 2016). Paradoxically, some international collections have a similar or greater number of specimens from El Salvador than its two national collections combined (see Chicas-Batres & González-Leiva 2016). Records of fish specimens from all those collections are highly important for the understanding of fish biodiversity in El Salvador, and cooperation

should be pursued. Therefore, we suggest combining efforts to integrate information and make it accessible through an open access media (e.g., online databases), and incorporate it to similar initiatives such as FishBase (Froese & Pauly, 2017), FishNet 2 (http://www.fishnet2.net/ index.html), the computerized form of the Catalog of Fishes (Eschmeyer, 2018), the Global Biodiversity Information Facility (GBIF, https://www.gbif.org/) or WORMS (Horton *et al.* 2018; http://www.marinespecies.org/index.php). In this sense, access to the collection data may reduce the redundancy and replication of research efforts and can allow more efficient allocation of resources, which in most cases are limited. Therefore, digitization of the data of the MUHNES ichthyology collection is an admirable first step towards the dissemination of the knowledge on fishes from the country.

Future perspectives of the museum must respond to national plans for research and biodiversity conservation. Primary interest must be directed to the collection of specimens that comprehensively represent the ichthyological diversity of El Salvador, including if possible tissue samples for DNA extraction, which can help to solve taxonomic conundrums in some species complex or groups (Robertson *et al.* 2017). It is critically important to increase the number of specimens and species particularly for freshwater taxa. Changes in land use and pollution (Sala *et al.* 2000) have affected the majority of freshwater ecosystems in El Salvador leading species towards the categories of collapsed, endangered or critically endangered (Crespín & Simonnetti 2015; 2016), exerting a strong pressure on the biodiversity. On the other hand, collection efforts must consider gathering specimens from the great diversity of environments in El Salvador, including lakes, rivers, estuaries, rocky, sandy and muddy shores, and offshore habitats. Deep sea environments in particular have recently shown a great diversity of fishes (Fuentes *et al.* 2015; Robertson *et al.* 2017) and still harbour undescribed species; for instance, based on a specimen from El Salvador, the species *Leptoderma ospesca* Angulo, Baldwin & Robertson 2016 was recently described for the Pacific Central American coast (Angulo *et al*. 2016).

Early life stages of fishes should also be taken into consideration as part of the process to increase collection acquisitions; early stages of fishes can provide valuable information on the taxonomy, phylogeny and ecology of species. In El Salvador and more generally in the TEP, there is a lack of taxonomic information about early life stages of fishes. The MUHNES ichthyology collection hosts a relative small number of eggs and larvae. However, the highly variable nature of fish eggs and larval traits make them difficult to identify using only morphological characters (Thiel *et al*. 2009; Ko *et al*. 2013; Leis 2015), and the collection of material for DNA barcoding should be consider. Eventually, the MUHNES ichthyology collection could focus efforts on being a reference collection in the region, promoting the incorporation other biogeographical areas within the TEP, and when possible, from other regions in the world, as well as specimens from other taxonomic groups, such as Myxini (hagfishes), Petromyzontida (lampreys), Holocephali (chimaeras) and Sarcopterygii (lobe-finned fishes).

A strong collection focused on fishes from El Salvador will promote new research areas at MUHNES such as the delineation of biogeographic areas, detection of areas with high species richness (hot spots) or endemicity (e.g. Zapata & Robertson 2007; Abell *et al*. 2008; Robertson & Cramer 2009; Matamoros *et al.* 2012a; Matamoros *et al.* 2015; Robertson *et al*. 2017) and genetic assessments of populations (McMahan *et al*. 2013; McMahan *et al*. 2014; Robertson *et al*. 2017). Furthermore, adding ecological data to the fish collection sites can favour the development of models to predict changes in distributions due to environmental conditions expected under different climate change scenarios (Sala *et al*. 2000).

In conclusion, the first qualitative and quantitative assessment of the MUHNES ichthyology collection registered 3791 individuals in 1005 lots that encompass 276 taxa, of which 248 are identified to the species level. A total of 47 species records are added to the national checklist of fishes (MARN 2016) and the known distributions of three species (*Profundulus kreiseri*, *Cathorops fuerthii* and *Atherinella starksi*) are expanded based on MUHNES vouchers from El Salvador. This information is a valuable contribution to the knowledge of the biodiversity from El Salvador and establishes an official starting point for future fish research in the country.

Acknowledgements

We are grateful to M. Murcia and S. Erdmann for the support to SGM; E. Echeverría for the logistic support in the MUHNES; X. Pocasangre for laboratory assistance; A. E. Gómez-González and W. Martínez-Pinto, colleagues who share our enthusiasm and passion for fishes; S. González-Rosales for his invaluable legacy and contribution to SGM; and K. Sambrook, B. Arbizu and Mark Sabaj for comments that improved the quality of the manuscript.

TABLE 1. Fish taxa, number of specimens, ontogenetic stages, year of collection, catalog number and localities represented at the MUHNES ichthyology collection. Systematic arrangement follows Nelson *et al.* (2016). Numbers after each family name represent the actual number of species in the MUHNES and numbers between parentheses the total number of species of that family reported in the MARN checklist 2016. Species that were not previously listed in the national fish inventory of the MARN (2016) are denoted with a plus (+) symbol; additions to the list of McMahan *et al*. (2013) are denoted with an asterisk (*); new distribution records for El Salvador are denoted with a cross (†). For inland records, the salinity tolerance classification follows Myers (1949) and is denoted in the column "Habitat(s)" as follow: Pr = Primary; Se = Secondary, Pe = Peripheral.

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
CARCHARHINIFORMES							
Carcharhinidae 1 (12)							
Rhizoprionodon longurio (Jordan & Gilbert 1882)	2	J	1976	40-117	M	Puerto de La Libertad	La Libertad
Sphyrnidae 1 (4)							
Sphyrna lewini (Griffith & Smith 1834)	1	J	2006	40-106	M	Jucuarán	Usulután
SQUALIFORMES							
Echinorhinidae 1 (1)							
Echinorhinus cookei+ Pietschmann 1928	1	J	2008	40-98	M	Acajutla	Sonsonate
MYLIOBATIFORMES							
Urotrygonidae 2 (4)							
Urotrygon munda+ Gill 1863	2	A	1976; 2001	40-126; 40-130	M	Bahía de Jiqulisco, Golfo de Fonseca	Usulután, La Unión
*Urotrygon rogersi** (Jordan & Starks 1895)	1	A	1979	40-226	B^{Pe}	Estero de Julupita	La Libertad
LEPISOSTEIFORMES							
Lepisosteidae 1 (1)							
Atractosteus tropicus Gill 1863	1	A	1991	40-107	F^{Se}	Barra de Santiago	Ahuachapán
ELOPIFORMES							
Elopidae 1 (1)							
*Elops affinis** Regan 1909	2	A	1979; 1991	40-394; 40-403	M, B^{Pe}	Golfo de Fonseca, Barra de Santiago	Ahuachapán, La Unión
ANGUILLIFORMES							
Congridae 1 (9)							
Rhynchoconger nitens (Jordan & Bollman 1890)	8	A	2001; 2008	40-99; 40-967; 40-973; 40-975	M	Golfo de Fonseca, Acajutla, La Libertad	Sonsonate, La Libertad, La Unión

