

A literature review of the Ophiuroidea (Echinodermata) from the Pacific coast of Mexico

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Abstract: Despite the important effort of knowing the Ophiuroidea diversity in the Mexican Pacific, some mistakes in the taxonomic nomenclature have pervaded through time. In order to clarify the latter, a checklist based on literature review of brittle stars from the Mexican Pacific is provided. We reviewed a total of 105 references that in total summarized 125 species of brittle stars from the Mexican Pacific (112) and the Gulf of California (97), belonging to two orders, 16 families and 50 genera. These records are higher than those reported on previous studies carried out in the area. México is the country with the highest number of brittle stars reported in the Tropical Eastern Pacific; this may be due to its exceptional oceanographic conditions, location and coastline extension. However, a total of 27 species reported in the literature were considered doubtful due to their general distributions and were not included in the checklist. Of the reported species, 35 have their type locality in the Mexican Pacific, corroborating the importance of the country in the Tropical Eastern Pacific in terms of Echinodermata diversity. *Rev. Biol. Trop.* 63 (Suppl. 2): 37-47. Epub 2015 June 01.

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The Mexican Pacific coast comprises the Gulf of California and a total of 11 States distributed in a coast line of approximately 8000 km (Instituto Nacional de Estadística y Geografía, 2012). The area is very complex, it can present a great range of depths (up to 5000 m), high values of productivity, and a large number of ecosystems such as submarine canyons, islands, rocky and sandy coast, coast lagoons, estuaries, coral reefs and mangroves, therefore the zone holds a high marine biodiversity (Wilkinson et al., 2009).

The study of the Ophiuroidea in the Mexican Pacific coast started during the nineteenth

century when Lyman (1860) reported for the first time ophiuroids (*Ophiocoma alexandri*, *Ophioderma teres*, *Ophionereis annulata*) from the Mexican Pacific waters. During this century, the first expedition, the *Albatross* (1891) was conducted in some areas from the Mexican Pacific (Gulf of California, Mariás Islands, Acapulco), and produced the important work of Lütken and Mortensen (1899), who described a large number of new brittle stars unknown to science. Following the former work, several other pioneering studies were conducted during this century, special mention deserve the works of Lyman (1865, 1882), Verrill (1867a, 1867b,

1867c, 1868, 1869, 1871a, 1871b), and Ives (1889a, 1889b).

The twentieth century was by far, the most productive in terms of published works and expeditions. In 1911 the expedition *Albatross* was carried out in the Gulf of California (mostly in San Francisquito Bay), a total of 34 species of brittle stars were collected and later reported in Clark (1913, 1923). The second oceanographic expedition of the *Pawnee* (1926) took place in the Gulf of California (Boone, 1926). In the 1930's, several expeditions were carried out: *Zaca* in the Gulf of California and Clarion Island (1936; Ziesenhenné, 1937), *Zaca* in Baja California, Jalisco, Guerrero and Oaxaca (1937-1938; H.L. Clark, 1940), the Presidential Cruise in the Gulf of California (1938; A.H. Clark, 1939), and *Velero III* in the Gulf of California, Baja California, Jalisco, Guerrero and Oaxaca (1934-1939; Ziesenhenné, 1940). In 1940, an expedition of the *Western Flyer* in the Gulf of California was carried out (Steinbeck & Ricketts, 1941). By the end of the century, studies conducted by national scientific began to increase, thus contributing largely to the knowledge of Ophiuroidea in the area (*i.e.* Caso 1951, 1962, 1979, 1983, 1986a, 1986b, 1992; Pacheco-Ruíz & Aguilar-Rosas, 1982; Salcedo-Martínez et al., 1988; Buitrón-Sánchez & Solís-Marín, 1993; Caso et al., 1996; Solís-Marín et al., 1997; Cintra-Buenrostro et al., 1998).

