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Commented Checklist of the Polychaetes (Annelida: Polychaeta) from Areas Adjacent to Islands of the Mexican Pacific and Gulf of California

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Abstract.—The systematic list of the benthic polychaetes from areas adjacent to the main islands of the Mexican Pacific is herein presented. A total of 1375 specimens were analyzed from 96 species and 29 families; the specimens were collected from soft bottoms around Tiburón, Del Carmen and María Madre islands, and from dead coral substrates from Socorro Island. All previous records of Annelid Polychaetes from the study area were also included; 348 species are now recorded from 36 islands in the Mexican Pacific. The highest number of species is recorded from Espíritu Santo Island (56 species) in the region of the Gulf of California and María Madre and Socorro islands (69 and 70 species) in the central Mexican Pacific.

The islands have always been considered a natural biological laboratory and have, as such, focused the attention of ecologists and evolutionists in their attempt to define if the species present are consistent with local geological records; the study of the biological processes in those isolated habitats has even been at the heart of setting forth theories such as the equilibrium theory in island biogeography (MacArthur and Wilson 1967).

In the Mexican Pacific, between latitudes 14°45′ and 32°26′ N, more than 140 islands and islets are found, but their polychaete fauna is largely unknown: the majority of the records are the product of sporadic or fortuitous collections. Research on polychaetes from these islands has been basically done by Rioja (1960, 1962) in several Pacific islands, Salazar-Vallejo et al. (1987), Góngora-Garza (1984), and Góngora-Garza and De León-González (1993) in María Madre Island and Salazar-Vallejo (1990) in Rasa Island; occasional records have been done in the vicinity of some islands by Treadwell (1914, 1929, 1937, 1941), Chamberlin (1919), Moore (1923), Hartman (1939a, b, 1940, 1941, 1944a, 1944b, 1950), Berkeley and Berkeley (1939, 1958), Steinbeck and Ricketts (1941), Rioja (1941, 1947a, 1947b, 1947c), Fauvel (1943), Fauchald (1968, 1970, 1972, 1982, 1992), Pettibone (1971), Sarti-Martínez (1984), De León-González (1985), Bastida-Zavala (1990), Holguín-Quiñones et al. (1992), Holguín-Quiñones (1994), and Bautista-Romero et al. (1994). These records together with the material obtained for this study make up for 348 species in littoral and sublittoral habitats from areas adjacent to the islands of the Mexican Pacific.

The Polychaetes are the best represented taxonomic group in the benthic communities, be it in hard or soft bottoms (Mackie and Oliver 1996), where they can reach between 36% and 70% of the total fauna, and between 25% and 65% of the species present. For this reason, their distribution patterns frequently reflect

those of the whole benthic fauna (Blake 1994; Mackie et al. 1997; Glasby and Read 1998). Being such a diversified and ubiquitous group, they can increase considerably the biodiversity values of any habitat considered. In this case, the description of the communities found around the islands located in the Mexican Pacific and Gulf of California is necessary, not only because of the great number of islands present, but also because several of them have been declared priority areas by the Mexican government, so that specific strategies are being implemented for their protection and management (SEDESOL 1994), all of which is impossible without a basic knowledge of the biota present.

The purpose of this study, then, is to synthesize the results of previous records as well as to add to the knowledge of this group, with the results of the identifications of the polychaetes collected by us in Tiburón, Del Carmen, María Madre and Socorro islands. We include a systematic list with all the records made around the islands of the Mexican Pacific as well as their affinities according to their faunistic composition.

Methods

Samples were collected in March 1985 in soft bottoms in four sublittoral stations (29–102 m) from Tiburón, Del Carmen and María Madre islands, as part of the expedition "Cortes"; and in November 1997, in dead coral substrates from seven localities (0.40 to 20.5 m) in Socorro Island, Revillagigedo as part of the expedition "Surpaclipp" (Fig. 1).

The soft bottom samples were collected with a Smith-McIntyre (0.1 m^2) dredge, and those from hard bottoms manually, either directly or with SCUBA diving techniques. Fixation of the organisms was done with 10% formaldehyde followed by preservation in 70% ethanol. The polychaetes were identified and deposited in the "Colección de Poliquetos del Instituto de Ciencias del Mar y Limnología, Universidad Nacional Autónoma de México" (CP-ICML, UNAM; DFE.IN.061.0598).

The previous records herein reported are taken from the existing literature, following an exhaustive revision. Outdated terminology was corrected in favor of presently valid names, based on the publications by Reish (1968), Salazar-Vallejo (1989) and Hernández-Alcántara (1992), since these are the basic studies about polychaetes from the Gulf of California and the Mexican Pacific.

Results and Discussion

The comprehensive list of the 348 species of polychaetes so far identified from Mexican Pacific islands is shown in Table 1, which includes also the 96 species identified for this study. The species which were found to be first records for the particular areas are also indicated. In Table 2, the number of species so far recorded for all the islands (including our survey), are shown, divided by state. The taxonomic arrangement follows Rouse (2000).

