

# Lectotype designations of new species of hydroids (Cnidaria, Hydrozoa), described by C.M. Fraser, from Allan Hancock Pacific and Caribbean Sea Expeditions

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Hydroids of the Allan Hancock Pacific Expeditions, and those of the Allan Hancock Caribbean Sea Expedition, were examined by Charles McLean Fraser in a series of reports published between 1938 and 1948. A total of 159 new nominal species was described from material collected in the eastern Pacific between Peru and southern British Columbia. Accounts of an additional five nominal species were based on specimens from the southern Caribbean Sea. No valid holotypes were designated in accordance with provisions of the International Code of Zoological Nomenclature for any of these taxa. The purpose of this report is to establish an objective standard for each species, and to promote stability of nomenclature in Hydrozoa, by designating lectotypes for these taxa, or in a few cases by recognizing a holotype by monotypy, based largely on specimens in the Allan Hancock Hydroid Collections at the Santa Barbara Museum of Natural History. One lectotype colony is in the C.M. Fraser Hydroid Collection at the Royal British Columbia Museum. Paralectotype material was also designated for most of the species. *Plumularia irregularis* Fraser, 1948 is referable to the genus *Nemertesia* Lamouroux, 1812, as are *Antennularia irregularis* Quelch, 1885 and *Antennularia irregularis* Fraser, 1938a [= *Nemertesia fraseri* Ramil and Vervoort, 1992]. To avoid secondary homonymy we adopt the replacement name *Nemertesia hancocki*, **nom. nov.**, for *Plumularia irregularis* Fraser, 1948. The specific name honors George Allan Hancock, philanthropist. Also referable to *Nemertesia* are *Antennularia mutabilis* Fraser, 1948 and *Plumularia mutabilis* Fraser, 1948, where they become homonyms. *Nemertesia anomala*, **nom. nov.**, is proposed as a replacement name for *Plumularia mutabilis* Fraser, 1948.

## Introduction

Current knowledge of the hydroids of tropical and warm-temperate regions of the eastern Pacific Ocean is based largely on accounts, by C.M. Fraser, of specimens obtained during various Allan Hancock Pacific Expeditions (1932-1942). Sampling was undertaken during these expeditions along the coast between Peru and southern British Columbia, including several oceanic islands offshore. Ownership of the large and important Hancock hydroid collections was transferred from the Allan Hancock Foundation, University of Southern California, Los Angeles, to the Santa Barbara Museum of Natural History (SBMNH), Santa Barbara, California, in June of 1988 (Henry

W. Chaney, personal communication). The specimens were moved to Santa Barbara about a decade later.

Some 158 nominal species of hydroids were described as new by Fraser (1938a, b, c, 1948) in reports on the Hancock Pacific Expeditions. An additional species, based on the trophosome of hydroids collected off Anacapa Island, California, and the gonosome of material thought by Fraser to be the same species from the Atlantic coast of Panama, was described in a paper on the hydroids of the Allan Hancock Caribbean Sea Expedition (Fraser, 1947). Another five were added from studies of specimens collected during the Allan Hancock Caribbean Sea Expedition. Fraser did not designate holotypes for any of them in accordance with provisions of the International Code of Zoological Nomenclature, however, and lectotypes have not yet been fixed. Our project was undertaken to examine syntype material of these nominal species, and to establish objective standards for each of them by designation of lectotypes.

While Fraser (1938a, b, c, 1948) did not validly designate holotypes in any of his publications on Allan Hancock collections, there are clues in his work as to the particular samples that contained what he likely regarded as primary types. With few exceptions, stations mentioned first by Fraser in "Distribution" lists coincide with the presumed type localities of species listed by Schmitt (1948) and with location data in bottles mislabeled as "holotypes" in the syntype collections. As well, a station number was provided in the "Distribution" section for only one of the sampling locales of a given new nominal species in Fraser's (1948) last paper of the series in all but three cases. Geographic locations of stations thus noted also coincide with the type localities as given by Schmitt (1948), and with station data in samples labeled "holotypes." For the most part we selected a lectotype specimen for each nominal species from material labeled "holotype," to accord with such evidence. Only when there was ample justification were such specimens rejected as name-bearing types in favor of others in the syntype series. We note here as well that many bottles of specimens labeled "Holotype" contained multiple colonies, each representing a syntype, not a holotype. Again, we selected only one of these specimens as the name-bearing type and objective standard of the species, in conformity with the definition of a lectotype (International Commission on Zoological Nomenclature, 1999: 120).

The nomenclature and systematic arrangement of species in the following list, for convenience, is as given in the works of Fraser (1938a, b, c, 1939, 1947, 1948). We emphasize that hydrozoan classifications have changed significantly since these works were published. However, organizing taxa listed below according to contemporary ideas of phylogeny would have changed the order of species significantly, and could have rendered species-by-species comparisons of accounts in Fraser's original works with those in this report much more difficult and confusing. For this reason too we have not included families herein, and include only the ranks of order, genus, and species in the overall classification hierarchy. All of the species discussed herein are in need of more detailed description, additional illustration, and taxonomic reappraisal. Such systematic work was beyond the scope of the present study.