As opposed to the XX century, the current one is characterized by major contributions of Mexican scientist regarding a wide variety of topics such as ecology (Benítez-Villalobos, 2001; Zamorano & Leyte, 2005; González-Medina et al., 2006), inventories of species (Solís-Marín et al., 2005; Honey-Escandón et al., 2008; Ríos-Jara et al., 2008a, 2008b, 2013; López-Urriarte et al., 2009; Hendrickx, 2012; Granja-Fernández et al., 2014), new distribution records (Frontana-Urbe et al., 2000; Hernández-Herrejón et al., 2010; Granja-Fernández & López-Pérez, 2011; Herrero-Pérezrul et al., 2014), potential distribution (Ayala-Bocos et al., 2011), symbiosis (Granja-Fernández et al.,

2013), and reproduction (Benítez-Villalobos et al., 2012).

The major effort of knowing the biodiversity of brittle stars in the Mexican Pacific has provided a large amount of information (*i.e.* substrata, depths, distribution records), and remarkable contributions have summarized the information about ophiuroids from the Mexican Pacific (Buitrón-Sánchez & Solís-Marín, 1993; Solís-Marín et al., 2005; Honey-Escandón et al., 2008; Hendrickx, 2012; Solís-Marín et al., 2013). Despite the valuable effort, differences in nomenclature have persisted over time thus hampering the knowledge of the brittle stars in the Mexican Pacific. Therefore, the main goal of the present contribution is to provide an up to date checklist of the valid names of brittle stars and their distribution in the Mexican Pacific, based on literature review.

MATERIALS AND METHODS

Species names of Ophiuroidea recorded in scientific publications concerning the Mexican Pacific region were compiled. Species names were assigned to any of the following areas: the Gulf of California (GF), Baja California (Pacific coast) (BC), Baja California Sur (Pacific coast) (BCS), Nayarit (NAY), Marías Islands (MAR), Isabel Island (ISA), Jalisco (JAL), Colima (COL), Revillagigedo Islands (REV), Michoacán (MICH), Guerrero (GRO), Oaxaca (OAX) and Chiapas (CHIS). When the literature did not mention a specific geographic site for a species, we assigned the record to the Mexican Pacific (MP).

The complete list of consulted literature includes about 105 references (1860-2014). Among the most relevant references are Lütken and Mortensen (1899), Clark (1913, 1915, 1940), Ziesenhenné (1937, 1940), Caso (1951, 1962, 1979, 1986a, 1986b, 1992), Downey (1969), Buitrón-Sánchez and Solís-Marín (1993), Maluf and Brusca (2005), Solís-Marín et al. (2005), Honey-Escandón et al. (2008), Hendrickx (2012), Solís-Marín et al. (2013) and Granja-Fernández et al. (2014). The checklist is

based solely on data reported in the literature and no specimens were examined.

The checklist represents a list of species currently considered as valid. Systematics arrangements follow the criteria of Smith et al. (1995) and Okanishi and Fujita (2013). Meanwhile, valid names agree with Stöhr et al. (2014).

RESULTS

Table 1 shows the list of the valid names of brittle stars and their distribution in the

Mexican Pacific. For this area, the checklist contains 125 species belonging to two orders, 16 families and 50 genera. The families with the highest number of species were Amphiuroidae (37), Ophiacanthidae (18), and Ophiuridae (14), but the families Asterocheimidae, Ophiomyxidae, Hemieuryalidae, Amphilepididae and Ophiocitonidae were represented by one species.