For this study, 1375 specimens belonging to 96 species of 29 families were identified from the islands of Tiburón, del Carmen, María Madre and Socorro. The scant knowledge of the polychaetes living in the islands of western Mexico is evidenced by the fact that between 48% and 89% of the species identified in this survey are registered for the first time in each island (Table 1). From soft bottoms (fine and muddy sands), 752 organisms (73 species) were recorded, while

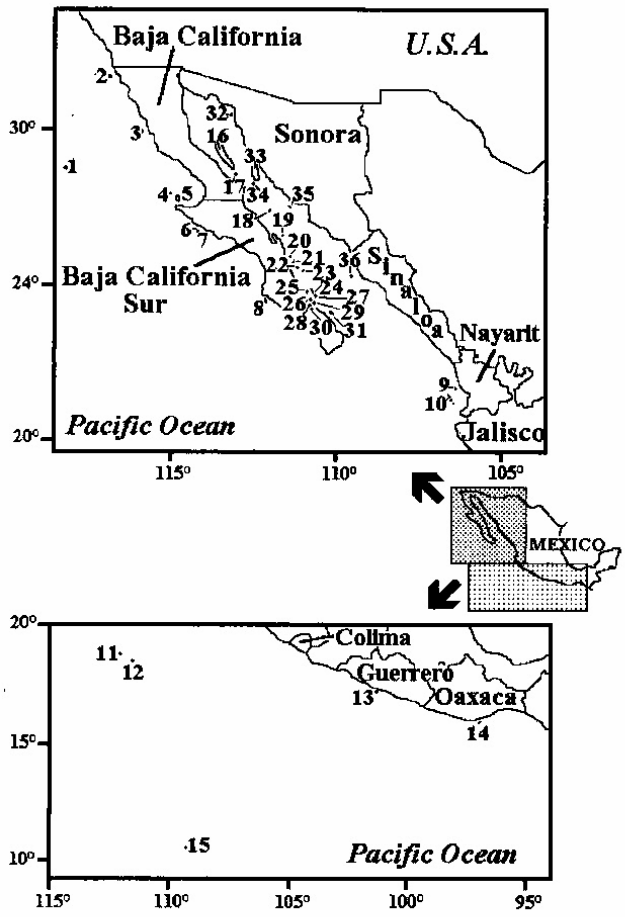

Fig. 1. Study area, including the islands where the polychaetes were reported in the literature.

623 organisms (25 species) were taken from dead coral substrates (in Socorro Island).

Comparison of the polychaete communities found in the different islands under study was limited by the sampling methodologies, often different, and by the literature records, done at different depths and types of substrates from soft to hard.

The idea that the macrofauna of the islands can be highly diversified comes from the variety of habitats present, from those due to their geological, climatic and topographic differences to those due to their location in two biogeographic provinces: the Californian province with temperate conditions and the Mexican province with tropical characteristics (Hendrickx 1992).

Albeit the variations in abundance cannot be directly compared, differences in specific composition could nevertheless be noted: in dead coral substrates, Syllids (mostly small species that are common in hard substrates of shallow waters) and Sabellariids (which live in tubes attached to hard substrates) dominate. The highest abundance there was found for *Idanthyrsus* sp. 1 and *Eurythoe complanata,* basically in intertidal localities since they both tend to decrease with depth.

On the other hand, the polychaetes collected from soft bottoms in the islands

Table 1. Systematic list of the species of the Class Polychaeta, recorded from areas adjacent to islands of the Mexican Pacific (the numbers in black indicate the distribution in a particular island and follow the same numeration of table 2; ** first records for the islands).

Annelida
Polychaeta

Scolecida

Family Maldanidae

Axiothella rubrocincta (Johnson, 1901): **10**, 20.**
Isocirrus papillatus (Berkeley and Berkeley, 1939): **28, 30.**
Sonatsa carinata (Moore, 1923): **5, 10.**

Family Capitellidae

Dasybranchus glabrus Moore, 1909: **5.**
Dasybranchus parplatyceps Kudenov, 1975: **17.**
Dasybranchus lumbricoides (Grube, 1878): **33.**
Dasybranchus sp.: **5.**
Leiocapitella glabra Hartman, 1947: **5, 29.**
Mastobranchus? variabilis Ewing, 1984: **10**.**
Notomastus americanus Day, 1973: **10**, 21**.**
Notomastus hemipodus Hartman, 1945: **21**.**
Notomastus lobatus Hartman, 1947: **29.**
Notomastus tenuis Moore, 1909: **7, 10**.**
Notomastus sp.: **2, 5.**
Scyphoproctus oculatus Reish, 1959: **17.**

Family Opheliidae

Ammotrypane gracile McIntosh, 1885: **23.**
Ophelina acuminata Örsted, 1843: **2, 17.**
Ophelina magna Treadwell, 1914: **23.**
Polyophthalmus pictus (Dujardin, 1839): **7, 28.**