All lectotypes designated herein are in type collections at the Santa Barbara Museum of Natural History, except where noted. Paralectotypes are identified in collections of the Santa Barbara Museum of Natural History, the National Museum of Natural History, Smithsonian Institution, and the Royal British Columbia Museum. Some schizolectotype

or schizoparalectotype slides exist in collections at the National Museum of Natural History (RMNH, Leiden, The Netherlands), as documented in the text. We examined all of the listed material in collections at both the SBMNH and the RMNH, but have not studied those at the Smithsonian or the RBCM except as noted. Unless otherwise indicated, all type material at the SBMNH is preserved in 70% isopropyl alcohol. Syntype localities are derived from Fraser's original descriptions, with the country of collection added; lectotype and paralectotype locality data strings have been derived from Fraser (1943c).

Charles McLean Fraser (1872-1946): a Tribute  
(figs 1, 2)

*"He was everything a student admired in a man, a teacher, and a scientist."*

—Waldo L. Schmitt (National Museum of Natural History, Smithsonian Institution)

Waldo LaSalle Schmitt (1887-1977), a widely respected invertebrate zoologist and curator at the Smithsonian Institution during much of the 20<sup>th</sup> century (Blackwelder, 1979), was a student when he met Charles McLean Fraser for the first time (Schmitt, 1948). They were table companions at a dinner held during the founding of the Pacific Fisheries Society in Seattle, Washington, USA, during 1914. It was clearly a memorable occasion for Schmitt and one that established his considerable respect for Fraser.

Schmitt (1948) recalled that Fraser had likewise gained the confidence and friendship of George Allan Hancock (1875-1965) as a scientist on the Third (December 1933-March 1934) and Tenth (February-March 1941) Allan Hancock Pacific Expeditions aboard the vessel *Velero III* (Figs 1, 2). Notably, the exacting task of documenting lists of personnel, of geographical and biological associations, and of official station data from those cruises, was entrusted to Dr Fraser by Capt. Hancock. The records were all duly published (Fraser, 1943a, b, c) in considerable detail. Moreover, Fraser, a professor at the University of British Columbia, became a formal associate of the Allan Hancock Foundation (see Fraser, 1943b: 45). Capt. Hancock's respect for the zoologist from British Columbia was obviously reciprocated. Fraser worked up the immense collections of hydroids accumulated during those expeditions, and he also named a species (*Hydractinia hancocki*) in honour of the philanthropist who made them possible.

According to Schmitt (1948), Fraser likely became interested in hydroids around and perhaps before 1901-1902. He spent the summers of those two years at a marine laboratory in Canso, Nova Scotia, Canada, as a student of and assistant to Professor Robert Ramsay Wright (1852-1933) of the University of Toronto (Arai, 1992, 2004). In early work at Canso on the Atlantic coast of Canada, and shortly thereafter on the Pacific coast at the Minnesota Seaside Station and at the Pacific Biological Station on Vancouver Island, he appears to have immersed himself in taxonomic research on these cnidarians (Arai, 2004). In 1910 he enrolled in graduate studies at the State University of Iowa (now the University of Iowa) under the supervision of Charles Cleveland Nutting (1858-1927), a renowned hydroid specialist (Arai, 2004; Calder, 2004). He was awarded a Ph.D. from Iowa, sometime around 1911, with a thesis on hydroids of the Pacific coast of North America. After graduating, he was employed as a biologist in British Columbia, first as Curator at the Pacific Biological Station, Departure Bay (1912-1924), and



Fig. 1. Charles McLean Fraser, sorting hydroids in the outdoor laboratory aboard the R/V *Velero III* during an Allan Hancock Pacific Expedition; date uncertain but possibly 1934. Courtesy of Special Collections, Information Services Division, the University of Southern California.





later as Professor and Head of the Department of Zoology (1920-1940) at the University of British Columbia (Arai, 1992, 2004). Geographically, his work focused on the fauna of the Atlantic, Pacific, and Arctic coasts of North America, but he also published on hydroids of Greenland, the Caribbean Sea, and Japan. His reports on hydroids of the Allan Hancock Pacific Expeditions included accounts of species from the eastern Pacific between Peru and southern British Columbia. He also worked up collections from the Allan Hancock Caribbean Sea Expedition. Material from all of the Hancock collections are addressed here.