The Gulf of California was the zone with the highest number of species (97), followed by the Pacific coast of Baja California Sur (57), the Pacific coast of Baja California (48),

TABLE 1

List of valid species and geographical distribution of the Ophiuroidea from the Mexican Pacific, based on literature review

Phylum Echinodermata Brugière, 1791
 Class Ophiuroidea Gray, 1840
 Order Euryalida Lamarck, 1816
 Family Asterocheimidae Verrill, 1899
Asterocheima sublaeve Lütken & Mortensen, 1899 **GC, MAR**
 Family Asteronychidae Verrill, 1899
Asteronyx excavata Lütken & Mortensen, 1899 **GC, BC, BCS, MAR**
Asteronyx longifissus Döderlein, 1927 **BCS, GRO**
Asteronyx loveni Müller & Troschel, 1842 **GC, BC, BCS**
 Family Gorgonocephalidae Ljungman, 1867
Astrocanthemum spinosum (Lyman, 1875) **GC, BCS, MAR**
Astrodictyum panamense (Verrill, 1867) **GC, BCS, REV**
Gorgonocephalus eucnemis (Müller & Troschel, 1842) **BC**
 Order Ophiurida Müller & Troschel, 1840
 Family Ophiomyxidae Ljungman, 1867
Ophiomyxa panamensis Lütken & Mortensen, 1899 **GC, BC, BCS, REV, GRO**
 Family Ophiacanthidae Ljungman, 1867
Ophiacantha bathybia H.L. Clark, 1911 **BC**
Ophiacantha cosmica Lyman, 1878 **GC**
Ophiacantha costata Lütken & Mortensen, 1899 **GC, MAR**
Ophiacantha diplasia H.L. Clark, 1911 **GC, BC, REV**
Ophiacantha eurypoma H.L. Clark, 1911 **MP**
Ophiacantha hirta Lütken & Mortensen, 1899 **GC, MAR**
Ophiacantha moniliformis Lütken & Mortensen, 1899 **GC, BCS, MAR, REV, GRO**
Ophiacantha normani Lyman, 1879 **GC, BC, BCS**
Ophiacantha pacifica Lütken & Mortensen, 1899 **PM**
Ophiacantha phragma Ziesenhenné, 1940 **GC, BC**
Ophiacantha pyriformis Ziesenhenné, 1937 **REV**
Ophiacantha quadrispina H.L. Clark, 1917 **GC**
Ophiacantha rhachophora H.L. Clark, 1911 **GC, BCS**
Ophiacantha sentosa Lyman, 1878 **GC, PM**
Ophiolimna bairdi (Lyman, 1883) **GC, BC**
Ophiomitra granifera Lütken & Mortensen, 1899 **GC, BC, MAR**
Ophiomitra partita Lütken & Mortensen, 1899 **GC, MAR**
Ophiotreta valenciennesi (Lyman, 1879) **GC**
 Family Hemieuryalidae Verrill, 1899
Amphigyptis perplexa Nielsen, 1932 **GC**

Family Ophiuridae Müller & Troschel, 1840

- Amphiophiura oligopora* (H.L. Clark, 1913) **GC**
Amphiophiura superba (Lütken & Mortensen, 1899) **GC, BCS, GRO**
Gymnophiura mollis Lütken & Mortensen, 1899 **GC, MAR**
Ophiernus adpersus annectens Lütken & Mortensen, 1899 **GC, BCS, MAR, GRO**
Ophiocten hastatum Lyman, 1878 **BC, BCS**
Ophiomisidium leurum Ziesenhenné, 1940 **OAX**
Ophiura bathybia H.L. Clark, 1911 **BC, BCS**
Ophiura flagellata (Lyman, 1878) **GC, BCS**
Ophiura leptoctenia H.L. Clark, 1911 **BC**
Ophiura luetkenii (Lyman, 1860) **GC, BC**
Ophiura sarsii Lütken, 1855 **MP**
Ophiura (Ophiura) scutellata (Lütken & Mortensen, 1899) **GC, MAR**
Ophiura (Ophiuroglypha) irrorata irrorata (Lyman, 1878) **GC, BCS, MAR, OAX**
Stegophiura ponderosa (Lyman, 1878) **GC, OAX**