……*continued on the next page*

TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Muraenesocidae 1 (1)							
Cynoponticus coniceps (Jordan & Gilbert 1882)	1	A	1980	40-416	M	Golfo de Fonseca	La Unión
Muraenidae 2 (13)							
Echidna nocturna (Cope 1872)	5	J, A	2001; 2011	40-469; 40-820	M	Los Cóbanos	Sonsonate
Gymnothorax dovii+ (Günther 1870)	1	A	1979	40-246	M	Los Cóbanos	Sonsonate
Ophichthidae 3 (9)							
Myrichthys aspetocheiros McCosker & Rosenblatt 1993	1	A	2001	40-957	M	Golfo de Fonseca	La Unión
*Myrichthys tigrinus** Girard 1859	5	A	2001	40-749; 40-750; 40-751; 40-825	M, B^{Pe}	Estero Tamarindo, Los Cóbanos	Sonsonate, La Unión
Ophichthus zophochir Jordan & Gilbert 1882	9	A	2001	40-938; 40-970; 40-972	M	Bahía de La Unión, La Libertad	Usulután, La Libertad
Unidentified							
Larva Leptocephala sp1	1	L	2001	40-795	M	Costa de Usulután	Usulután
Larva Leptocephala sp2	1	L	2001	40-796	M	Costa de Usulután	Usulután
Larva Leptocephala sp3	3	L	2001	40-936	M	Costa de Usulután	Usulután
CLUPEIFORMES							
Clupeidae 3 (6)							
Harengula thrissina (Jordan & Gilbert 1882)	9	L	2010	40-501	M	Bahía de La Unión	La Unión
*Lile stolifera** (Jordan & Gilbert 1882)	26	A	1976; 1979; 1981; 1982; 1983; 1989	40-137; 40-142; 40-154; 40-156; 40-175; 40-208; 40-333; 40-348; 40-813	M, B^{Pe}	Estero de Jaltepeque, Bocana Río Las Marías, Estero San Diego, Los Cóbanos, El Pital, Punta Remedios	Sonsonate, La Libertad, La Paz
Opisthonema libertate (Günther 1867)	5	A	1976; 1980; 2006	40-44; 40-45; 40-116; 40-225	M	Bahía de Jiquilisco, Jucuarán	Usulután
Engraulidae 6 (14)							
Anchoa eigenmannia+* (Meek & Hildebrand 1923)	70	A	1989; 2001; 2006	40-56; 40-152; 40-815; 40-852	M, B^{Pe}	Estero San Diego, Bahía de La Unión, Jucuarán	La Libertad, Usulután, La Unión
Anchoa nasus (Kner & Steindachner 1867)	4	A	2001	40-129	M	La Libertad	La Libertad
Anchoa sp 1	3	L	2010	40-510	M	Bahía de La Unión	La Unión
Anchoa spinifer+ (Valenciennes 1848)	11	A	1980; 2001; 2006	40-29; 40-53; 40-54; 40-62; 40-768; 40-858; 40-908; 40-917; 40-954	M	Jucuarán, Playa las Tunas, Golfo de Fonseca	Usulután, La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Anchoa starksi (Gilbert & Pierson 1898)	4	A	1989; 2001; 2006	40-84; 40-814; 40-911	M, B^{Pe}	Estero San Diego, Costa Azul, Jucuarán	Sonsonate, La Libertad, Usulután
Anchovia macrolepidota (Kner 1863)	7	A	1976; 1980; 1991	40-119; 40-207; 40-215	M, B^{Pe}	Barra de Santiago, La Chacara, Bahía de Jiquilisco, Los Lagartos, Golfo de Fonseca, Isla Conchagüita	Ahuachapán, Usulután, La Unión
Cetengraulis mysticetus (Günther 1867)	1	A	2006	40-27	M	Jucuarán	La Unión
Engraulidae sp 1	6	L	2010	40-495	M	Bahía de La Unión	La Unión
Engraulidae sp 2	3	L	2010	40-499	M	Bahía de La Unión	La Unión
Engraulidae sp 3	1	L	2010	40-507	M	Bahía de La Unión	La Unión
Engraulidae sp 4	1	L	2010	40-508	M	Bahía de La Unión	La Unión
Pristigasteridae 3 (6)							
Ilisha fuerthii+ (Steindachner 1875)	3	A	1980	40-320	M	Golfo de Fonseca	La Unión
Opisthopterus dovii (Günther 1868)	1	A	2001	40-942	M	Playa El Espino	Usulután
Opisthopterus equatorialis+ Hildebrand 1946	2	A	1980	40-172	M	Golfo de Fonseca, Isla Conchagüita	La Unión
GONORYNCHIFORMES							
Chanidae 1 (1)							
*Chanos chanos** (Forsskål 1775)	1	A	1991	40-111	M, B^{Pe}	Bocana El Zapote, Barra de Santiago	Ahuachapán
CHARACIFORMES							
Characidae 2 (3)							
Astyanax aeneus (Günther 1860)	75	A	1980; 2011	40-139; 40-511; 40-523; 40-531; 40-536; 40-550; 40-555; 40-566; 40-591; 40-622; 40-629; 40-636; 40-660; 40-673; 40-674	F^{Pr}	Río Lempa, Río Chimalapa, Río La Joya, Río Salitre, Río Angue, Río Hipapayo, Río La Hacienda, Río Torola, Río Guancora, Río Los Limones, Río Guacotecti, Río Sisigua	Sonsonate, Santa Ana, Chalatenango, San Vicente, Cabañas, Usulután, Morazán
Roeboides bouchellei Fowler 1923	8	A	2011	40-521; 40-560; 40-567; 40-635	F^{Pr}	Río Sisigua, Río Lempa, Río Hipapayo, Río Angue, La Joya	Santa Ana, San Vicente, Cabañas, Usulután,

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
SILURIFORMES							
Ariidae 7 (12)							
Ariopsis guatemalensis (Günther 1864)	1	A	1979	40-216	M	Golfo de Fonseca	La Unión
Ariopsis seemanni[+](Günther 1864)	23	J, A	1976; 1989; 1991	40-131; 40-150; 40-151; 40-235; 40-383	B, F[Pe]	Estero de San Diego, Bahía de Jiquilisco, Río Chaguantique, Bahía de Jiquilisco, Los Lagartos, Estero de Jaltepeque, Barra de Santiago	Ahuachapán, La Libertad, La Paz, Usulután
Bagre panamensis (Gill 1863)	8	A	1976; 1980; 1990	40-16; 40-125; 40-146; 40-217; 40-379;	M, B[Pe]	Bahía de Jiquilisco, El Potrero, Golfo de Fonseca, Jucuarán, El Morrito	Usulután, La Unión
*Cathorops dasycephalus** (Günther 1864)	2	A	1991; 2006	40-127; 40-430	M, B[Pe]	Barra de Santiago, La Chacara, Juacuarán	Ahuachapán, Usulután
Cathorops fuerthii[†] (Steindachner 1876)	5	A	1976; 1991; 2006	40-382; 40-435; 40-436; 40-785; 40-786	M, B	Barra de Santiago, Bahía de Jiquilisco, El Potrero, Jucuarán	Ahuachapán, Usulután
Cathorops steindachneri (Gilbert & Starks 1904)	1	A	2006	40-39	M	Jucuarán	Usulután
Occidentarius platypogon (Günther 1864)	1	A	2006	40-70	M	Jucuarán	Usulután
Heptapteridae 2 (2)							
Rhamdia guatemalensis[+] (Günther 1864)	18	A	1977; 2011	40-256; 40-519; 40-529; 40-549; 40-565; 40-587; 40-599; 40-614; 40-628	F[Pr]	Río Paz, Río La Joya, Río Lempa, Río Salitre, Río Angue, Río Quezalapa, Río La Hacienda, Río Guancora	Ahuachapán, Santa Ana, Chalatenango, Cuscatlán, San Vicente, Cabañas
Rhamdia laticauda[+] (Kner 1858)	150	A	1977; 2011	40-273; 40-541; 40-559; 40-572; 40-588; 40-594; 40-600; 40-606; 40-615; 40-621; 40-627; 40-640; 40-647; 40-658	F[Pr]	Río Paz, Río Lempa, Río Hipapayo, Río Guancora, Río Frío, Río Quezalapa, Río Paso Hondo, Río Guacotecti, Río Los Limones, Río Guaza, Río Tepemechín, Río Sesori, Río La Hacienda, Río Torola	Ahuachapán, Santa Ana, Chalatenango, San Salvador, Cuscatlán, Cabañas, San Miguel, Morazán
GADIFORMES							
Bregmacerotidae 1 (1)							
Bregmaceros bathymaster Jordan & Bollmann 1890	1	L	2001	40-797	M	Costa de Usulután	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
AULOPIFORMES							
Synodontidae 2 (4)							
Synodus evermanni Jordan & Bollman 1890	3	A	2001	40-871; 40-905	M	Playa Costa Azul, Bahía de Jiqulisco	Sonsonate, Usulután
Synodus scituliceps Jordan & Gilbert 1882	8	A	1976; 1980; 1990; 2001	40-184; 40-257; 40-319; 40-955; 40-989	M	Bahía de Jiquilisco, Corral de Mulas, Golfo de Fonseca	Usulután, La Unión
HOLOCENTRIFORMES							
Holocentridae 1 (2)							
Neoniphon suborbitalis (Gill 1863)	28	J, A	1978; 1979; 1981; 1983	40-236; 40-294; 40-330; 40-387; 40-392; 40-689; 40-690; 40-712; 40-713; 40-714; 40-715; 40-716	M	Los Cóbanos, Playa El Pital	Sonsonate, La Libertad
OPHIDIIFORMES							
Bythitidae 2 (6)							
Ogilbia robertsoni Møller, Schwarzhans & Nielsen 2005	4	A	2001	40-843; 40-994	M	Bahía de La Unión, Golfo de Fonseca	La Unión
Ogilbia sedorae Møller, Schwarzhans & Nielsen 2005	1	A	2001	40-918	M	Gofo de Fonseca	La Unión
Ophidiidae 2 (6)							
Cherublemma emmelas (Gilbert 1890)	5	A	2001	40-211	M	Costa de Usulután	Usulután
Lepophidium prorates (Jordan & Bollman 1890)	7	A	1980; 2001	40-346; 40-935; 40-959; 40-960	M	Golfo de Fonseca	La Unión
BATRACHOIDIFORMES							
Batrachoididae 3 (3)							
Batrachoides waltersi Collette & Russo 1981	6	A	1976; 2001	40-118; 40-443; 40-956	M, B, F	Bahía de Jiquilisco, Golfo de Fonseca	Usulután, La Unión,
Porichthys greenei[+] * Gilbert & Starks 1904	4	A	1976; 2001	40-209; 40-210; 40-945	M, B[Pe]	Bahía de Jiquilisco, Playa El Espino	Usulután
Porichthys margaritatus (Richardson 1844)	11	A	1980; 1990; 2001	40-14; 40-298; 40-937	M	Jucuarán, Golfo de Fonseca	Usulután, La Unión
GOBIIFORMES							
Eleotridae 3 (3)							
Dormitator latifrons (Richardson 1844)	37	L, A	1979; 1980; 1984; 2006; 2010; 2011	40-85; 40-95; 40-183; 40-218; 40-233; 40-389; 40-401; 40-437; 40-480; 40-505	B, F[Pe]	Jucuarán, Bocana del Río Jiboa, Los Cóbanos, Golfo de Fonseca, Bahía de La Unión, Estero contiguo a Solimar	Sonsonate, La Paz, Usulután, La Unión,