Fraser's capacity for work appears to have been prodigious given the vast amount of hydroid material that he examined from Hancock expeditions to the eastern Pacific and the Caribbean Sea. All of these collections were processed and described expeditiously in various Hancock Expedition reports. During the same 10-year period he published books on hydroids of the Pacific coast of Canada and the United States, the Atlantic coast of North America, and on distribution and relationships in American hydroids. The first two of these works continue to be primary references for hydroid identification today. Numerous shorter contributions on hydroids also appeared over that time interval. Meanwhile, he maintained a full academic workload at the University of British Columbia, and held important positions in several professional societies including the Royal Society of Canada (Arai, 2004). Instrumental in establishing programs of research on fisheries biology and oceanography on the west coast of Canada, his list of publications in those disciplines actually exceeds that devoted to the taxonomy of hydroids (Schmitt, 1948). More than 125 of his papers and books were in the discipline of marine biology (Arai, 1992), yet only some 52 of them were devoted to Hydrozoa. A more detailed biography of Fraser, with a fuller account of his life and accomplishments, is given by Arai (2004).

Fraser's hydroid work has long been subjected to severe criticism. For example, his ideas about classification and nomenclature in the group were little advanced over systems used by the Rev. Thomas Hincks (1818-1899), George James Allman (1812-1898), and others in the 19<sup>th</sup> century. Few of the refinements in hydroid taxonomy proposed by his contemporaries in Europe and elsewhere were adopted in his publications. New species were often established on insufficient grounds, and he took little notice of the medusa stages of these cnidarians. His descriptions tended to be perfunctory and his illustrations were marginal. Concepts that he held concerning hydrozoan relationships have long been discounted (*e.g.*, see Rees, 1957). As apparent in our present report, his attention to principles of zoological nomenclature was substandard. The Type Concept in Nomenclature, as it is known today (International Commission on Zoological Nomenclature, 1999), was largely ignored. His hydroid research was indeed flawed in many respects, but it is easy to criticize in hindsight and from the vantage point of current knowledge. His investigations were undertaken during an earlier era; science advances,

◀ Fig. 2. Scientific personnel of the Third Allan Hancock Pacific Expedition (December 1933-March 1934) on the deck of R/V *Velero III*. Standing, left to right: Charles McLean Fraser (hydroids), George Allan Hancock (owner and Master), Waldo LaSalle Schmitt (crustaceans), Fred C. Ziesenhenné (echinoderms), Edwin O. Palmer (ship's medical doctor), W. Charles Swett (photographer). Seated, left to right: William Randolph Taylor (algae), Harold W. Manter (fish parasites), Emil Jensen (as Emory Johnson in Fraser, 1943c; duties uncertain), John S. Garth (arthropods). Courtesy of Special Collections, Information Services Division, the University of Southern California.

and so too do scientific methods and procedures. Fraser's work should at least be assessed in the context of his overall duties. His main professional responsibilities were the establishment of research in marine science and fisheries on the west coast of North America, and undergraduate and graduate education as professor and head of a rapidly growing university department. Hydroid taxonomy for him was, by comparison, an adjunct activity, and he was perhaps guilty of undertaking to do too much in the limited amount of time available to him for such work. Now, more than a half-century after his death and last publication, the shortcomings of his work should perhaps no longer so completely overshadow his contributions and his unmistakable dedication to the study of hydroids. Fraser increased knowledge of the group to an extent matched by few others, and he is credited as the author of more nominal species in the Hydrozoa by far than anyone else (Schuchert, 1998). As a testament to the importance of his work, his publications are still used in the identification, characterization, and distribution of hydroids, at least those of North America and the northern parts of South America. Notably, we deal herein with nominal species that he described and named. Without his contributions on Allan Hancock Pacific Expedition collections, the hydroid fauna of the region from Baja California to Ecuador and Peru, and the oceanic islands immediately offshore, would be virtually unknown.

### Abbreviations

AHF	= Allan Hancock Foundation, Los Angeles, California, USA.
BCPM	= Royal British Columbia Museum (formerly British Columbia Provincial Museum), Victoria, British Columbia, Canada.
ICZN	= International Code of Zoological Nomenclature.
RMNH	= National Museum of Natural History, Leiden, The Netherlands.
SBMNH	= Santa Barbara Museum of Natural History, Santa Barbara, California, USA.
USNM (and NMNH)	= National Museum of Natural History, Smithsonian Institution, Washington, DC, USA.

### Systematic Account

Order Anthoathecata Cornelius, 1992

Genus *Clava* Gmelin, 1791

*Clava parva* Fraser, 1938a

*Clava parva* Fraser, 1938a: 7, 11, pl. 1 fig. 1; 1939: 157 et seq.; 1946: 37, 100; Schmitt, 1948: ix; Arai, 1977: 26.

Syntype material.— Panama, Jicarita Island, 30 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 242-34, Panama, off Jicarita Island, 07°13'15"N, 81°49'W, 30 fm (55 m), sand + shell, 20.ii.1934, one stolonal colony, zooids up to 2 mm high, on gastropod shell, gonophores not seen, SBMNH 347014 (AHF Holotype No. 1).

Paralectotype.— Panama, Jicarita Island, BCPM 976-157-1 (Arai, 1977).