Family Amphilepididae Matsumoto, 1915

- Amphilepis patens* Lyman, 1879 **GC, BC, BCS**

Family Amphiuridae Ljungman, 1867

- Amphichondrius granulatus* (Lütken & Mortensen, 1899) **GC, BC, GRO, OAX**
Amphichondrius laevis Ziesenhenné, 1940 **GC, BC, BCS, JAL, OAX**
Amphiodia assimilis (Lütken & Mortensen, 1899) **MAR**
Amphiodia occidentalis (Lyman, 1860) **GC, BC, NAY**
Amphiodia periercta H.L. Clark, 1911 **MP**
Amphiodia platyspina Nielsen, 1932 **GC, NAY, GRO**
Amphiodia psara H.L. Clark, 1935 **GC, GRO**
Amphiodia sculptilis Ziesenhenné, 1940 **GC, JAL, GRO, OAX**
Amphiodia tabogae Nielsen, 1932 **GC, GRO**
Amphiodia violacea (Lütken, 1856) **GC, NAY**
Amphiodia (Amphispinga) digitata Nielsen, 1932 **GC, BC, NAY**
Amphiodia (Amphispinga) urtica (Lyman, 1860) **GC, BC, NAY, MAR, OAX**
Amphioplus (Amphioplus) strongyloplax (H.L. Clark, 1911) **GC, BC**
Amphioplus (Unioplus) daleus Lyman, 1879 **BC, BCS**
Amphipholis elevata Nielsen, 1932 **GC, MAR**
Amphipholis pugetana (Lyman, 1860) **GC, BC, BCS, NAY**
Amphipholis squamata (Delle Chiaje, 1828) **GC, BC, BCS, GRO, OAX**
Amphiura arcystata H.L. Clark, 1911 **GC, BC, GRO**
Amphiura carchara H.L. Clark, 1911 **BC**
Amphiura otteri Ljungman, 1872 **GC, BC, BCS**
Amphiura seminuda Lütken & Mortensen, 1899 **GC, BC, BCS, REV, OAX**
Amphiura serpentina Lütken & Mortensen, 1899 **GC, BCS, MAR, GRO**
Amphiura (Amphiura) diomedea Lütken & Mortensen, 1899 **GC**
Dougaloplus amphacanthus (McClendon, 1909) **GC, MP**
Dougaloplus gastracanthus (Lütken & Mortensen, 1899) **GRO**
Dougaloplus notacanthus (Lütken & Mortensen, 1899) **GC, MAR**
Microphiopholis geminata (Le Conte, 1851) **GC**
Microphiopholis platydisca (Nielsen, 1932) **GC, BCS, NAY**
Microphiopholis puntarenae (Lütken, 1856) **GC, BCS, MAR**
Ophiocnida californica Ziesenhenné, 1940 **GC, BC, BCS**
Ophiocnida hispida (Le Conte, 1851) **GC, BCS, MAR, JAL, GRO, OAX**
Ophiophragmus lonchophorus Ziesenhenné, 1940 **JAL**
Ophiophragmus marginatus (Lütken, 1856) **GC, NAY, JAL, OAX**
Ophiophragmus papillatus Ziesenhenné, 1940 **GRO, OAX**
Ophiophragmus paucispinus Nielsen, 1932 **GC**
Ophiophragmus tabogensis Nielsen, 1932 **GC, BCS**
Ophiostigma tenue Lütken, 1856 **BCS, ISA**

Family Ophiotrichidae Ljungman, 1867

- Ophiothela gracilis* Nielsen, 1932 **MP**
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Ophiothela mirabilis Verrill, 1867 GC, BCS, NAY, ISA, JAL, MICH, GRO
Ophiothrix galapagensis Lütken & Mortensen, 1899 GC, BCS, MAR, REV
Ophiothrix (Ophiothrix) rudis Lyman, 1874 GC, BCS, NAY, MAR, REV, MICH, GRO, OAX
Ophiothrix (Ophiothrix) spiculata Le Conte, 1851 GC, BC, BCS, NAY, MAR, ISA, JAL, COL, REV, MICH, GRO, OAX