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Eleotris picta[+] Kner 1863	30	J, A	1978;1979;1980;2008	40-100;40-185;40-202;40-219	B, F[Pe]	Río Ceniza-Banderas, Río Chimalapa, Bocana del Río Jiboa	Sonsonate, La Libertad, La Paz
Gobiomorus maculatus[+] (Günther 1859)	17	A	1979; 1989; 2011	40-214; 40-286; 40-512; 40-513; 40-520	B, F[Pe]	Bocana del Río Jiboa, Estero San Diego, Río La Joya, Puente Cuscatlán	La Libertad, La Paz, San Vicente, Usulután
Gobiidae 11(25)							
Aboma etheostoma Jordan & Starks 1895	2	A	2006	40-93; 40-94	M	Jucuarán	Usulután
Akko rossi Van Tassell & Baldwin 2004	19	A	2001	40-263; 40-947	M	Golfo de Fonseca	La Unión
Bathygobius andrei[+]* (Sauvage 1880)	5	A	2001	40-717; 40-718; 40-719; 40-720; 40-1004	M, B[Pe]	Estero El Tamarindo, Golfo de Fonseca	La Unión
Bathygobius ramosus Ginsburg 1947	26	A	1974; 1978; 1979; 2001; 2010	40-193; 40-198; 40-312; 40-475; 40-746; 40-818	M, B[Pe]	Los Cóbanos, Playa Mizata, Barra de Santiago, Acajutla	Ahuachapán, Sonsonate, La Libertad,
Bathygobius sp 1	1	L	2010	40-506	M	Bahía de La Unión	La Unión
Bathygobius sp 2	3	L	2010	40-509	M	Bahía de La Unión	La Unión
Ctenogobius manglicola[+] Jordan & Starks 1895	1	L	2010	40-498	M	Bahía de La Unión	La Unión
Ctenogobius sagittula (Günther 1862)	2	L, A	1983; 2010	40-281; 40-496	M	Los Cóbanos, Bahía de La Unión	Sonsonate, La Unión
Gobiidae sp 1	7	L	2010	40-481	M	Bahía de La Unión	La Unión
Gobiidae sp 2	7	L	2010	40-492	M	Bahía de La Unión	La Unión
Gobiidae sp 3	1	L	2010	40-500	M	Bahía de La Unión	La Unión
Gobionellus microdon (Gilbert 1892)	22	L, A	1979; 1982; 1989; 2001; 2011	40-166; 40-169; 40-187; 40-301; 40-347; 40-479; 40-949; 40-966	M	Playa El Pital, Los Cóbanos, Bocana Río Jiboa, Golfo de Fonseca, Bahía de Jiquilisco	Sonsonate, La Libertad, La Paz, La Unión,
Gobiosoma aceras[+] Ginsburg 1939	5	A	2001	40-849; 40-922	B	Bahía de La Unión, Golfo de Fonseca	La Unión
Gobiosoma paradoxum (Günther 1861)	2	A	2011	40-468	M	Los Cóbanos	Sonsonate
Microgobius tabogensis Meek & Hildebrand 1928	1	L	2010	40-484	M	Bahía de La Unión	La Unión
Sicydium multipunctatum[+] Regan 1906	15	A	1977; 2007; 2011	40-3; 40-274; 40-515	F[Pe]	Río La Joya, Río Ceniza, Río Paz	Ahuachapán, Sonsonate, San Vicente

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
MUGILIFORMES							
Mugilidae 3 (7)							
Agonostomus monticola (Bancroft 1834)	8	A	1977; 2011	40-296; 40-518	F^{Pe}	Río Paz, Río La Joya	Ahuachapán, San Vicente,
Mugil curema Valenciennes 1836	116	J, A	1975; 1976; 1978; 1979; 1980; 1981; 1982; 1989; 1991; 2001; 2006; 2010	40-21; 40-38; 40-60; 40-104; 40-133; 40-168; 40-181; 40-186; 40-220; 40-238; 40-240; 40-276; 40-283; 40-285; 40-341; 40-463; 40-370; 40-711; 40-743; 40-744; 40-824; 40-835	B, F^{Pe}	Estero de Jaltepeque, Jucuarán, Barra de Santiago, Los Cóbanos, Golfo de Fonseca, Estero San Diego, Río Jiboa, Río Chimalapa, Estero Las Bocanitas, Bahía de Jiquilisco, Estero El Tamarindo, Estero de Los Blancos, Isla Martín Pérez	Ahuachapán, Sonsonate, La Libertad, La Paz, Usulután, La Unión,
Xenomugil thoburni (Jordan & Starks 1896)	2	J	1976	40-371	M	Bahía de Jiqulisco	Usulután
CICHLIFORMES							
Cichlidae 8 (14)							
Amatitlania nigrofasciata (Günther 1867)	229	A	1979; 2007; 2011; 2017	40-2; 40-170; 40-516; 40-528; 40-542; 40-558; 40-563; 40-579; 40-584; 40-589; 40-602; 40-607; 40-616; 40-630; 40-632; 40-633; 40-641; 40-648; 40-659; 40-999	F^{Se}	Río Ceniza-Banderas, Río San Francisco, Río Lempa, Río La Joya, Río Hipapayo, Río Salitre, Río El Llano, Río Tamulasco, Río Guancora, Río Quezalapa, Río Guaza, Río Los Limones, Río La Hacienda, Río Sisigua, Río Sesori, Río Tepemechín, Quebrada de Perquín, Río Torola	Ahuachapán, Sonsonate, Santa Ana, Chalatenango, Cuscatlán, San Salvador, San Vicente, Cabañas, San Miguel, Morazán
Amphilophus trimaculatus (Günther 1867)	10	A	1977; 2011	40-158; 40-522; 40-548; 40-634; 40-666	F^{Se}	Río Sisigua, Río Lempa, Río Torola, Río Paz	Ahuachapán, Chalatenango, San Vicente, Cabañas
Astatheros macracanthus (Günther 1864)	4	A	1977; 2007	40-134; 40-996	F^{Se}	Río Ceniza-Banderas, Río Paz	Ahuachapán, Sonsonate
Cribroheros longimanus^{+} (Günther 1867)	1	A	1977	40-701	F^{Se}	Río Paz	Ahuachapán
Cryptoheros cutteri^{+} (Fowler 1932)	4	A	2011	40-544	F^{Se}	Río Lempa	Chalatenango
Oreochromis niloticus (Linnaeus 1758)	9	A	2007; 2011	40-1; 40-4; 40-543; 40-661	F^{Se}	Río Ceniza, Río Lempa, Río Ceniza	Sonsonate, Chalatenango, Morazán