Remarks.— The lectotype specimen was earlier intended as the name-bearing type

of the species, inasmuch as hand-written labels in the vial with the specimen were marked "*Clava parva* Fraser Holotype" and "AHF Holotype No. 1." It was the only specimen of the species in Allan Hancock collections at the Santa Barbara Museum of Natural History, but material of the species from Jicarita Island, Panama, also exists in the Fraser Collection of hydroids at the Royal British Columbia Museum (BCPM 976-157-1) (Arai, 1977). Given uncertainty whether the two collections are part of the same colony, we designated SBMNH 347014 as the lectotype of *Clava parva* instead of recognizing it as a holotype by monotypy (Recommendation 73F, ICZN). Material from the Fraser Collection at the RBCM is designated as the paralectotype.

In his original description of this species, Fraser (1938a) described and illustrated gonophores as sporosacs on the hydranth. These structures were reportedly arranged in a single compact cluster just below the tentacles. We could find no gonophores on any of the hydranths observed in our re-examination of the lectotype colony (SBMNH 347014).

We consider the identity of this hydroid to be uncertain, although it may be a hydractiniid.

Reported range.— Pacific off Panama (type locality: off Jicarita Island) (Fraser, 1938a, 1946, 1948).

Genus *Corydendrium* van Beneden, 1844a  
*Corydendrium flabellatum* Fraser, 1938a

?*Corydendrium flabellatum* Fraser, 1938a: 7, 11, pl. 1 fig. 2; 1939: 157 et seq.; 1946: 38, 105; Schmitt, 1948: ix; Arai, 1977: 26.

Syntype material.— Panama, Secas Islands, 25 fm. Mexico, east of islands off Navidad Head, 25-35 fm; off Isabel Island, 10-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 250-34, Panama, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, one young upright polysiphonic colony, 1.8 cm high, on a bryozoan colony, without gonophores, SBMNH 347018 (AHF Holotype No. 2).

Paralectotypes.— *Velero III* station 250-34, as above for lectotype, 16 polysiphonic, upright colonies or colony fragments, up to 5.8 cm high, all detached from substrates, without visible gonophores, SBMNH 347019 (AHF Paratype No. 165).

*Velero III* station 275-34, Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, four small monosiphonic or slightly polysiphonic upright colonies, up to 1.8 cm high, on calcareous fragments and a polychaete tube, without gonophores, SBMNH 346303.

*Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, one dense polysiphonic upright colony, 5.0 cm high, autoepizoic, without gonophores, SBMNH 346304.

Mexico, Isabel Island, as above, BCPM 976-162-1, BCPM 976-162-2, BCPM 976-162-3 (Arai, 1977).

Remarks.— The hydroid colony chosen as lectotype of *Corydendrium flabellatum*, one of several in a vial containing the labels "Holotype" and "AHF Holotype No. 2" (SBMNH 347018), most closely resembled Fraser's (1938a) "figure 2a" of this species. It

was also one of the few colonies in the sample with hydranths. Other hydroids preserved with it were designated as part of the paralectotype series and removed to another vial containing specimens of this species from the same station (*Velero III* station 250-34), earlier labeled "Paratype" and "AHF Paratype No. 165" (SBMNH 347019).

Of all the material examined here, hydranths were most intact in a paralectotype colony from *Velero III* station 277-34 off Isabel Island, Mexico (SBMNH 346304). Fraser's (1938b) "figure 2b" may have been drawn from this hydroid.

Fraser (1938a) referred this species, with question, to *Corydendrium*. His generic assignment is upheld here.

Reported range.— Pacific off Panama (type locality: Secas Islands) and Mexico (Fraser, 1938a, 1946, 1948).

Genus *Tubiclava* Allman, 1863

*Tubiclava laxa* Fraser, 1938a

*Tubiclava laxa* Fraser, 1938a: 7, 12, pl. 1 fig. 3; 1939: 157 et seq.; 1946: 38, 102; 1948: 192; Schmitt, 1948: ix; Arai, 1977: 26; Ljubenkova, 1980: 45; Cairns et al., 1991: 13; 2002: 49.  
*Merona laxa*: Cairns et al., 2002: 11, 49.

Syntype material.— Mexico, Tangola Tangola, near shore, 15-20 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 259-34, Mexico, Tangola Tangola Bay and Santa Cruz Bay, 15°45'N, 96°06'12"W, 15-20 fm (27-37 m), sand + gravel + mud, 28.ii.1934, one stolon colony, zooids 2 mm high, on a gastropod shell, with gonophores on gonozooids, SBMNH 347015 (AHF Holotype No. 3).

Paralectotypes.— *Velero III* station 259-34, as above for lectotype, two stolon colonies, zooids to 3.5 mm high, on gastropod shells, with gonophores on gonozooids, SBMNH 347016 (AHF Paratype No. 166).

*Velero III* station 259-34, as above for lectotype, one lot, in ethanol, USNM 71634.