Family Ophiactidae Matsumoto, 1915

Hemipholis gracilis Verrill, 1867 GC, BCS, JAL
Histampica duplicata (Lyman, 1875) GC
Ophiactis savignyi (Müller & Troschel, 1842) GC, BC, BCS, NAY, MAR, JAL, COL, REV, MICH, GRO, OAX
Ophiactis simplex (Le Conte, 1851) GC, BC, BCS, NAY, MAR, ISA, JAL, COL, REV, MICH, GRO, OAX
Ophiopholis aculeata (Linnaeus, 1767) MP
Ophiopholis bakeri McClendon, 1909 GC, BC, BCS, REV
Ophiopholis kennertyi Lyman, 1860 MP
Ophiopholis longispina H.L. Clark, 1911 GC, BCS

Family Ophionereididae Ljungman, 1867

Ophionereis albomaculata E.A. Smith, 1877 GC, MAR, ISA
Ophionereis amphilogus (Ziesenhenné, 1940) BC
Ophionereis annulata (Le Conte, 1851) GC, BC, BCS, NAY, ISA, JAL, COL, REV, MICH, GRO, OAX
Ophionereis eurybrachioplax H.L. Clark, 1911 GC, BC
Ophionereis perplexa Ziesenhenné, 1940 GC, BCS, GRO

Family Ophiocomidae Ljungman, 1867

Ophiocoma aethiops Lütken, 1859 GC, BC, BCS, NAY, MAR, ISA, JAL, COL, REV, MICH, GRO, OAX
Ophiocoma alexandri Lyman, 1860 GC, BC, BCS, NAY, MAR, ISA, JAL, COL, REV, MICH, GRO, OAX
Ophiocomella schmitti A.H. Clark, 1939 COL, REV
Ophiocomella sexradia (Duncan, 1887) GC, MAR, REV
Ophiopsila californica A.H. Clark, 1921 GC, BC, BCS
Ophiopteris papillosa (Lyman, 1875) BC, BCS

Family Ophiochitonidae Matsumoto, 1915

Ophiochiton fastigatus Lyman, 1878 GC

Family Ophiodermatidae Ljungman, 1867

Diopederma daniana (Verrill, 1867) GC, BC, BCS, JAL, MICH, GRO, OAX, CHIS
Ophioderma panamensis Lütken, 1859 GC, BC, BCS, MAR, ISA, JAL, REV, GRO, OAX
Ophioderma pentacantha H.L. Clark, 1917 GC
Ophioderma sodipallaresi Caso, 1986 GC
Ophioderma sp. GRO, OAX
Ophioderma teres (Lyman, 1860) GC, BC, BCS, NAY, MAR, JAL, GRO, OAX
Ophioderma vansyoci Hender, 1996 GC, BCS
Ophioderma variegata Lütken, 1856 GC, BC, BCS, NAY, MAR, JAL, REV, GRO, OAX
Ophioncus granulatus Ives, 1889 GC
Ophiopaepale diplax (Nielsen, 1932) GC, BCS
Ophiuroconis bispinosa Ziesenhenné, 1937 GC, BCS, REV

Family Ophiolepididae Ljungman, 1867

Ophiolepis crassa Nielsen, 1932 GC, BC, BCS, MAR
Ophiolepis fulva H.L. Clark, 1940 OAX
Ophiolepis pacifica Lütken, 1856 GC, NAY, MAR, JAL, GRO, OAX
Ophiolepis plateia Ziesenhenné, 1940 JAL
Ophiolepis variegata Lütken, 1856 GC, BCS, NAY, MAR, JAL, COL, GRO, OAX
Ophiomusium glabrum Lütken & Mortensen, 1899 GC, BC, BCS, OAX
Ophiomusium lymani Wyville-Thomson, 1873 GC, BC, BCS, MAR
Ophiomusium variabile Lütken & Mortensen, 1899 GC, MAR, JAL, REV, GRO
Ophiosphalma jolliense (McClendon, 1909) GC, BCS
Ophioplocus esmarki Lyman, 1874 GC, BC, BCS

Gulf of California (GF), Baja California (Pacific coast) (BC), Baja California Sur (Pacific coast) (BCS), Nayarit (NAY), Marías Islands (MAR), Isabel Island (ISA), Jalisco (JAL), Colima (COL), Revillagigedo Islands (REV), Michoacán (MICH), Guerrero (GRO), Oaxaca (OAX), Chiapas (CHIS), Mexican Pacific (MP).