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Parachromis managuensis (Günther 1867)	1	A	2011	40-556	F[Se]	Río Hipayo	Santa Ana
Parachromis motaguensis (Günther 1867)	75	A	1977; 2000; 2011; 2013; 2017	40-153; 40-182; 40-525; 40-539; 40-551; 40-568; 40-592; 40-597; 40-603; 40-617; 40-637; 40-643; 40-650; 40-675; 40-1003	F[Se]	Río Quezalapa, Río Lempa, Río Los Limones, Río Paso Hondo, Río Angue, Río Salitre, Río Guancora, Río Sisigua, Río Tepemechín, Río Sesori, Lago de Ilopango	Santa Ana, San Salvador, San Vicente, Chalatenango, Cabañas, San Miguel, Morazán,
BLENNIIFORMES							
Blenniidae 3 (4)							
Hypsoblennius brevipinnis (Günther 1861)	36	J, A	2001	40-834	M	Acajutla	Sonsonate
Hypsoblennius sp 1	1	A	1983	40-311	M	Los Cóbanos	Sonsonate
Ophioblennius steindachneri Jordan & Evermann 1898	21	J, A	1976; 1979; 1981; 1983; 2001; 2011	40-140; 40-160; 40-309; 40-471; 40-755; 40-756; 40-777; 40-778; 40-826; 40-933	M, B	Playa El Pital, Los Cóbanos, Acajutla, Golfo de Fonseca, Bahía de Jiquilisco	Sonsonate, La Libertad, Usulután, La Unión
Plagiotremus azaleus Jordan & Bollman 1890	1	A	2001	40-844	M	Bahía de La Unión	La Unión
Labrisomidae 3 (9)							
Malacoctenus sp 1	2	L	2010	40-486	M	Bahía de La Unión	La Unión
Malacoctenus sudensis[+] Springer 1959	29	L, J, A	1979; 1981; 1982; 2001; 2010	40-203; 40-264; 40-388; 40-488; 40-779; 40-780; 40-823; 40-851	M	Acajutla, Bahía de La Unión	Sonsonate, La Unión
Paraclinus beebei[+] Hubbs 1952	5	A	2001	40-846; 40-919	M, B	Golfo de Fonseca	La Unión
Paraclinus monophthalmus[+] (Günther 1861)	5	A	2001; 2011	40-466; 40-841; 40-920	M, B	Acajutla, Golfo de Fonseca, Bahía de La Unión	Sonsonate, La Unión
Tripterygiidae 1 (2)							
Enneanectes carminalis (Jordan & Gilbert 1882)	4	A	2001	40-923	M	Golfo de Fonseca	La Unión
Tripterygiidae sp 1	1	L	2010	40-502	M	Bahía de La Unión	La Unión
GOBIESOCIFORMES							
Gobiesocidae 3 (7)							
Arcos rhodospilus[+](Günther 1864)	5	A	1979	40-196	M	Playa El Pital	La Libertad
Gobiesocidae sp 1	2	L	2010	40-491	M	Bahía de La Unión	La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Gobiesox daedaleus[+] Briggs 1951	11	A	1979; 2001	40-304; 40-924; 40-961	M	Los Cóbanos, Playa El Flor, Golfo de Fonseca	Sonsonate, La Unión.
Tomicodon zebra[+] (Jordan & Gilbert 1882)	2	A	2009	40-381	M	Playa El Pital	La Libertad
ATHERINIFORMES							
Atherinopsidae 4 (7)							
Atherinella argentea Chernoff 1986	8	A	1976; 2006	40-43; 40-234; 40-804; 40-805; 40-806; 40-807; 40-808; 40-809	M	Bahía de Jiquilisco, Jucuarán	Usulután
Atherinella eriarcha Jordan & Gilbert 1882	1	A	1979	40-799	M	Playa El Pital	La Libertad
Atherinella starksi[+†] (Meek & Hildebrand 1923)	9	A	1979; 2001	40-787; 40-800; 40-801; 40-802; 40-803; 40-921	M	Playa El Pital, Golfo de Fonseca	La Libertad, La Unión
Membras gilberti (Jordan & Bollman 1890)	1	A	2006	40-48	M	Jucuarán	Usulután
BELONIFORMES							
Belonidae 3 (6)							
*Strongylura exilis** (Girard 1854)	1	A	1991	40-397	M, B^{Pe}	Barra de Santiago	Ahuachapán
Strongylura scapularis (Jordan & Gilbert 1882)	1	L	2010	40-487	M	Bahía de La Unión	La Unión
*Tylosurus crocodilus fodiator** Jordan & Gilbert 1882	1	A	1979	40-112	B^{Pe}	Estero Tamarindo	Usulután
Hemiramphidae 2 (8)							
*Hyporhamphus naos** Banford & Collette 2001	1	A	1979	40-179	B^{Pe}	Estero de Jaltepeque	La Paz
Hyporhamphus snyderi Meek & Hildebrand 1923	2	A	1976; 2006	40-343; 40-425	M, B	Jucuarán, Bahía de Jiqulisco	Usulután
CYPRINODONTIFORMES							
Anablepidae 1 (1)							
Anableps dowei Gill 1861	2	A	1977; 1991	40-110; 40-376	B, F^{Se}	Hacienda Nancuchiname, Barra de Santiago	Ahuachapán, Usulután
Poeciliidae 8 (8)							
Poecilia nelsoni[+] (Meek 1904)	46	A	2011	40-532; 40-552; 40-570; 40-598; 40-605; 40-619; 40-651; 40-652; 40-668	F^{Se}	Río Lempa, Río Salitre, Río Angue, Rio Paso Hondo, Río Quezalapa, Río Los Limones, Río Tepemechín, Río Torola	Santa Ana, Cuscatlán, Chalatenango, Cabañas, Morazán

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Poecilia sp (Steindachner 1863)	24	A	2011; 2017	40-625; 40-997; 40-998	F^{Se}	Río Guacotecti, Quebrada de Perquín	Morazán, Cabañas
Poecilia marcellinoi Poeser 1995	11	A	2011	40-535; 40-571; 40-610; 40-620; 40-623; 40-645; 40-655; 40-657	F^{Se}	Río Lempa, Río Guaza, Río Angue, Río Guacotecti, Río Sesori, Río Tepemechín, Río Los Limones	Santa Ana, Chalatenango, Cuscatlán, San Miguel, Morazán
Poecilia salvatoris Regan 1907	695	A	1980; 2011	40-517; 40-530; 40-533; 40-537; 40-538; 40-540; 40-554; 40-561; 40-562; 40-569; 40-576; 40-580; 40-585; 40-596; 40-604; 40-609; 40-611; 40-618; 40-624; 40-631; 40-638; 40-639; 40-642; 40-644; 40-646; 40-649; 40-653; 40-656; 40-663; 40-664; 40-665; 40-667; 40-671; 40-811; 40-812	B, F^{Se}	Río La Joya, Río El Salitre, Río Lempa, Río Hipayo, Río Angue, Río Frío, Río El Llano, Río Tahuilapa, Río Paso Hondo, Río Quezalapa, Río Guaza, Río Los Limones, Río Guacotecti, Río La Hacienda, Río Sisigua, Río Sesori, Río Guacotecti, Río Tepemechín, Estero Las Bocanitas	Santa Ana, La Libertad, Chalatenango, San Salvador, Cuscatlán, San Vicente, Cabañas, Morazán
Poecilia sphenops[+] Valenciennes 1846	245	A	1978;1; 1979; 1989; 2011; 2017	40-282; 40-299; 40-302; 40-402; 40-669; 40-670; 40-672, 40-1001	F^{Se}	Hacienda Santa Clara, Estero San Diego, Río Jiboa, Río San Francisco, Río Guacotecti, Río Lempa, Quebrada de Perquín	Ahuachapán, La Libertad, La Paz, Chalatenango, Cabañas, Morazán
Poeciliopsis pleurospilus[+] (Günther 1866)	155	A	2011; 2017	40-514; 40-524; 40-534; 40-553; 40-564; 40-577; 40-593; 40-601; 40-608; 40-612; 40-626; 40-654; 40-662; 40-1000	F^{Se}	Río La Joya, Río Lempa, Río Salitre, Río Angue, Río El Llano, Río Paso Hondo, Río Quezalapa, Río Los Limones, Río La Hacienda, Río Tepemechín, Río Torola	Santa Ana, Chalatenango, San Salvador, Cuscatlán, Cabañas, San Vicente, Morazán
Poeciliopsis turrubarensis[+] (Meek 1912)	53	A	1989; 1979	40-5; 40-710	B^{Se}	Esteros Los Blancos, Estero San Diego	Sonsonate, La Libertad
Pseudoxiphophorus anzuetoi[+] (Rosen & Bailey 1979)	73	A	2011	40-547; 40-578; 40-581; 40-582; 40-586; 40-590; 40-595; 40-613	F^{Se}	Los Limones	Cuscatlán
Profundulidae 2 (2)							
Profundulus guatemalensis[+] (Günther 1866)	43	A	1975; 1979	40-174; 40-249	F^{Se}	Finca San Benito; Río Mixtepe	Ahuachapán, Santa Ana
Profundulus kreiseri[+†] Matamoros, Schaefer, Hernández & Chakrabarty 2012	92	A	2011; 2017	40-526; 40-527; 40-545; 40-546; 40-573; 40-574; 40-575; 40-583; 40-1002	F^{Se}	Río Lempa, Río El Gramal, Río La Conquista, Río Negro; Río Frío	Santa Ana, Chalatenango, Morazán