Family Orbiniidae

Leitoscoloplos mexicanus (Fauchald, 1972): **21**.**
Naineris dendritica (Kinberg, 1867): **17.**
Naineris grubei (Gravier, 1909): **10**.**
Naineris laevigata (Grube, 1855): **6, 7.**
Naineris sp.: **12.**
Orbinia riseri (Pettibone, 1957); **10**, 21**.**
Scoloplos (*Leodamas*) *chevalieri* (Fauvel, 1901): **17.**
Scoloplos (*Leodamas*) *ohlini* (Ehlers, 1901): **33.**
Scoloplos (*Scoloplos*) *acmeceps* Chamberlin, 1919: **10, 33.**
Scoloplos (*Scoloplos*) *armiger* (Müller, 1776); **10**, 16.**
Scoloplos (*Scoloplos capensis* (Day, 1961): **10**, 33**.**
Scoloplos (*Scoloplos*) *elongata* Johnson, 1901: **20.**

Family Paraonidae

Aricidea (*Acmira*) *simplex* Day, 1963: **10**, 21**.**
Aricidea (*Allia*) *sueccia* Eliason, 1920: **17, 21**.**

Family Cossuridae

Cossura brunnea Fauchald, 1972: **10**.**

Family Scalibregmatidae

Sclerocheilus pacificus Moore, 1909: **23.**

Palpata
Aciculata

Amphinomida *sensu stricto*

Family Amphinomidae

Chloeia entypa Chamberlin, 1919: **7, 10**, 16.**
Chloeia pinnata Moore, 1911: **29.**
Chloeia viridis Schmarda, 1961: **9, 10**, 16, 18, 19, 21, 26, 27, 29, 33, 35.**
Eurythoe complanata (Pallas, 1766); **5, 6, 7, 9, 11, 12, 15, 16, 26, 28, 29.**
Eurythoe pacifica Kinberg, 1857: **11.**

Table 1. Continued.

Linopherus kristiani Salazar-Vallejo, 1987: **10****, **21**.
Notopygos ornata Grube, 1856: **12****, **16**.
Pareurythoe californica (Johnson, 1897): **5**, **6**.
Pareurythoe paupera (Grube, 1856): **12**.

Family Euphrosinidae

Euphrosine bicirrata Moore, 1905: **27**.

Eunicida sensu stricto

Family Dorvilleidae

Dorvillea cerasina (Ehlers, 1901): **12**, **20**, **21**, **29**, **34**.

Family Lumbrineridae

Eranno bicirrata (Treadwell, 1929): **4**.
Lumbrinerides ? acuta (Verrill, 1875): **33**.
Lumbrineris cruzensis Hartman, 1944: **29**.
Lumbrineris inflata Moore, 1911: **27**, **33**.
Lumbrineris latreilli Audouin and Milne-Edwards, 1834: **9**, **21**, **32**, **33**.
Lumbrineris limicola Hartman, 1944: **10****, **33**.
Lumbrineris simplicis Hartman, 1959: **16**.
Lumbrineris zonata (Johnson, 1901); **12**, **23**.
Ninoe sp 2: **10**.
Scoletoma crassidentata Fauchald, 1970: **10****.
Scoletoma erecta (Moore, 1904): **3**, **6**, **7**, **20**, **29**, **33**, **34**.
Scoletoma platylobata Fauchald, 1970: **10****, **36**.
Scoletoma tenuis (Verrill, 1873): **16**.
Scoletoma tetraura (Schmarda, 1861): **29**, **33**.

Family Oenonidae

Arabella attenuata Moore, 1907: **23**.
Arabella iricolor (Montagu, 1804): **6**, **7**, **12**, **16**, **17**.
Arabella panamensis Colbath, 1898: **12**, **16**.
Arabella semimaculata (Moore, 1911); **6**, **7**, **33**.
Arabella sp. ?: **5**.
Drilonereis falcata Moore, 1911: **4**, **10****, **21****, **29**.
Oenone fulgida (Savigny, 1818): **24**, **29**, **33**.

Family Eunicidae

Eunice aedificatrix (Monro, 1933): **5**, **9**.
Eunice afra Peters, 1854: **16**, **29**.
Eunice americana Hartman, 1944: **4**, **18**.
Eunice antennata (Lamarck, 1818): **5**, **9**, **10**, **11**, **16**, **20**, **21**, **24**, **29**, **33**.
Eunice aphroditois (Pallas, 1788): **29**, **33**, **35**.
Eunice biannulata Moore, 1904: **9**, **12**, **16**, **20**, **22**, **23**, **26**, **28**, **29**.
Eunice cariboea Grube, 1856: **7**, **29**, **30**.
Eunice filamentosa Grube, 1856: **6**, **16**, **33**.
Eunice indica Kinberg, 1865: **24**.
Eunice mexicana (Fauchald, 1970): **9**.
Eunice multipectinata Moore, 1911: **7**.
Eunice mutilata Webster, 1884: **10**, **12**.
Eunice reducta Fauchald, 1970: **29**.
Eunice rubra Grube, 1856: **7**.
Eunice tridentata Ehlers, 1905: **10**.
Eunice unidentata Rioja, 1962: **6**, **7**.
Eunice vittata (delle Chiaje, 1829): **12**, **16**, **24**, **35**.
Eunice vittatopsis Fauchald, 1970: **35**.
Eunice sp.: **12**.
Lysidice collaris (Grube, 1870): **12**.
Lysidice ninetta Audouin and Milne-Edwards, 1833: **10****, **12**, **35**.
Marphysa aenea (Blanchard, 1849): **29**.
Marphysa angelensis Fauchald, 1970: **16**.
Marphysa mortenseni Monro, 1928: **29**.
Marphysa sanguinea (Montagu, 1815): **15**, **16**, **20**, **28**, **29**, **32**.