Mariás Islands (36), Guerrero (33), Oaxaca (29), Jalisco (21), Revillagigedo Islands (21) and Nayarit (20). The States of Chiapas (1), Colima (8), Michoacán (9) and Isabel Island (9) were the zones with the lowest number of reported brittle stars.

The brittle stars *Ophiothrix* (*Ophiothrix*) *spiculata*, *Ophiactis simplex*, *Ophiocoma aethiops* and *Ophiocoma alexandri* were the most widespread species in the Mexican Pacific, inhabiting all the zones except the State of Chiapas. Other species with wide distribution were *Ophiactis savignyi*, *Ophionereis annulata*, *Ophioderma panamensis* and *Ophioderma variegata*. It is important to note that 30 species were reported in just one zone, most of them in the Northern part of the Mexican Pacific such as the Gulf of California, or the Pacific coast of Baja California Sur and Baja California (Table 1). Specifically, in the Mexican Pacific, the species *Ophiacantha cosmica*, *Ophiacantha quadrispina*, *Ophiotreta valenciennesi*, *Amphigyptis perplexa*, *Amphiophiura oligopora*, *Amphiura* (*Amphiura*) *diomedea*, *Microphiopholis geminata*, *Ophiophragmus paucispinus*, *Histampica duplicata*, *Ophiochiton fastigatus*, *Ophioderma pentacantha*, *Ophioderma sodipallaresi* and *Ophioncus granulosus* were confined to the Gulf of California. On the other hand, since the distribution records of 27 species reported in the literature were considered doubtful, they were not included in the checklist.

DISCUSSION

This updated compilation of brittle stars of the Mexican Pacific includes more taxa than the reported in any of the previous reviews for this area (Buitrón-Sánchez & Solís-Marín, 1993; Solís-Marín et al., 2005; Honey-Escandón et al., 2008; Hendrickx, 2012; Solís-Marín et al., 2013). We reported a total of 97 species in the Gulf of California and 112 in the Mexican Pacific. Previously, 41-71 species were recorded in the Gulf of California (Buitrón-Sánchez & Solís-Marín, 1993; Solís-Marín et al., 2005; Solís-Marín et al., 2013), and 63 - 84 species were listed for the Mexican Pacific

(Buitrón-Sánchez & Solís-Marín, 1993; Honey-Escandón et al., 2008; Hendrickx, 2012). Differences in diversity among studies are related to differences in methodology, but also to the addition of new records in the area. Honey-Escandón et al. (2008), for example, only reported brittle stars deposited in the National Museum of Natural History (Smithsonian Institution) and the Colección Nacional de Equinodermos “Dra. Ma. Elena Caso” (Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México), while our checklist was drawn after literature search. Meanwhile, the recent addition of new species records in the region such as *Gorgonocephalus eucnemis* in Guadalupe Island, Baja California (Herrero-Pérezrul et al., 2014), *Ophioderma* sp. in the verge of description and recently discovered in Guerrero and Oaxaca (Granja-Fernández et al. 2014), and *Ophiacantha pacifica* collected in the Mexican Pacific (Hendrickx, 2012) added to the difference among this and previous studies.