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
SYNBRANCHIFORMES							
Synbranchidae							
Synbranchus marmoratus (Bloch 1795)	2	J, A	1976; 2011	40-291; 40-557	F[Se]	Río Agua Caliente, Río Hipapayo	Santa Ana, La Libertad
CARANGIFORMES							
Carangidae 14(30)							
Caranx caballus Günther 1868	1	A	1980	40-685	B	Puerto El Triunfo	Usulután
Caranx caninus Günther 1867	27	J, A	1976; 1979; 1980; 1983; 1992; 2006	40-55; 40-63; 40-65; 40-113; 40-132; 40-141; 40-155; 40-173; 40-190; 40-191; 40-300; 40-422; 40-423; 40-784	M, B, F[Pe]	Jucuarán, Bahía de Jiquilisco, Estero de Jaltapeque, Barra de Santiago, Los Cóbanos, Bocana del Río Jiboa, Río Chaguantique, Golfo de Fonseca	Ahuachapán, Sonsonate, La Paz, Usulután, La Unión,
Chloroscombrus orqueta Jordan & Gilbert 1883	12	A	1976; 1980; 1990; 2001	40-22; 40-128; 40-277; 40-791; 40-854; 40-859; 40-869; 40-892; 40-912	M, B	Bahía de Jiquilisco, Jucuarán, Golfo de Fonseca, Costa Azul, La Libertad	Sonsonate, La Libertad, Usulután, La Unión,
Hemicaranx leucurus (Günther 1864)	2	A	2006	40-86; 40-103	M	Jucuarán	Usulután
Hemicaranx zelotes Gilbert 1898	4	A	2006	40-40; 40-49; 40-51; 40-76	M	Jucuarán	Usulután
Oligoplites altus (Günther 1868)	3	A	1979; 1980; 2006	40-171; 40-424; 40-681	M, B	Puerto El Triunfo, Jucuarán, Golfo de Fonseca	Usulután, La Unión
*Oligoplites refulgens** Gilbert & Starks 1904	4	A	1976; 1979; 1980; 1991	40-143; 40-205; 40-232; 40-395	M, B[Pe]	Bahía de Jiquilisco, Barra de Santiago, Golfo de Fonseca	Ahuachapán, Usulután, La Unión,
Selar crumenophthalmus (Bloch 1793)	3	A	1980	40-228; 40-229	M	Golfo de Fonseca, Puerto El Triunfo	Usulután, La Unión
*Selene brevoortii** (Gill 1863)	17	A	1976; 1980; 2001; 2006	40-8; 40-35; 40-64; 40-83; 40-87; 40-91; 40-97; 40-101; 40-144; 40-157; 40-995	M, B[Pe]	Estero de la Costa del Sol, Golfo de Fonseca, Bahía de Jiquilisco, Costa Azul	Sonsonate, La Paz, Usulután, La Unión
Selene orstedii Lütken 1880	3	J, A	1980; 2001; 2006	40-82; 40-440; 40-682	M, B	Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión
Selene peruviana (Guichenot 1866)	8	J, A	1976; 1990; 2001	40-23; 40-124; 40-197; 40-245; 40-767	M	Golfo de Fonseca, Bahía de La Unión, Costa de Usulután	La Libertad, Usulután, La Unión
Trachinotus kennedyi Steindachner 1876	1	A	2006	40-88	M	Jucuarán	Usulután
Trachinotus paitensis Cuvier 1832	8	J, A	1980; 2001	40-138; 40-678; 40-827	M, B	Los Cóbanos, Puerto El Triunfo	Sonsonate, La Unión
Trachinotus rhodopus Gill 1863	2	A	2006	40-28; 40-79	M	Jucuarán	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Echeneidae 1 (4)							
*Remora remora**(Linnaeus 1758)	2	A	1979	40-421	B^{Pe}	Barra de Santiago	Ahuachapán
Nematistiidae 1 (1)							
Nematistius pectoralis Gill 1862	1	A	1992	40-114	M	Bahía de Jiquilisco	Usulután
ISTIOPHORIFORMES							
Sphyraenidae 1 (1)							
Sphyraena ensis Jordan & Gilbert 1882	10	A	1980; 1990; 2001,2006	40-50; 40-73; 40-78; 40-353; 40-427; 40-680; 40-792; 40-793; 40-794	M, B	La Libertad, Jucurán, Playa El Espino	La Libertad, Usulután
PLEURONECTIFORMES							
Achiridae 4 (4)							
Achirus mazatlanus (Steindachner 1869)	7	J, A	1976; 1980; 2001	40-12; 40-230; 40-303; 40-352; 40-907	M, B^{Pe}	Estero Las Bocanitas, Golfo de Fonseca, Playa Las Tunas, Bahía de Jiquilisco	La Libertad, La Unión, La Libertad
Achirus scutum (Günther 1862)	10	J, A	1980; 1990; 2001; 2006; 2007	40-25; 40-37; 40-364; 40-414; 40-464; 40-676	M	Jucuarán, Golfo de Fonseca	Usulután, La Unión
Trinectes fimbriatus (Günther 1862)	7	L, A	1990; 2010	40-365; 40-489	M	Jucuarán, Bahía de La Unión	Usulután, La Unión
Trinectes fonsecensis (Günther 1862)	3	A	1980; 2001	40-13; 40-853	M	Golfo de Fonseca	La Unión
Bothidae 1 (5)							
Engyophrys sanctilaurentii Jordan & Bollman 1890	1	A	2001	40-857	M	Golfo de Fonseca	La Unión
Cynoglossidae 5 (13)							
Symphurus atramentatus Jordan & Bollman 1890	7	A	2001	40-757; 40-758; 40-759; 40-760; 40-761; 40-762; 40-763	M	Costa de La Libertad	La Libertad
Symphurus chabanaudi Mahadeva & Munroe 1990	21	J, A	1976; 1986; 2001; 2006	40-9; 40-90; 40-96; 40-122; 40-159; 40-253; 40-374; 40-375; 40-439; 40-765; 40-766; 40-772	M, B, F	Playa Las Tunas, Golfo de Fonseca, Bahía de Jiquilisco, Jucuarán	Usulután, La Unión
Symphurus elongatus (Günther 1868)	43	A	2001	40-10; 40-241; 40-247; 40-764; 40-828; 40-829; 40-830; 40-831; 40-832; 40-833; 40-988	M	Playa El Espino, Canal Bahía de Jiquilisco, Golfo de Fonseca, Playa Las Tunas	Usulután, La Unión
Symphurus fasciolaris Gilbert 1892	1	A	2001	40-145	M	Golfo de Fonseca	La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Symphurus leei Jordan & Bollman 1890	1	A	2001	40-19	M	Costa de Usulután	Usulután
Paralichthyidae 7 (14)							
Citharichthys gilberti Jenkins & Evermann 1889	20	J, A	1979; 1990; 2006	40-361; 40-363; 40-367; 40-460	M, B^{Pe}	Estero de Jaltepeque, Juacuarán, Playa El Espino	La Paz, Usulután
Citharichthys mariajorisae[+] van der Heiden & Mussot-Pérez 1995	2	A	2001	40-976	M	Golfo de Fonseca	La Unión
Citharichthys platophrys Gilbert 1891	4	A	2001	40-426; 40-895; 40-899	M	La Libertad, Costa Azul, Golfo de Fonseca	Sonsonate, La Libertad, La Unión
Cyclopsetta panamensis Steindachner 1876	2	A	2001	40-868; 40-983	M	Bahía de Jiquilisco, Golfo de Fonseca	Usulután, La Unión
Cyclopsetta querna (Jordan & Bollman 1890)	1	A	2001	40-865	M	Bahía de Jiquilisco	Usulután
Etropus crossotus Jordan & Gilbert 1882	1	A	1990	40-362	M	Jucuarán	Usulután
*Syacium ovale** (Günther 1864)	17	A	2001; 2006	40-31; 40-57; 40-121; 40-730; 40-731; 40-732; 40-781; 40-782; 40-783; 40-867; 40-893; 40-946; 40-965	M, B^{Pe}	Bahía de Jiquilisco, Jucuarán, Estero El Tamarindo, Playa El Espino, Playa El Icacal, Golfo de Fonseca	Usulután, La Unión
SYNGNATHIFORMES							
Fistulariidae 1 (1)							
Fistularia corneta Gilbert & Starks 1904	1	A	1976	40-162	M	Bahía de Jiquilisco, Punta San Juan	Usulután
Syngnathidae 3 (5)							
Doryrhamphus excisus Kaup 1856	1	A	2010	40-474	M	Los Cóbanos	Sonsonate
*Hippocampus ingens** Girard 1858	5	J, A	1991; 2001	40-239; 40-385	M, B^{Pe}	Barra de Santiago, La Ensenada, Costa Azul	Ahuachapán, Sonsonate
*Syngnathus auliscus** (Swain 1882)	1	A	2001	40-237	B^{Pe}	Estero El Tamarindo	La Unión
SCOMBRIFORMES							
Scombridae 1 (9)							
Scomberomorus sierra Jordan & Starks 1895	2	A	1980; 2006	40-434; 40-687	M, B	Puerto El Triunfo, Jucuarán	Usulután
Stromateidae 1 (2)							
Peprilus medius Peters 1869	6	A	1980; 2001; 2006	40-105; 40-340; 40-459; 40-461; 40-862	M	Jucuarán, Golfo de Fonseca	Usulután, La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Trichiuridae 1 (1)							
Trichiurus lepturus Linnaeus 1758	3	J, A	1980; 2001	40-446; 40-860	M	Golfo de Fonseca	La Unión
TRACHINIFORMES							
Uranoscopidae 1 (2)							
*Astroscopus zephyreus** Gilbert & Starks 1897	1	A	1991	40-396	B^{Pe}	Barra de Santiago	Ahuachapán
LABRIFORMES							
Labridae 3 (13)							
Halichoeres dispilus (Günther 1864)	16	A	2001	40-838; 40-842; 40-929	M	Bahía de La Unión, Golfo de Fonseca	La Unión
Halichoeres notospilus (Günther 1864)	29	J, A	1979; 1981; 1983; 2001	40-24; 40-188; 40-192; 40-200; 40-221; 40-391; 40-930	M	Los Cóbanos, Golfo de Fonseca	Sonsonate, La Unión
Thalassoma lucasanum (Gill 1862)	3	A	1981	40-201	M	Los Cóbanos	Sonsonate
Scaridae 2 (5)							
Nicholsina denticulata (Evermann & Radcliffe 1917)	1	J	1979	40-279	M	Playa Maculís	La Unión
Scarus compressus+ (Osburn & Nichols 1916)	1	A	1978	40-773	B	Bahía de Jiquilisco	Usulután
PERCIFORMES							
Apogonidae 2 (3)							
Apogon dovii Günther 1862	5	A	2001	40-836; 40-927; 40-981	M	Golfo de Fonseca	La Unión
Apogon retrosella+ (Gill 1862)	4	A	2001	40-847; 40-928; 40-982	M, B	Bahía de La Unión, Golfo de Fonseca	La Unión
Centropomidae 5 (6)							
Centropomus armatus Gill 1863	3	J	1981	40-698; 40-699; 40-700	M	Los Cóbanos	Sonsonate
Centropomus medius Günther 1864	1	J	2006	40-42	M	Jucuarán	Usulután
Centropomus nigrescens Günther 1864	2	J	1979	40-136	M	Golfo de Fonseca	La Unión
Centropomus robalito Jordan & Gilbert 1882	5	J, A	1980; 1989; 1990	40-213; 40-323; 40-366	M, B^{Pe}	Corral de Mulas, Puerto El Triunfo, Estero San Diego	Usulután, La Libertad
Centropomus unionensis Bocourt 1868	5	A	1980; 2006	40-324; 40-428; 40-677	M	Puerto El Triunfo, Jucuarán	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Trichiuridae 1 (1)							
Trichiurus lepturus Linnaeus 1758	3	J, A	1980; 2001	40-446; 40-860	M	Golfo de Fonseca	La Unión
TRACHINIFORMES							
Uranoscopidae 1 (2)							
*Astroscopus zephyreus** Gilbert & Starks 1897	1	A	1991	40-396	B^{Pe}	Barra de Santiago	Ahuachapán
LABRIFORMES							
Labridae 3 (13)							
Halichoeres dispilus (Günther 1864)	16	A	2001	40-838; 40-842; 40-929	M	Bahía de La Unión, Golfo de Fonseca	La Unión
Halichoeres notospilus (Günther 1864)	29	J, A	1979; 1981; 1983; 2001	40-24; 40-188; 40-192; 40-200; 40-221; 40-391; 40-930	M	Los Cóbanos, Golfo de Fonseca	Sonsonate, La Unión
Thalassoma lucasanum (Gill 1862)	3	A	1981	40-201	M	Los Cóbanos	Sonsonate
Scaridae 2 (5)							
Nicholsina denticulata (Evermann & Radcliffe 1917)	1	J	1979	40-279	M	Playa Maculís	La Unión
Scarus compressus+ (Osburn & Nichols 1916)	1	A	1978	40-773	B	Bahía de Jiquilisco	Usulután
PERCIFORMES							
Apogonidae 2 (3)							
Apogon dovii Günther 1862	5	A	2001	40-836; 40-927; 40-981	M	Golfo de Fonseca	La Unión
Apogon retrosella+ (Gill 1862)	4	A	2001	40-847; 40-928; 40-982	M, B	Bahía de La Unión, Golfo de Fonseca	La Unión
Centropomidae 5 (6)							
Centropomus armatus Gill 1863	3	J	1981	40-698; 40-699; 40-700	M	Los Cóbanos	Sonsonate
Centropomus medius Günther 1864	1	J	2006	40-42	M	Jucuarán	Usulután
Centropomus nigrescens Günther 1864	2	J	1979	40-136	M	Golfo de Fonseca	La Unión
Centropomus robalito Jordan & Gilbert 1882	5	J, A	1980; 1989; 1990	40-213; 40-323; 40-366	M, B^{Pe}	Corral de Mulas, Puerto El Triunfo, Estero San Diego	Usulután, La Libertad
Centropomus unionensis Bocourt 1868	5	A	1980; 2006	40-324; 40-428; 40-677	M	Puerto El Triunfo, Jucuarán	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Chaetodontidae 1 (2)							
*Chaetodon humeralis** Günther 1860	20	A	1976; 1979; 1980; 1981; 1983; 2001	40-7; 40-176; 40-204; 40-265; 40-266; 40-369; 40-721; 40-722; 40-723; 40-724; 40-725; 40-726; 40-819	M, B^{Pe}	Los Cóbanos, Estero El Tamarindo, Playa Maculís, Bahía de Jiquilisco	Sonsonate, Usulután, La Unión
Cirrhitidae 1 (3)							
Cirrhitus rivulatus Valenciennes 1846	3	A	1979	40-135	M	Playa El Pital	La Libertad
Gerreidae 4 (10)							
Deckertichthys aureolus^{+} (Jordan & Gilbert 1882)	4	A	1980; 2001	40-165; 40-986	M	Golfo de Fonseca	La Unión
Diapterus brevirostris (Sauvage 1879)	47	L, J, A	1976; 1979; 1980; 1981; 1989; 1992; 2001; 2006; 2010	40-34; 40-80; 40-89; 40-148; 40-288; 40-306; 40-335; 40-400; 40-451; 40-457; 40-458; 40-462; 40-494; 40-686; 40-704; 40-878	M, B^{Pe}	Bahía de Jiquilisco, Jucuarán, Estero San Diego, Barra de Santiago, Estero Las Bocanitas, Bahía de La Unión, Golfo de Fonseca, Los Cóbanos	Ahuachapán, Sonsonate, La Libertad, Usulután, La Unión
Eucinostomus currani Zahuranec 1980	34	J, A	1978; 1980; 1981; 1982; 1991; 1992; 2001; 2006; 2011	40-52; 40-81; 40-149; 40-199; 40-380; 40-472; 40-705; 40-706; 40-707; 40-708; 40-709; 40-747; 40-753; 40-754; 40-863; 40-866; 40-875; 40-913; 40-1005	M, B^{Pe}	Bahía de Jiquilisco, Jucuarán, Estero de Las Bocanitas, Barra de Santiago, Estero de Los Blancos, Los Cóbanos Bocana Río Las Marías, Golfo de Fonseca, Costa Azul	Ahuachapán, Sonsonate, La Libertad, Usulután, La Unión
Eucinostomus sp 1	2	L	2010	40-493	M	Bahía de La Unión	La Unión
Gerres simillimus^{+} Regan 1907	1	A	1992	40-345	M	Bahía de Jiquilisco	Usulután
Haemulidae 13 (24)							
Anisotremus caesius (Jordan & Gilbert 1882)	1	A	1980	40-327	M	Golfo de Fonseca	La Unión
Anisotremus taeniatus Gill 1861	7	J, A	1981; 1986; 2001	40-419; 40-688; 40-848; 40-926; 40-980	M	Los Cóbanos, Bahía de La Unión, Golfo de Fonseca	Sonsonate, La Unión
Conodon serrifer Jordan & Gilbert 1882	6	A	1980; 1990; 2001	40-404; 40-788; 40-789; 40-879	M, B	Puerto El Triunfo, Jucuarán, Golfo de Fonseca	Usulután, La Unión
Genyatremus dovii (Günther 1864)	11	A	1976; 1980; 2001; 2006	40-47; 40-206; 40-318; 40-456; 40-885	M, B, F	Jucurán, Puerto El Triunfo, Río Chaguantique, Bahía de Jiquilisco, Bahía de La Unión	Usulután, La Unión
Haemulidae sp 1	5	A	2010	40-485	M	Bahía de La Unión	La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Haemulon flaviguttatum Gill 1862	1	A	2006	40-77	M	Jucuarán	Usulután
Haemulon sexfasciatum Gill 1862	5	J, A	2001; 2006	40-32; 40-68; 40-872	M	Juacuarán, Bahía de Jiquilisco	Usulután
Haemulon steindachneri (Jordan & Gilbert 1882)	1	A	1986	40-420	M	Los Cóbanos	Sonsonate
Haemulopsis axillaris (Steindachner 1869)	6	J, A	1980; 2001; 2006	40-36; 40-58; 40-75; 40-178; 40-902; 40-977	M	Costa azul, Jucuarán, Golfo de Fonseca, Puerto El Triunfo	Sonsonate, Usulután, La Unión
Haemulopsis elongatus (Steindachner 1879)	3	A	1976; 1980	40-405; 40-769; 40-770	B, F	Puerto El Triunfo, Bahía de Jiquilisco	Usulután
Haemulopsis nitidus (Steindachner 1869)	6	J, A	1980; 2001	40-338; 40-339; 40-810; 40-941; 40-974	M, B	Frente a playa El Espino, Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión
Pomadasys macracanthus (Günther 1864)	17	L, J, A	1976; 1980; 1991; 2001; 2010	40-109; 40-164; 40-398; 40-490; 40-870; 40-964; 40-979	M, B, F	Barra de Santiago, Canal del Zapatero, Playa El Icacal, Golfo de Fonseca, Bahía de La Unión	Ahuachapán, Usulután, La Unión,
Rhencus panamensis (Steindachner 1876)	3	A	1980	40-325	M	Puerto El Triunfo	Usulután
Xenichthys xanti Gill 1863	2	A	1977; 1990	40-295; 40-418	M	Costa del Sol, Jucuarán	La Paz, Usulután
Kyphosidae 1 (3)							
*Kyphosus elegans** (Peters 1869)	1	A	1991	40-115	B^{Pe}	Barra de Santiago	Ahuachapán
Lutjanidae 6 (10)							
Hoplopagrus guentherii Gill 1862	1	J	1978	40-102	M	Bahía de Jiquilisco	Usulután
Lutjanus aratus (Günther 1864)	1	J	1979	40-194	M	Playa Maculís	La Unión
Lutjanus argentiventris (Peters 1869)	35	J, A	1976; 1978; 1979; 1980; 1981; 1982; 1991; 1992; 2001; 2006	40-33; 40-46; 40-69; 40-163; 40-177; 40-189; 40-242; 40-244; 40-262; 40-267; 40-268; 40-329; 40-344; 40-384; 40-691; 40-692; 40-733; 40-734; 40-735; 40-736; 40-737; 40-738; 40-739; 40-740; 40-741; 40-742; 40-822	M, B, F^{Pe}	Jucuarán, Puerto El Triunfo, Los Cóbanos, Barra de Santiago, Bocana Las Marías, Río Chimalapa, Bahía de Jiquilisco, bocana del Río Potrero, Estero El Tamarindo, Playa El Pital, Los Cóbanos, Playa El Flor, Golfo de Fonseca	Ahuachapán, Sonsonate, La Libertad, Usulután
Lutjanus colorado Jordan & Gilbert 1882	3	A	1980; 1991; 2006	40-30; 40-108; 40-683	B	Puerto El Triunfo	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Lutjanus guttatus (Steindachner 1869)	6	J, A	1980; 1990; 2001	40-227; 40-407; 40-856	M, B	Bahía de Jiquilisco, frente a la Bocana El Bajón, Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión,
Lutjanus novemfasciatus Gill 1862	2	J	1980	40-248	M	Los Cóbanos	Sonsonate
Mullidae 2 (2)							
Mulloidichthys dentatus Gill 1862	1	A	2001	40-896	M	Golfo de Fonseca	La Unión
Pseudupeneus grandisquamis (Gill 1863)	10	A	1980; 1983; 1990; 2001; 2006	40-41; 40-275; 40-305; 40-359; 40-855; 40-953; 40-978	M, B	Jucuarán, Puerto El Triunfo, Golfo de Fonseca, La Libertad	La Libertad, Usulután, La Unión
Polynemidae 2 (2)							
Polydactylus approximans (Lay & Bennett 1839)	10	A	1976; 1980; 1982; 1990; 2001	40-258; 40-350; 40-356; 40-377; 40-378; 40-969	M, B	Corral de Mulas, frente a La Chepona, Bahía de Jiquilisco, La Caramba, Bahía de Jiquilisco, Canal Bahía de La Unión, Acajutla	Sonsonate, Usulután, La Unión
Polydactylus opercularis[+] (Gill 1863)	2	A	1986	40-332	M	Golfo de Fonseca	La Unión
Pomacanthidae 1 (2)							
Pomacanthus zonipectus (Gill 1862)	2	J	1979	40-313	M	Playa El Pital	La Libertad
Pomacentridae 4 (7)							
Abudefduf concolor (Gill 1862)	67	J, A	1978; 1979; 1980; 1981; 1983; 2001; 2010; 2011	40-212; 40-260; 40-290; 40-292; 40-328; 40-393; 40-438; 40-470; 40-478; 40-693; 40-694; 40-695; 40-696; 40-697; 40-748; 40-816; 40-925	M	Los Cóbanos, Golfo de Fonseca, Acajutla, Playa El Pital	Sonsonate, La Libertad, La Unión
Abudefduf troschelii (Gill 1862)	12	J, A	1979; 2001; 2010	40-20; 40-161; 40-465; 40-745; 40-817	M	Acajutla, Los Cóbanos	Sonsonate
Microspathodon dorsalis (Gill 1862)	2	J, A	2001; 2010	40-476; 40-931	M	Acajutla, Golfo de Fonseca	Sonsonate, La Unión
Stegastes acapulcoensis (Fowler 1944)	24	J, A	1979; 2001; 2006	40-26; 40-386; 40-840; 40-850; 40-934	M, B	Playa El Pital, Bahía de La Unión, Golfo de Fonseca	La Libertad, Usulután, La Unión
Priacanthidae 1 (2)							
Pristigenys serrula (Gilbert 1891)	3	A	1990	40-360	M	Jucuarán	Usulután