Table 1. Continued.

Marphysa stylobranchiata Moore, 1909: **1.**
Nematonereis hebes Verrill, 1900: **10.**
Nematonereis unicornis (Grube, 1840): **10**.**
Palola paloloides (Moore, 1909): **6, 7, 15, 21.**
Palola siciliensis (Grube, 1840): **9, 10, 15, 16, 24, 29.**

Family Onuphidae

Diopatra neotridens Hartman, 1944: **16.**
Diopatra obliqua Hartman, 1944: **10**, 21**.**
Diopatra ornata Moore, 1911: **6, 13, 16.**
Diopatra splendidissima Kinberg, 1857: **20.**
Hyalinoecia juvenalis Moore, 1911: **16, 20, 27, 29.**
Kinbergonuphis cedroensis (Fauchald, 1968): **21**.**
Kinbergonuphis pulchra (Fauchald, 1980): **10**.**
Kinbergonuphis vermillionensis (Fauchauld, 1968): **33.**
Mooreonuphis cirrata (Hartman, 1944): **16, 17.**
Mooreonuphis elsiae (De León-González, 1994): **33**.**
Mooreonuphis cf. guadalupensis (Fauchald, 1968): **10**.**
Mooreonuphis nebulosa (Moore, 1911): **7, 10**.**
Onuphis iridescens (Johnson, 1901): **23.**
Sarsonuphis parva (Moore, 1911): **21.**
Rhamphobrachium longisetosum Berkeley and Berkeley, 1938: **4.**

Family Aphrodititae

Aphrodita castanea Moore, 1910: **5.**
Aphrodita japonica Marenzeller, 1879: **27, 29.**
Aphrodita negligens Moore, 1905: **20.**
Aphrodita parva Moore, 1905: **23.**
Pontogenia laeviseta Hartman, 1939: **9, 16.**

Phyllodocida

Family Eulepethidae

Grueulepis mexicana (Berkeley and Berkeley, 1939): **13, 16.**

Family Polynoidae

Arctonoe pulchra (Johnson, 1897): **20.**
Chaetacanthus magnificus (Grube, 1875): **12, 29.**
Halosydna brevisetosa Kinberg, 1855: **5, 23, 32.**
Halosydna insignis (Baird, 1863): **23.**
Halosydna latior Chamberlin, 1919: **5, 20.**
Halosydna tuberculifer Chamberlin, 1919: **5.**
Harmothoe exanthema (Grube, 1856): **27.**
Harmothoe hirsuta Johnson, 1879: **12.**
Hololepida veleronis Hartman, 1939: **16.**
Iphione ovata Kinberg, 1855: **12, 20, 26, 28, 29.**
Lepidasthenia pulchra (Johnson, 1897): **5.**
Lepidasthenia treadwelli (Grube, 1840): **5.**
Lepidonotus purpureus Potts, 1910: **16.**
Lepidonotus hupferi Augener, 1918: **7, 9, 28, 29.**
Lepidonotus nesophilus Chamberlin, 1919: **7, 30.**
Lepidonotus squamatus (Linnaeus, 1767): **7, 12.**
Lepidonotus versicolor Ehlers, 1901: **12, 34.**
Malmgrenia nesiotes (Chamberlin, 1919): **8.**
Thormora johnstoni (Kinberg, 1855): **7, 12, 20, 27, 29.**

Family Acoetidae

Panthalis pacifica Treadwell, 1914: **23.**

Family Sigalionidae

Eupholoe philippinensis McIntosh, 1885: **29.**
Euthalanessa digitata McIntosh, 1885: **16.**
Psammolyce arenosa (Delle Chiaje, 1830): **5.**
Psammolyce fimbriata Hartman, 1939: **9.**

Table 1. Continued.

Psammolyce myops Hartman, 1993: **29.**
Sigalion lewisi Berkeley and Berkeley, 1939: **9, 29.**
Sigalion spinosus (Hartman, 1939): **9, 11, 28.**
Sthenelais articulata Kinberg, 1855: **7, 20, 29.**
Sthenelais fusca Johnson, 1897: **9.**
Sthenelais helenae Kinberg, 1855: **29.**
Sthenelais neoleanirae Hartman, 1939: **21.**
Sthenelais verruculosa Johnson, 1897: **10**, 21**.**
Sthenelanella uniformis Moore, 1910: **16.**
Sthenolepis fimbriarum (Hartman, 1939): **21, 29.**

Family Chrysopetalidae

Chrysopetalum occidentale Johnson, 1897: **12**.**

Family Glyceridae

Glycera americana Leidy, 1855: **5, 20, 23, 29.**
Glycera dibranchiata Ehlers, 1868: **33**.**
Glycera lapidum Quatrefages, 1865: **11.**
Glycera oxycephala Ehlers, 1887: **33**.**
Glycera papillosa Grube, 1857: **10**, 33**.**
Glycera profundi Chamberlin, 1919: **5.**
Glycera tesselata Grube, 1863: **9, 10**, 12, 16, 18, 23, 27, 33, 35.**