Specifically, the current list of species increases the number of known brittle stars reported by Honey-Escandón et al. (2008) for some areas of the Mexican Pacific coasts: Baja California (23), Baja California Sur (36), Mariás Islands (11), Jalisco (14), Colima (5), Revillagigedo Islands (13), Guerrero (28) and Oaxaca (10), thus for this area, the current checklist increment the total number of species in a 30 to 85 %. We also found the same number of brittle stars for Michoacán (9) and Chiapas (1) as Honey-Escandón et al. (2008), which suggest that there have been no new reports for these States during the last five years.

Regarding other countries of the Tropical Eastern Pacific, México is the country with the highest number of species in the area (125), followed by Panamá (75; Coppard & Alvarado, 2013), Perú (42; Hooker et al., 2013), Costa Rica (38; Alvarado et al., 2013), Colombia (30; Benavides-Serrato et al. 2013), Ecuador (21; Sonnenholzner et al., 2013), El Salvador (17; Alvarado et al., 2013), Nicaragua (12; Alvarado et al., 2013), Guatemala (7; Alvarado et al., 2013), and Honduras (3; Alvarado et al.,

2013). It is relevant that the Gulf of California by itself possesses more species (98) than any other country in the Tropical Eastern Pacific, this can be explained by its geographical location and conformation (Lluch-Cota et al., 2007), as well as a major coastline compared to other countries. Similarly, Mariás Islands possess more species (36) than comparable size island as Cocos Island (30; Alvarado et al., 2013) but less than the Galápagos archipelago (82; Sonnenholzner et al., 2013).

According to the literature research, we realized that the distribution record of some of the reported species is doubtful. The species *Ophiocoma (Breviturma) brevipes* (Stiansky & Groenewegen, 1929), *Amphiodia guillermosoberoni*, *Astrocanem herrerae*, *Ophiocoma echinata*, *Ophiocoma pumila*, *Ophiocoma wendtii*, *Ophioderma appressa*, *Ophioderma cinerea*, *Ophiophragmus wurdemani*, *Ophiopsila riisei*, *Ophiopyren longispinus*, *Ophiothrix (Ophiothrix) angulata*, *Ophiothrix (Ophiothrix) oerstedii*, *Ophiothrix (Acanthophiothrix) suenisoni*, *Ophiura acervata*, *Ophiura ljunghmani* (Buitrón-Sánchez & Solís-Marín, 1993), *Hemipholis elongata* (Solís-Marín et al., 2005), *Amphioplus coniertodes*, *Ophiocomella ophiactoides* (Honey-Escandón et al., 2008), *Hemipholis cordifera* and *Ophiacantha pentacrinus* (Solís-Marín et al., 2013) previously reported in the Gulf of California and the Mexican Pacific, have their distribution in the Western Atlantic, the Caribbean Sea and the Gulf of México (Hendler et al., 1995; Stöhr et al., 2014), while *Amphiura koreae* (Luke, 1982) and *Ophiacantha adiaphora* (Buitrón-Sánchez & Solís-Marín, 1993; Hendrickx, 2012) have been only reported to inhabit in the Western Pacific and the Bering Sea (Stöhr et al., 2014). It is important to emphasize that all the above records are the only ones in the entire Eastern Pacific therefore the presence of the species in the area should be taken with caution.

The species *Ophiernus adspersus adspersus* currently inhabiting the Western Atlantic, the Caribbean Sea and the Gulf of México (Stöhr et al., 2014), was recorded in Baja California Sur, Mariás Islands and Guerrero by

Honey-Escandón et al. (2008) after material deposited in the National Museum of Natural History (Smithsonian Institution). We consulted these records in the available online database of the Smithsonian Institution (<http://collections.nmnh.si.edu/search/iz/>) and detected that the records correspond to the species *Ophiernus polyporum*, a synonym of the valid species *Ophiernus adspersus annectens*, therefore this report corresponds to the latter and not to *O. adspersus adspersus*. On this regard, we did not include *O. adspersus adspersus* in the current checklist.