Mexico, Tangola Tangola Bay, as above for lectotype, BCPM 976-168-1; BCPM 976-168-2 (Arai, 1977).

Remarks.— The vial labeled "Holotype" and "AHF Holotype No. 3" (SBMNH 347015) contained two colonies, each on a gastropod shell. The better of these specimens was selected as the lectotype. The other was combined with a specimen from the same collection, labeled "Paratype" and "AHF Paratype 166" (SBMNH 347016) as paralectotype material.

In having polymorphic colonies with gonophores on gonozooids, as well as nematocyst-bearing, this species was earlier reassigned from *Tubiclava* Allman, 1863 to *Merona* Norman, 1865 by Cairns et al. (2002).

Reported range.— Pacific off Mexico (type locality: Tangola Tangola Bay) (Fraser, 1938a, 1946), and southern California (Fraser, 1948).

*Tubiclava triserialis* Fraser, 1938a

?*Tubiclava triserialis* Fraser, 1938a: 7, 12, pl. 1 fig. 4; 1939: 157; 1946: 38, 102; 1948: 192; Schmitt, 1948: ix; Arai, 1977: 26.

Syntype material.— Mexico, Revillagigedo Islands, Socorro Island, along shore of Braithwaite Bay, at low tide, on coral (Fraser, 1938a).



Lectotype.— *Velero III* station 131-34, Mexico, Revillagigedo Islands, Socorro Island, Braithwaite Bay, 18°42'45"N, 110°56'50"W, shallow water, *Pocillopora* coral, 03.i.1934, one stolonial colony, zooids to 2 mm high, on a sponge, without gonophores, SBMNH 347017 (AHF Holotype No. 4).

Paralectotype.— Mexico, Braithwaite Bay, as above for lectotype, BCPM 976-169-1; BCPM 976-169-2 (Arai, 1977).

Remarks.— The single colony containing the labels "Holotype" and "AHF Holotype No. 4" (SBMNH 347017) has been chosen as the lectotype. Material from the same station, at the Royal British Columbia Museum (BCPM 976-169-1; BCPM 976-169-2), is designated as paralectotype material.

Fraser (1938a) assigned this hydroid with question to the genus *Tubiclava*, and more taxonomic study is required to determine its generic identity. Schuchert (2004) remarks that *Tubiclava* Allman, 1863 is a doubtful genus and therefore should not be used anymore.

Reported range.— Pacific off Mexico (type locality: Socorro Island, Braithwaite Bay) (Fraser, 1938a, 1946, 1948).

Genus *Balea* Nutting, 1905  
*Balea irregularis* Fraser, 1938a

*Balea irregularis* Fraser, 1938a: 7, 13, pl. 1 fig. 5; 1939: 157 et seq.; Schmitt, 1948: ix; Arai, 1977: 26.  
*Balella irregularis*: Fraser, 1944b: 34; 1946: 48, 150; Calder et al., 2003: 1204.

Syntype material.— Ecuador, Galápagos Islands, dredged in open passage between Indefatigable and Charles Islands, 65-70 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.i.1934, one upright, polysiphonic colony fragment, 8 mm high, unattached, without gonophores, SBMNH 347008 (AHF Holotype No. 5).

Paralectotypes.— *Velero III* station 190-34, as above for lectotype, about 18 fragments of colonies, to 1.7 cm high, unattached, without gonophores, SBMNH 347009.

Ecuador, Galápagos Islands, reported as Charles Island but probably as above, BCPM 976-275-1 (Arai, 1977).

Remarks.— The sample of this species with the labels "Holotype" and "AHF Holotype No. 5" (SBMNH 347008) contained some nine fragments of a colony or colonies. The fragment most closely corresponding with Fraser's (1938a) illustration of *Balea irregularis*, though small, has been chosen as the lectotype. The eight others have been combined with material labeled "Paratype" and "AHF Paratype No. 167" (SBMNH 347009) from the same station, as paralectotypes.

Calder et al. (2003) regarded *Balella irregularis* (Fraser, 1938a) and *B. mirabilis* (Nutting, 1905) from Hawaii as conspecific. Having seen the type material of *B. irregularis*, and on re-examining the description and illustrations of *B. mirabilis*, we prefer to recognize both species as valid for now given the differences in development of the proximal tentacles in hydroids from the two areas.

*Balea* Nutting, 1905 is an invalid junior homonym of *Balea* Gray, 1824 (Mollusca) and has been replaced by the name *Balella* Stechow, 1919. Fraser (1938a) assigned the species

to the family Tubidendridae Nutting, 1905, but that name is invalid (Art. 11.7.1.1) and has been replaced by Balellidae Stechow, 1922.

Reported range.— Galápagos Islands (type locality: east of south end of Albemarle Island) (Fraser, 1938a, 1946, 1948).