Family Goniadidae

Glycinde armigera Moore, 1911: **11.**
Glycinde multidens Muller, 1858: **23.**
Goniada aciculata Harmtan, 1940: **16, 29.**
Goniada brunnea Treadwell, 1906: **33.**

Family Phyllodocidae

Eulalia myriacyclum (Schmarda, 1861): **16, 28.**
Eumida sanguinea (Oersted, 1843): **5, 6, 7.**
Nereiphylla sp. 1: **16.**
Nereiphylla castanea (Marenzeller, 1879): **23.**
Phyllodoce (Anaitides) erythrophylla (Schmarda, 1861): **5.**
Phyllodoce (Anaitides) lamellifera (Pallas, 1788): **15.**
Phyllodoce (Anaitides) longipes (Kinberg, 1866): **10**, 16.**
Phyllodoce (Anaitides) medipapillata (Moore, 1909): **12**, 23.**
Phyllodoce (Anaitides) mucosa (Orsted, 1843): **12.**
Phyllodoce (Phyllodoce) ferruginea Moore, 1909: **23.**
Phyllodoce (Phyllodoce) fristedti Bergström, 1914: **16.**
Phyllodoce (Phyllodoce) madeirensis Langerhans, 1880: **6, 7, 10**, 16, 20.**
Phyllodoce (Phyllodoce) sp. 1: **10, 33.**

Family Hesionidae

Hesione intertexta Grube, 1878: **9, 11, 12, 18, 29.**
Hesione pantherina Risso, 1826: **24.**
Leocrates chinensis Kinberg, 1866: **11, 29.**
Ophiodromus pugettensis Johnson, 1901: **7, 28, 29.**

Family Pilargidae

Synelmis albini (Langerhans, 1881): **12**.**

Family Nephtyidae

Aglaophamus dibranchis (Grube, 1877): **5, 21, 26.**
Aglaophamus erectans Hartman, 1950: **21**.**
Aglaophamus malmgreni (Théel, 1879): **1.**
Aglaophamus verrilli (McIntosh, 1855): **16, 21, 26, 33.**
Inermonephtys inermis (Ehlers, 1887): **29.**
Nephtys caecoides Hartman, 1938: **23, 33**.**
Nephtys californiensis Hartman, 1938: **10**, 20, 21**, 33**.**
Nephtys sioni (Perkins, 1980): **9, 16, 18, 19, 27, 29, 33, 35.**
Nephtys panamensis Monro, 1928: **29.**
Nephtys picta Ehlers, 1868: **16.**

Table 1. Continued.

Nephtys squamosa Ehlers, 1887: **16, 21, 23, 29, 35.**

Family Nereididae

Ceratocephale oculata Banse, 1977: **10**, 16, 21**, 33**.**
Ceratonereis longicirrata Perkins, 1980: **10**, 21**.**
Ceratonereis singularis Treadwell, 1929: **6, 10, 12, 21.**
Ceratonereis tentaculata Kinberg, 1866: **9, 16, 20, 29.**
Leptonereis laevis Kinberg, 1866: **33.**
Namanereis riojai (Bastida-Zavala, 1990): **25.**
Neanthes arenaceodentata (Moore, 1903): **17.**
Neanthes caudata (delle Chiaje, 1828): **7, 29.**
Nereis callaona Grube, 1857: **5, 6, 7, 14, 29.**
Nereis mediator Chamberlin, 1918: **7, 14.**
Nereis paucidentata (Moore, 1903): **23.**
Nereis pelagica Linnaeus, 1761: **23.**
Nereis procera Ehlers, 1868: **23.**
Nereis rava Ehlers, 1868: **29.**
Nereis riisei Grube, 1857: **10**, 11, 12, 29.**
Nereis vexillosa Grube, 1851: **20, 23.**
Nereis zonata Malmgren, 1867: **34.**
Nicon moniloceras (Hartman, 1940): **23, 34.**
Platynereis bicanaliculata (Baird, 1863): **1, 5, 6, 7, 16, 20, 23, 29, 33.**
Platynereis dumerilii (Audouin and Milne-Edwards, 1833): **12.**
Platynereis polyscalma Chamberlin, 1919: **5, 6, 21, 28, 29.**
Rullierinereis mexicana (Treadwell, 1942): **10.**