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Serranidae 10 (29)							
Alphestes multiguttatus (Günther 1867)	6	J, A	2001	40-894; 40-968; 40-985	M	Bahía de La Unión, Golfo de Fonseca	La Unión
Cephalopholis panamensis (Steindachner 1876)	2	A	2001	40-915; 40-992	M	Golfo de Fonseca	La Unión
Diplectrum labarum Rosenblatt & Johnson 1974	5	A	1990; 2001	40-417; 40-900; 40-971	M	Costa Azul, Jucuarán, La Libertad	Sonsonate, La Libertad, Usulután,
Diplectrum maximum[+] Hildebrand 1946	2	A	2001	40-901	M	Costa Azul	Sonsonate
Diplectrum pacificum Meek & Hildebrand 1925	3	A	2001	40-874; 40-984	M	Golfo de Fonseca	La Unión
Epinephelus analogus Gill 1863	2	J	1976; 1980	40-390; 40-406	B, F	Bahía de Jiquilisco, Puerto El Triunfo	Usulután
Epinephelus labriformis (Jenyns 1840)	17	J, A	1979; 1981; 1983; 2001; 2006; 2011	40-74; 40-307; 40-310; 40-372; 40-473; 40-774; 40-775; 40-776; 40-821; 40-837; 40-916	M	Jucuarán, Los Cóbanos, Golfo de Fonseca	Sonsonate, Usulután, La Unión
Hyporthodus exsul (Fowler 1944)	1	J	1980	40-413	M	Puerto El Triunfo	Usulután
Paralabrax loro Walford 1936	1	A	1980	40-679	B	Puerto El Triunfo	Usulután
Rypticus nigripinnis Gill 1861	7	J, A	1976; 1990; 2001; 2006	40-61; 40-167; 40-355; 40-431; 40-839; 40-888; 40-932	M	Bahía de Jiquilisco, Bahía de La Unión	Usulután, La Unión
Serranidae sp 1	1	L	2010	40-503	M	Bahía de La Unión	La Unión
SCORPAENIFORMES							
Scorpaenidae 2 (6)							
Scorpaena mystes Jordan & Starks 1895	8	A	1979; 2001	40-297; 40-373; 40-441; 40-445; 40-845	M, B	Playa El Pital, Bahía de la Unión, Golfo de Fonseca,	La Libertad, La Unión
Scorpaena russula Jordan & Bollman 1890	4	A	1990; 2001	40-11; 40-358; 40-914	M	Costa Azul, Costas de Usulután	Sonsonate, Usulután
Triglidae 3 (8)							
Prionotus horrens Richardson 1844	10	A	1980; 2001	40-222; 40-876; 40-889; 40-890; 40-898; 40-987	M	Golfo de Fonseca	La Unión
Prionotus ruscarius Gilbert & Starks 1904	4	A	1990	40-357	M	Corral de Mulas, frente a Monte Alto	Usulután
Prionotus stephanophrys Lockington 1881	1	A	2001	40-903	M	Costa Azul	Sonsonate