Genus *Coryne* Gaertner, 1774

*Coryne repens* Fraser, 1938a

*Coryne repens* Fraser, 1938a: 7, 13, pl. 1 fig. 6; 1939: 157 et seq.; 1946: 51, 162; Schmitt, 1948: ix; Arai, 1977: 25; Schuchert, 2001: 853-854; Calder et al., 2003: 1198, 1205, fig. 17.

Syntype material.— Ecuador, Galápagos Islands, Charles Island, creeping over coralline at low tide on Black Beach (Fraser, 1938a).

Lectotype.— *Velero III* station 161-34, Ecuador, Galápagos Islands, Charles Island, off Black Beach, 01°16'40"S, 90°29'46"W, 3 fm (5 m), rock + algae, 17.i.1934, one upright, monosiphonic colony fragment, 5 mm high, on algae, with gonophores, SBMNH 345373 (AHF Holotype No. 6).

Paralectotypes.— *Velero III* station 161-34, as above for lectotype, three upright, monosiphonic colonies, to 5 mm high, on algae, without gonophores, SBMNH 345374.

*Velero III* station 161-34, as above for lectotype, one small colony, 7 mm high, on algae, without gonophores, SBMNH 345375.

Ecuador, Galápagos Islands, Charles Island, BCPM 976-131-1 (Arai, 1977).

Remarks.— Three colonies were present in the vial containing the labels "Holotype" and "AHF Holotype No. 6" (SBMNH 345373). The best of these colonies, and the one with gonophores, has been selected as the lectotype. Paralectotypes include material labeled "Paratype" and "AHF Paratype No. 168" (SBMNH 345374), a voucher specimen (SBMNH 345375), and BCPM 976-131-1.

Reported range.— Galápagos Islands (type locality: Charles Island, off Black Beach) (Fraser, 1938a; 1946; Calder et al., 2003).

Genus *Eugemmaria* Fraser, 1938a

*Eugemmaria dendritica* Fraser, 1938a

*Eugemmaria dendritica* Fraser, 1938a: 7, 14, pl. 2 fig. 7; 1939: 157 et seq.; 1946: 50, 167; Schmitt, 1948: ix; Arai, 1977: 25.

*Solanderia dendritica*: Bouillon et al., 1992: 7, pl. 1; Schuchert, 1998: 211.

Syntype material.— Mexico, White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 275-34, Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, one upright colony, 8 cm high, detached from substrate, with gonophores, SBMNH 345376 (AHF Holotype No. 7).

Paralectotypes.— *Velero III* station 264-34, Mexico, south of White Friars Islands, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, one upright colony, 6 cm high, detached from substrate, with gonophores, SBMNH 345377.

*Velero III* station 275-34, as above for lectotype, one lot, in ethanol, USNM 49287.

Mexico, Tenacatita Bay, BCPM 976-133-1; White Friars Islands, BCPM 976-134-1 (Arai, 1977).

Remarks.— The vial with the specimen designated as the lectotype contained labels marked “Holotype” and “AHF Holotype No. 7” (SBMNH 345376). Another single specimen, here designated as a paralectotype, occurred in a vial having labels marked “Paratype” and “AHF Paratype 169” (SBMNH 345377).

This species, the type species by monotypy of the nominal genus *Eugemmaria*, is referable to the genus *Solanderia* Duchassaing and Michelin, 1846 (family Solanderiidae).

Reported range.— Pacific off Mexico (type locality: Tenacatita Bay) (Fraser, 1938a, 1946; 1948).

Genus *Syncoryne* Ehrenberg, 1834  
*Syncoryne flexibilis* Fraser, 1938a

*Syncoryne flexibilis* Fraser, 1938a: 7, 15, pl. 2 fig. 8; 1939: 157 et seq.; 1946: 51, 164; Schmitt, 1948: ix; Arai, 1977: 25; Schuchert, 2001: 861.

*Sphaerocoryne flexibilis*: Schuchert, 2001: 862.

Syntype material.— Colombia, Gorgona Island, 20 fm; Port Utria, low tide, on coral and at 20 fm and 40 fm. Panama, Jicarón Island, 15 fm; Secas Islands, 15 fm. Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 238-34, Colombia, off Port Utria, 05°59'25"N, 77°21'50"W, 20 fm (37 m), sand + shell + cake urchins, 15.ii.1934, one pedicel with hydranth, 9 mm high, detached from substrate, without gonophores, SBMNH 345378 (AHF holotype No. 9).

Paralectotypes.— *Velero III* station 221-34, Colombia, off Gorgona Island, 03°01'25"N, 78°10'W, 20 fm (37 m), rock + shell, 12.ii.1934, 10 colonies or fragments of colonies, to 14 mm high, on calcareous fragments or detached from substrate, some with possible gonophores, SBMNH 345380 (AHF Holotype No. 8).

*Velero III* station 236-34, Colombia, off Port Utria, 06°00'15"N, 77°23'10"W, 40 fm (73 m), shell + dead leaves, 15.ii.1934, two colonies, to 8 mm high, on sponges, without gonophores, SBMNH 345379.