Family Syllidae

Ambliosyllis granosa Ehlers, 1897: **10.**
Autolytus prolifera (Müller, 1788): **10, 12**.**
Autolytus sp.: **12.**
Branchiosyllis exilis (Gravier, 1900): **10, 12**.**
Branchiosyllis pacifica Rioja, 1941: **12.**
Branchiosyllis sp.: **12.**
Eoxgone (*Exogone*) *lourei* Berkeley and Berkeley, 1938: **10.**
Eoxgone (*Exogone*) *naidinoides* (Westheide, 1974): **10.**
Eoxgone (*Exogone*) *breviantennata* Hartmann-Schröder, 1959: **17.**
Eoxgone (*Exogone*) *occidentalis* Westheide, 1974: **12**.**
Haplosyllis spongicola (Grube, 1855): **10, 12.**
Haplosyllis sp.: **12.**
Odontosyllis heterodonta Góngora-Garza and De León-González, 1993: **10.**
Odontosyllis phosphorea Moore, 1909: **7, 20, 23.**
Odontosyllis polycera (Schmarda, 1861): **10.**
Odontosyllis sp.: **12.**
Opisthosyllis brunnea Langerhans, 1879: **10, 12.**
Pionosyllis cf. uraga Imajima, 1966: **10.**
Pseudosyllides mexicana Góngora-Garza and De León-González, 1993: **10.**
Pseudosyllides sp.: **12.**
Syllis gracilis Grube, 1840: **10, 12.**
Trypanosyllis gemmipara Johnson, 1901: **12.**
Trypanosyllis (*Trypanedenta*) *taeniaeformis* (Haswell, 1866): **10.**
Trypanosyllis sp.: **12.**
Typosyllis aciculata (Treadwell, 1943): **33**.**
Typosyllis adamanteus (Treadwell, 1941): **12.**
Typosyllis alternata (Moore, 1908): **12.**
Typosyllis gerlachi Hartmann-Schröder, 1960: **10.**
Typosyllis heterocirrata Rioja, 1941: **10, 17.**
Typosyllis hyalina Grube, 1865: **7, 10, 12.**
Typosyllis lutea Hartmann-Schröder, 1960: **12**.**
Typosyllis magna (Westheide, 1974): **12**.**
Typosyllis pigmentata (Chamberlin, 1919): **12.**
Typosyllis prolifera (Krohn, 1852): **10, 12**, 17, 33**.**
Typosyllis rosea (Langerhans, 1879): **12**.**

Table 1. Continued.

Canalipalpata
Spionida

Family Spionidae

Aonidella sp. 1: **33.**
Aonides cf. oxycephala (Sars, 1862): **10**.**
Apoprionospio pygmaea (Hartman, 1961): **16.**
Apoprionospio dayi Foster, 1969: **10**.**
Boccardia anophthalma (Rioja, 1962): **7.**
Boccardia sp.: **17.**
Dispio uncinata Hartman, 1951: **33**.**
Laonice cirrata (Sars, 1851): **2, 10**.**
Paraprionospio pinnata (Ehlers, 1901): **21**, 33.**
Prionospio (Prionospio) heterobranchia Moore, 1907: **10**, 12**, 17, 33**.**
Prionospio (Prionospio) steenstrupi Malmgren, 1867: **16, 21**, 33**.**
Scolelepis (Scolelepis) squamata (Müller, 1806): **10**.**
Spiophanes bombyx (Claparede, 1870): **7.**

Family Chaetopteridae

Mesochaetopterus minuta Potts, 1914: **15.**
Phyllochaetopterus prolifica Potts, 1914: **30.**
Spiochaetopterus costarum (Claparède, 1870): **30.**

Sabellida

Family Sabellariidae

Idanthyrsus cretus Chamberlin, 1919: **5, 12, 15.**
Idanthyrusus sp. 1: **12.**
Lygdamis nesiotes (Chamberlin, 1919): **12.**
Phragmatopoma californica (Fewkes, 1889): **7, 20.**
Phragmatopoma moerchi Kinberg, 1867: **5.**
Sabellaria cementarium Moore, 1906: **10.**

Family Sabellidae

Chone infundibuliformis Kroyer, 1865: **30.**
Chone infundibuliformis fauveli McIntosh, 1916: **29.**
Chone mollis (Bush, 1904): **29.**
Chone sp. 1: **10, 21, 33.**
Demonax medius (Bush, 1904): **5.**
Demonax rugosus (Moore, 1904): **5, 7, 33.**
Megalomma circumspectum (Moore, 1923): **10**, 30.**
Megalomma mushaensis (Gravier, 1908): **7, 20.**
Megalomma pigmentum Reish, 1963: **10**.**
Megalomma quadrioculatum Willey, 1905: **31.**
Notaulax occidentalis (Baird, 1865): **7, 29.**
Potamilla neglecta (Sars, 1851): **2.**
Sabellonga disjuncta Hartman, 1969: **5.**

Family Serpulidae

Circeis armoricana Saint Joseph, 1894: **7.**
Hydroides brachyacantha Rioja, 1941: **12.**
Hydroides dianthus (Verrill, 1873): **12.**
Simplaria pseudomilitaris Thiriot-Quiereux, 1965: **29.**
Pomatostegus stellatus (Abildgaard, 1789): **5.**
Protula atypha Bush, 1904: **23.**
Protula tubularia (Montagu, 1803): **6, 21.**
Pseudovermilia conchata ten Hove, 1975: **12.**
Pseudovermilia sp.: **12.**
Spirobranchus giganteus corniculatus (Grube, 1862): **12, 28, 29.**
Spirobranchus quadricornis Grube, 1878: **23.**
Spirorbis (Paralaeospira) racemosus Pixell, 1912: **7.**
Spirorbis spatulatus Knight-Jones, 1978: **7.**
Spirorbis tricornigerus Rioja, 1942: **12.**

Table 1. Continued.