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
MORONIFORMES							
Ephippidae 2 (2)							
Chaetodipterus zonatus (Girard 1858)	4	A	1976; 2006	40-399; 40-442; 40-447; 40-450	M, B	Bahía de Jiquilisco, La Caramba, Jucuarán	Usulután
Parapsettus panamensis (Steindachner, 1876)	8	A	1980; 2001; 2006	40-321; 40-448; 40-449; 40-864; 40-963	M	Playa El Icacal, Golfo de Fonseca, Jucuarán	Usulután, La Unión
ACANTHURIFORMES							
Sciaenidae 28 (41)							
Bairdiella armata Gill 1863	4	A	1976; 2001; 2006	40-59; 40-272; 40-337; 40-752	M, B, F	Bahía de Jiqulisco	Usulután
*Bairdiella ensifera** (Jordan & Gilbert 1882)	3	A	1976; 1991	40-120; 40-180; 40-287	M, B[Pe]	Bahía de Jiquilisco, Los Lagartos, Barra de Santiago	Ahuachapán, Usulután
Bairdiella sp 1	1	A	2001	40-790	M	La Libertad	La Libertad
Cynoscion albus (Günther 1864)	2	A	1980	40-415	M	Golfo de Fonseca	La Unión
Cynoscion phoxocephalus Jordan & Gilbert 1882	7	A	1976; 1992; 2006	40-147; 40-331; 40-334; 40-349; 40-454	M, B	Bahía de Jiquilisco, El Potrero, Jucuarán	Usulután
Cynoscion reticulatus (Günther 1864)	1	A	1980	40-269	M	Golfo de Fonseca	La Unión
Cynoscion squamipinnis (Günther 1867)	2	A	1980; 2006	40-271; 40-453	M	Golfo de Fonseca, Jucuarán	Usulután, La Unión
Isopisthus remifer Jordan & Gilbert 1882	6	A	1980	40-293; 40-314, 40-444	M	Jucuarán, Golfo de Fonseca	Usulután, La Unión
Larimus argenteus (Gill 1863)	2	A	1990; 2006	40-66; 40-261	M	Jucuarán	Usulután
Larimus effulgens Gilbert 1898	5	A	1980; 1990	40-252; 40-351; 40-368	M, B	Jucuarán, Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión
Larimus pacificus Jordan & Bollman 1890	13	J, A	2001	40-950; 40-951; 40-952; 40-962; 40-990; 40-991	M	Playa El Icacal, Golfo de Fonseca	La Unión
Menticirrhus nasus (Günther 1868)	3	A	2001; 2006	40-452; 40-906	M	Costa Azul, Jucuarán	Sonsonate, Usulután
Menticirrhus paitensis Hildebrand 1946	1	A	2006	40-92	M	Jucuraán	Usulután
Micropogonias altipinnis (Günther 1864)	1	A	2006	40-433	M	Jucuarán	Usulután
Nebris occidentalis Vaillant 1897	8	A	1980; 1990; 2006	40-72; 40-223; 40-224; 40-316	M	Jucuarán, frente a Las Cuevitas, frente a La Chepona, Gofo de Fonseca, Puerto El Triunfo	Usulután, La Unión
Ophioscion imiceps (Jordan & Gilbert 1882)	4	A	2001	40-861; 40-881; 40-897; 40-993	M	Golfo de Fonseca	La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
Ophioscion scierus (Jordan & Gilbert 1884)	3	A	1976; 1979; 2001	40-231; 40-250; 40-882	M	Bahía de Jiquilisco, Golfo de Fonseca, Bahía de La Unión	Usulután, La Unión
Ophioscion strabo Gilbert 1897	4	A	2001	40-981; 40-944	M	Playa El Espino, Golfo de Fonseca	Usulután, La Unión
Ophioscion typicus[+] Gill 1863	4	A	2001	40-887	M	Golfo de Fonseca	La Unión
Ophioscion vermicularis[+] (Günther 1867)	4	A	1980; 2001; 2006	40-67; 40-278; 40-886	M	Bahía de La Unión, Golfo de Fonseca, Jucuarán	Usulután, La Unión
Paralonchurus dumerilii (Bocourt 1869)	5	A	1980; 1992	40-18; 40-123; 40-409; 40-411; 40-684	M	Bahía de Jiquilisco, Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión
Paralonchurus goodei Gilbert 1898	10	J, A	1980; 1990; 2006	40-322; 40-408; 40-410; 40-455	M, B	Jucuarán, frente a Las Cuevitas, frente a La Chepona, Puerto El Triunfo, Golfo de Fonseca	Usulután, La Unión
Paralonchurus rathbuni[+] (Jordan & Bollman 1890)	1	A	1980	40-270	M	Goldo de Fonseca	La Unión
Sciaenidae sp 1	1	L	2010	40-482	M	Bahía de La Unión	La Unión
Sciaenidae sp 2	1	L	2010	40-497	M	Bahía de La Unión	La Unión
Sciaenidae sp 3	2	L	2010	40-504	M	Bahía de La Unión	La Unión
Stellifer chrysoleuca (Günther 1867)	6	A	1992; 2001	40-17; 40-884	M	Bahía de Jiquilisco, Bahía de La Unión	Usulután, La Unión
Stellifer ericymba (Jordan & Gilbert 1882)	9	A	1982; 2001	40-254; 40-910; 40-940; 40-948	M	Playa Las Tunas, Playa El Espino, Acajutla, Golfo de Fonseca	Sonsonate, Usulután, La Unión,
Stellifer fuerthii (Steindachne 1876)	6	A	1980; 1990; 2001	40-342; 40-771; 40-880; 40-939	M, B	Puerto El Triunfo, Playa El Espino, Jucuarán, Golfo de Fonseca	Usulután, La Unión
Stellifer oscitans[+] (Jordan & Gilbert 1882)	4	A	1976; 1980; 1995	40-255; 40-289; 40-336	M	Bahía de Jiquilisco, Los Lagartos, La Caramba, Golfo de Fonseca	Usulután, La Unión
Stellifer sp 1	1	L	2010	40-483	M	Bahía de La Unión	La Unión
Stellifer zestocarus[+] Gilbert 1898	2	A	1980	40-308	M	Golfo de Fonseca	La Unión
Umbrina xanti Gill 1862	1	A	1980	40-412	B	Puerto El Triunfo	Usulután
LOPHIIFORMES							
Antennariidae 1 (3)							
Antennarius sanguineus (Gill 1863)	1	A	2001	40-798	M	Golfo de Fonseca	La Unión