*Velero III* station 239-34, Colombia, Port Utria, 05°59'40"N, 77°21'30"W, shore, reef inside outer island, 15.ii.1934, several pedicels with poorly preserved hydranths, to 5 mm high, detached from substrate, without visible gonophores, SBMNH 346352.

*Velero III* station 241-34, Panama, off Jicarita Island, 07°13'05"N, 81°48'30"W, 15 fm (27 m), rough rock, 20.ii.1934, 2-3 poorly preserved colonies with few hydranths, 10 mm high, on calcareous fragments, without visible gonophores, SBMNH 346350.

*Velero III* station 251-34, Panama, Secas Islands, 07°57'50"N, 82°01'15"W, 15 fm (27 m), rock + nullipores, 22.ii.1934, one pedicel without hydranth, 5 mm high, detached from substrate, without gonophores, SBMNH 346351.

Panama, Secas Islands, BCPM 976-138-1, BCPM 976-138-2 (Arai, 1977).

Remarks.— The lectotype chosen here was labeled as “Holotype” and “AHF Holotype No. 9” (SBMNH 345378). Although relatively small and unattached, it is one of the largest and best preserved specimens in the syntype series. Moreover, it most resembles the hydroid illustrated as “fig. 8a” in Fraser’s (1938a) account of *S. flexibilis*.

Relegated to paralectotype status was the syntype material from five other *Velero III* stations listed above.

The genus name *Syncoryne* Ehrenberg, 1834 (original spelling *Syncoryna*) has been placed in synonymy with *Coryne* Gaertner, 1774. In our opinion, these hydroids are referable instead to *Sphaerocoryne* Pictet, 1893 (family Sphaerocorynidae), and they resemble *Sphaerocoryne bedoti* Pictet, 1893. Schuchert (2001) earlier reached the same conclusion about the identity of the species.

Reported range.— Pacific off Colombia (type locality: off Port Utria), Panama, and Mexico (Fraser, 1938a, 1946, 1948).

Genus *Bimeria* Wright, 1859

*Bimeria laxa* Fraser, 1938a

?*Bimeria laxa* Fraser, 1938a: 7, 16, pl. 2 fig. 9; 1939: 157 et seq.; 1946: 42, 108; Schmitt, 1948: ix; Arai, 1977: 26; Calder et al., 2003: 1204.

*Garveia laxa*: Calder et al., 2003: 1204.

Syntype material.— Ecuador, Galápagos Islands, Indefatigable Island, Academy Bay, 17-22 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 169-34, Ecuador, Galápagos Islands, Indefatigable Island, Academy Bay, 00°46'18"S, 90°19'27"W, 15-25 fm (27-46 m), sand + rock + algae, 20.i.1934, one erect polysiphonic colony, 2 cm high, unattached, without gonophores, SBMNH 347244 (AHF Holotype No. 10).

Paralectotypes.— *Velero III* station 169-34, as above for lectotype, nine polysiphonic to strongly polysiphonic colonies, to 7 cm high, unattached, without gonophores, SBMNH 347245.

Ecuador, Galápagos Islands, Academy Bay, BCPM 976-175-1 (Arai, 1977).

Remarks.— The sample of *Bimeria laxa* containing the labels "Holotype" and "AHF Holotype No. 10" (SBMNH 347244) contained eight colonies or fragments of colonies, most with no or few hydranths present. The lectotype chosen here was the specimen with the most hydranths present, and it corresponds with Fraser's account of the species. The remaining seven colonies were combined with specimens labeled "Paratype" and "AHF Paratype No. 171" (SBMNH 347245) from the same station.

Fraser (1938a) referred this hydroid, with question, to the genus *Bimeria*. Unlike in *Bimeria*, perisarc does not extend as a sleeve-like covering over the base of each tentacle in this species. Accordingly, *B. laxa* was assigned to *Garveia* by Calder et al. (2003). In the absence of gonophores, however, uncertainty remains as to its generic assignment.

Reported range.— Galápagos Islands (type locality: Indefatigable Island, Academy Bay) (Fraser, 1938a, 1946, 1948).

*Bimeria pygmaea* Fraser, 1938a

*Bimeria pygmaea* Fraser, 1938a: 16, pl. 2 fig. 10; 1939: 157 et seq.; 1946: 42, 107; Schmitt, 1948: ix.

Syntype material.— Ecuador, Santa Elena Bay, 8-12 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one tiny stolonal

colony, 1 mm high, on algae, without gonophores, SBMNH 347246 (AHF Holotype No. 11).

Paralectotypes.— None designated.

Remarks.— No other specimens of this nominal species were found in Allan Hancock collections at the Santa Barbara Museum of Natural History, and it was not listed by Arai (1977) from the Fraser Collection at the Royal British Columbia Museum. We are nevertheless reluctant to assume that this specimen is the holotype by monotypy (Recommendation 73F, ICZN), and accord it lectotype status.