Spirorbis variabilis Bush, 1904: **12.**
Spirorbis (*Spirorbella*) *marioni* (Caullery and Mesnil, 1879): **7, 12.**

Terebellida

Family Flabelligeridae

Flabelliderma caudata (Rioja, 1962): **7.**
Pherusa capulata (Moore, 1909): **16.**
Pherusa inflata (Treadwell, 1914): **23.**
Pherusa neopapillata (Hartman, 1961): **30.**
Pherusa papillata (Johnson, 1901): **12.**
Therochaeta sp. 1: **10.**

Family Cirratulidae

Aphelochaeta multifilis (Moore, 1909): **5.**
Caulleriella hamata (Hartman, 1948): **33.**
Caulleriella pacifica Berkeley, 1929: **10**, 17, 33**.**
Chaetozone acuta Banse and Hobson 1968: **21**.**
Chaetozone sp. 1: **10.**
Cirratulus cingulatus Johnson, 1901: **29.**
Cirratulus revillagigedoensis Rioja, 1960: **12.**
Cirriformia punctata (Grube, 1859): **12.**
Cirriformia spirabrancha (Moore, 1904): **7, 12.**
Cirriformia tentaculata (Montagu, 1808): **17.**
Monticellina tesselata (Hartman, 1960): **21**, 33**.**
Monticellina sp. 1: **21.**
Timarete luxuriosa (Moore, 1904): **6, 7.**

Family Ampharetidae

Amage anelicornuta Moore, 1923: **2.**
Amphicteis mucronata Moore, 1923: **2.**
Amphicteis scaphobranchiata Moore, 1906: **33**.**
Asabellides lineata (Berkeley and Berkeley, 1943): **33.**

Family Pectinariidae

Cistenides regalis (Verrill, 1902): **12.**
Cistenides brevicoma Johnson, 1901: **5.**
Pectinaria (*Amphictene*) *auricoma* (Müller, 1776): **28, 29.**
Pectinaria (*Pectinaria*) *belgica* (Pallas, 1766): **5, 7.**

Family Terebellidae

Artacama coniferi Moore, 1905: **5.**
Eupolymnia heterobranchia (Johnson, 1901): **50, 20.**
Lanice conchilega (Pallas, 1766): **33**.**
Loimia sp.: **12.**
Neoamphitrite robusta (Johnson, 1901): **5.**
Pista elongata Moore, 1909: **7.**
Polycirrus caliendrum Claparede, 1870: **12.**
Streblosoma longifilis Rioja, 1962: **7, 10**.**
Terebella sp.: 12.
Thelepus crispus (Johnson, 1901): 7, 23.
Thelepus hamatus Moore, 1905: 23.

Family Tichobranchidae

Terebellides californica Williams, 1984: **21.**
Terebellides ehlersi McIntosh, 1885: **2.**
Terebellides reishi Williams, 1984: **5.**
Terebellides sp. 1: **10, 21.**
Terebellides sp. 2: **10.**
Trichobranchus gracilis Malmgren, 1966: **10**.**

Family Sternaspidae

Sternaspis scutata (Ranzani, 1817): **5.**
Sternaspis fossor Stimpson, 1854: **2, 23.**

Table 2. Number of species from Mexican Pacific Islands.

State	Island	No. species
Pacific Ocean		
BC	1 Guadalupe	3
	2 Coronado	8
	3 San Martín	1
	4 San Benito	4
	5 Cedros	39
BCS	6 San Roque	17
	7 Asunción	45
	8 Santa Margarita	1
NAY	9 Isabela	18
	10 María Madre	69
COL	11 Clarión	9
	12 Socorro	70
GUE	13 Grande	2
OAX	14 Tangola-Tangola	2
	15 Clipperton	7
Gulf of California		
BC	16 Ángel de la Guarda	46
	17 Rasa	17
BCS	18 Tortuga	5
	19 San Ildefonso	2
	20 Coronado	25
	21 Del Carmen	37
	22 Monserrat	1
	23 Santa Catalina	32
	24 San José	6
	25 Partidito	1
	26 San Francisco	6
	27 Partida	9
	28 Ballena	13
	29 Espíritu Santo	56
	30 La Gaviota	8
	31 Cerralvo	1
SON	32 San Jorge	3
	33 Tiburón	46
	34 San Esteban	5
	35 San Pedro Nolasco	8
SIN	36 San Ignacio	1

of Tiburón, Del Carmen and María Madre islands, despite an overall wide geographical distribution, show different species composition in the different islands; moreover, the species found in this study had already been recorded from the continental shelf of the Mexican Pacific (Hernández-Alcántara and Solís-Weiss 1999). Their presence in these islands probably results from their migration from nearby coastal zones, the intensity of such migration depending on specific dispersion abilities as well as on particular oceanographic conditions surrounding these areas.

Although the sedimentary processes that determine the distribution of the organisms are still not well understood (Snelgrove and Butman 1994), the soft bottoms' environments might have less limiting factors for the settlement of species coming from nearby continental littoral and sublittoral areas. By contrast, the polychaetes living in hard bottoms might have a more restricted distribution, insofar as they need this type of substrate for settlement and, therefore, these coralline environments, surrounded by soft sediments, might be considered as real "ecological islands".