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TABLE 1. (Continued)

Species	N° of specimens	Ontogenetic stage(s)	Year(s)	Catalog number(s)	Habitat(s)	Location(s)	Departament(s)
TETRAODONTIFORMES							
Diodontidae 2 (3)							
Diodon holocanthus Linnaeus 1758	2	A	1979; 1983	40-195; 40-326	M	Playa Maculís, Los Cóbanos	Sonsonate, La Unión
Diodon hystrix Linnaeus 1758	1	A	1979	40-317	M	Playa Maculís	La Unión
Tetraodontidae 6 (9)							
Arothron hispidus (Linnaeus 1758)	1	J	2011	40-477	M	Los Cóbanos	Sonsonate
Arothron meleagris (Anonymous 1798)	1	J	2011	40-467	M	Los Cóbanos	Sonsonate
Sphoeroides annulatus (Jenyns 1842)	8	J, A	1976; 1979; 1990; 2001,2006	40-71; 40-251; 40-284; 40-354; 40-429; 40-432	M, B, F^{Pe}	Playa El Flor, Juacuarán, Corral de Mulas, frente a La Chepona, Bahía de Jiquilisco Río Chaguantique, Estero de San Juan	Ahuachapán, Sonsonate, Usulután,
Sphoeroides lobatus (Steindachner 1870)	1	A	2001	40-943	M	Playa El Espino	Usulután
Sphoeroides rosenblatti[+]* Bussing 1996	7	J, A	1979; 2001	40-6; 40-280; 40-315; 40-727; 40-728; 40-729	B^{Pe}	Bahía de Jiquilisco, Barra de Santiago, Estero El Tamarindo	Ahuachapán, Usulután, La Unión
Sphoeroides trichocephalus[+] (Cope 1870)	13	A	1979; 1982; 1990; 2001	40-15; 40-243; 40-259; 40-702; 40-703; 40-873; 40-877; 40-883; 40-904; 40-909; 40-958	M, B	Playa El Majahual, Los Cóbanos, Golfo de Fonseca, Corral de Mulas, frente a La Chepona, Bahía de Jiquilisco, Bahía de La Unión, Costa Azul, Playa Las Tunas	Sonsonate, La Libertad, Usulután, La Unión,

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