The reported brittle stars *Ophiopholis kennerlyi* (Ives, 1889b; Hendrickx, 2012), *Ophiopholis aculeata* (Buitrón-Sánchez & Solís-Marín, 1993), *Amphiodia periercta*, *Ophiacantha euryroma* and *Ophiura sarsii* (Hendrickx, 2012) in Mexican Pacific waters needs to be confirmed since their distributions occur in the North Pacific Ocean (from California to Arctic Ocean) and there is no other record of these species in lower latitudes. Finally, *Amphioplus (Unioplus) daleus*, *Ophiacantha cosmica*, *Ophiernus seminudus*, *Ophiotoma paucispina* and *Ophiura plana*, have been mentioned in localities called “off México”, “590 km south of Puerto Angel, Oaxaca” and “Gulf of Tehuantepec, Oaxaca” corresponding to the *Albatross Station 3414* (Lütken & Mortensen, 1899; Turner & Hallan, 2011; Granja-Fernández & López-Pérez, 2012; Hendrickx, 2012); we corroborated the geographic coordinates of the station (10°14' N - 96°29' W; Lütken & Mortensen, 1899), and found that it is off Mexican waters, therefore the records of these species in Oaxacan territory are incorrect and were removed for the State in the current list.

A total of 35 species of brittle stars collected in Mexican Pacific waters bear some type status, of these, 20 are holotype (*Amphichondrius laevis*, *Amphiodia sculptilis*, *Amphiophiura oligopora*, *Dougaloplus gastracanthus*, *Dougaloplus notacanthus*, *Amphiura seminuda*, *Ophiura (Ophiura) scutellata*, *Ophiacantha phragma*, *Ophiacantha pyriformis*, *Ophiocnida californica*, *Ophiocoma alexandri*, *Ophioderma sodipallaresi*, *Ophioderma*

vansyoci, *Ophionereis amphilogus*, *Ophiolepis fulva*, *Ophiolepis plateia*, *Ophiophragmus lonchophorus*, *Ophiophragmus papillatus*, *Ophiomitra partita*, *Ophiuroconis bispinosa*). The large number of species recorded in the area as well as the importance of the type material, highlights the relevance of the Mexican Pacific waters to the taxonomy and diversity of ophiuroids in the Tropical Eastern Pacific. Regardless the high number of records of Ophiuroidea in the Mexican Pacific, large stretches of Colima, Michoacán and Chiapas remain unexplored therefore systematic effort in poor known areas surely should increase the biodiversity in the area. Also, we suggest realizing more studies involving literature review in other marine taxa since these allow to determinate with more precision an inventory of the regional fauna and provide baseline data for future taxonomical, ecological and biogeographic works.

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RESUMEN

Revisión de literatura de Ophiuroidea (Echinodermata) de las costas del Pacífico de México. A pesar del importante esfuerzo en el conocimiento de la diversidad de ofiuroides del Pacífico mexicano, algunos errores en la nomenclatura taxonómica han perseverado a través del tiempo. Con el objetivo de clarificar lo anterior, se provee una lista de especies de ofiuroides del Pacífico Mexicano, basada en la revisión de literatura. Se revisó un total de 105 referencias que en total suman 125 especies pertenecientes a dos órdenes, 16 familias y 50 géneros de ofiuroides del Pacífico Mexicano (112) y el Golfo de California (97). Estos reportes son mayores que otros estudios llevados a cabo en el área. México es el país con el mayor número de ofiuroides reportados en el Pacífico Oriental Tropical; esto

puede deberse a su excepcional condición oceanográfica, ubicación y extensión de línea de costa. Un total de 27 de las especies reportadas en la literatura fueron consideradas dudosas de acuerdo distribución geográfica por lo que no fueron incluidas en la lista. 35 especies poseen su localidad tipo en el Pacífico Mexicano, corroborando la importancia de México en el Pacífico Oriental Tropical en términos de diversidad de equinodermos.

Palabras clave: estrellas quebradizas, referencias bibliográficas, listado, distribución, nombres válidos.

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