In spite of the wide distribution of the 73 species identified in soft sediments, only *Ceratocephale oculata* was found on the three sampled islands, showing that actually diverse oceanographic processes play a role in the type of substrate present which in turn determines largely the distribution of the species, so that the location of the islands in the different regions of the Gulf of California is instrumental in shaping the existing differences in the composition of their fauna.

In this respect, the highest values both in abundance (422 org) and in species richness (43), is found in the sublittoral internal coastal zone of María Madre Island, probably because its location at the southern end of the Gulf of California makes it possible for species belonging to temperate environments associated to the Californian province, as well as species related to the Mexican province, adapted to tropical and subtropical conditions to coexist (Table 1). *Caulleriella pacifica, Notomastus tenuis, Scoloplos (S.) capensis* and *Nereis riisei,* were the most abundant species there.

In Tiburón Island (23 species; 157 organisms), subjected to wide environmental variations in the islands' region, as well as in Del Carmen Island (25 species; 137 organisms) located close to the peninsular margin of the Gulf, where polychaetes do not abound (Hernández-Alcántara 2002), a lower number of species was recorded, especially those pertaining to tropical environments. The composition of their polychaete fauna also differ: *Prionospio (P.) steenstrupi* and *Aricidea (A.) simplex* are respectively the most abundant species.

Upon adding the records obtained during this survey to the species of polychaetes registered previously, we could see that these organisms have been collected only in 36 out of the more than 140 islands and islets of the Mexican Pacific (Fig. 1, Table 2). In spite of these limitations in the sampling effort, a substantial species richness is apparent in this fauna: 348 species in 40 families (Table 1) which represents approximately one third of all the species of polychaetes so far recorded from all the western coasts of Mexico (Hernández-Alcántara and Solis-Weiss 1999).

The families with the highest number of species (Table 1) are: Syllidae (35 spp.), Eunicidae (30 spp.), Nereididae (22 spp.) and Polynoidae (19 spp.). Although the available literature gives practically no information concerning the environmental particularities or habitat under which that fauna was collected, and though these families are geographically widely distributed and have been found in a broad variety of habitats, the fact that they are composed basically of mobile or discreetly mobile and mainly carnivorous species (Fauchald and Jumars 1979), could indicate that the polychaetes of the islands have been mainly collected from rocky environments, including dead coral substrates.

By contrast, the families commonly found in soft sediments, being less mobile and feeding mainly on sediments, such as the Maldanidae, Spionidae or Am-

pharetidae, are scantily represented in the collections of the islands of the Mexican Pacific (Table 1).

Of course, the abundance (or scarcity), and coverage (limited or not) of the species recorded, also reflects the particular objectives and sampling effort or limited possibilities of the research operations carried out in the region; as an example of this, less than 10 species have been found in 72% of the islands (Table 2). Therefore, the main limiting factor seems to be the accessibility to the sampling areas, since the majority of the islands sampled so far (21) is precisely located in the Gulf of California, the region traditionally most widely surveyed and studied in the Mexican Pacific (Fig. 1).

The islands of Tiburón (46 spp.) and Ángel de la Guarda (46 spp.) located in the center of the Gulf, in a region with such a recognized diversity high enough to be proposed as "Province of Cortes" (Briggs 1995), and the island of Espíritu Santo (56 spp.) located in front of the bay of La Paz, harbor the highest number of species, with basically tropical affinities (Fig. 1).

Elsewhere in the Mexican Pacific, María Madre and Socorro islands (in the Mexican Province), are the areas where the largest research effort has been carried out, not only in the benthic systems but in other branches of biology as well. As a result, they are now the best known islands, with the highest number of registered species of polychaetes: 69 and 70 respectively (Table 2).

The most widely distributed species appeared to be *Chloeia viridis, Eurythoe complanata, Eunice antennata, Glycera tesselata* and *Platynereis bicanaliculata,* all of them mobile species, commonly found in hard substrates.

Looking at the faunistic similarities, the islands of Espíritu Santo (29), Coronado (20) and Ángel de la Guarda (16), located in the western region of the Gulf of California, are characterized by populations where *Eunice antennata, Eunice biannulata, Platynereis bicanaliculata* and *Marphysa sanguinea* dominate; the islands of Asunción (7) and Cedros (5) of the western part of Baja California, are associated due to the presence of the Amphinomid *Eurythoe complanata*; and the islands María Madre (10), Del Carmen (21) and Tiburón (33), whose similarity results from the records brought out by this study (which basically includes soft bottom species) albeit also related by the presence of two of the widely distributed species *Chloeia viridis* and *Eunice antennata.* Socorro (12) and Santa Catalina (23) are separated from the other islands by the type of dominant fauna: in the first, a high number of species is recorded although basically associated to coralline substrates, while the second shows a mixture of species recorded both in rocky and soft bottoms.

In synthesis, the available information about the polychaetes from the islands of the Mexican Pacific shows that in spite of the high number of species recorded (mainly dependent so far on the sampling effort), there are still many regions and habitats to be studied and the high diversity displayed by this faunistic group, makes its study important in order to understand the ecology of these areas.

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