This small hydroid is of uncertain identity. Fraser (1938a) placed it, with question, in *Bimeria*.

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay) (Fraser, 1938a, 1946, 1948).

Genus *Bougainvillia* Lesson, 1830

*Bougainvillia crassa* Fraser, 1938a

*Bougainvillia crassa* Fraser, 1938a: 7, 17, pl. 3 fig. 11; 1938c: 131; 1939: 157 et seq.; 1946: 41, 119; 1948: 194; Schmitt, 1948: ix; Vannucci and Rees, 1961: 64; Arai, 1977: 26; Alvarez-Leon and Wedler, 1982: 22-24, figs 2b, 5a.

Syntype material.— Ecuador, Santa Elena Bay, at low tide, in 7-8 fm, and in 10-12 fm. Costa Rica, Port Culebra, 3-10 fm. Mexico, Tangola Tangola, 15-20 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 207-34, Ecuador, south of Point Santa Elena, 02°12'23"S, 81°00'05"W, shore, rock, 08.ii.1934, one upright polysiphonic colony, 6 cm high, unattached, with medusa buds, SBMNH 347247 (AHF Holotype No. 12).

Paralectotypes.— *Velero III* station 207-34, as above for lectotype, two upright polysiphonic colony fragments, to 4.3 cm high, unattached, one with medusa buds and one without, SBMNH 369442.

*Velero III* station 254-34, Costa Rica, Port Culebra, 10°37'50"N, 85°39'15"W, 3-10 fm (5-18 m), sand + shell, 24.ii.1934, one upright polysiphonic colony, 5.5 cm high, unattached, with medusa buds, SBMNH 347248.

Ecuador, off Santa Elena Bay, 09.ii.1934, one lot, in ethanol, USNM 49288 (USNM data most closely match *Velero III* station 209-34).

Costa Rica, Port Culebra, as above, BCPM 976-969-1 (Arai, 1977).

Remarks.— Three colonies or fragments of colonies were found in the vial marked "Holotype" and "AHF Holotype No. 12" (SBMNH 347247) containing this species. The largest colony, in the best condition and with some hydranths and medusa buds, was selected as the lectotype. The other two were removed to a second vial as paralectotypes (SBMNH 369442).

A specimen from Port Culebra, Costa Rica (*Velero III* station 254-34, SBMNH 347248), marked "Paratype" and "AHF Paratype No. 172," was the best of the colonies assigned to this species by Fraser (1938a) that we examined. We considered designating it as the lectotype, but were reluctant to change what may have been Fraser's intended primary type of the species, and to alter the type locality designation of Schmitt (1948). It is therefore deemed to be part of the paralectotype series.

We were unable to locate any of the syntype specimens of *Bougainvillia crassa* from Tangola Tangola, Mexico.



Based on the morphology of the hydroid and its medusa buds, we agree with the assignment of this species to *Bougainvillia*.

Reported range.— Pacific off Peru, Ecuador (type locality: south of Point Santa Elena), Central America, and Mexico (Fraser, 1938a, c, 1946, 1948).

Genus *Perigonimus* M. Sars, 1846

*Perigonimus gracilis* Fraser, 1938c

?*Perigonimus gracilis* Fraser, 1938c: 131, 137, pl. 19 fig. 1; 1939: 157 et seq.; 1946: 40, 116; Schmitt, 1948: ix; Arai, 1977: 26.

Syntype material.— Colombia, Octavia Bay, 35-40 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 429-35, Colombia, Octavia Bay, 06°48'40"N, 77°40'50"W, 30-35 fm (55-64 m), coarse sand + gravel, 27.i.1935, one colony, 5.5 mm high, on tube of coronate scyphopolyp, without gonophores, SBMNH 347249 (AHF Holotype No. 13).

Paralectotypes.— *Velero III* station 429-35, as above for lectotype, one colony, 4 mm high, on fragment of tube of coronate scyphopolyp, without gonophores, SBMNH 347250.

Colombia, Octavia Bay, BCPM 976-200-1 (Arai, 1977).

Remarks.— The vial labeled "Holotype" and "AHF Holotype No. 13" (SBMNH 347249) contained a hydroid colony with several cormoids growing on the tube of a coronate scyphopolyp. We designate that specimen, corresponding well with Fraser's (1938c) original account of *Perigonimus gracilis*, as the lectotype. The paralectotype colony, labeled "Paratype" and AHF Paratype 173" (SBMNH 347250), was also growing on a coronate scyphopolyp tube.

Fraser (1938c) assigned this species with question to *Perigonimus*, a junior subjective synonym of *Bougainvillia* (see Rees, 1938, 1956). We agree that its generic identity is uncertain, in the absence of life cycle information.

Reported range.— Pacific off Colombia (type locality: Octavia Bay) (Fraser, 1938c, 1946, 1948).

*Perigonimus robustus* Fraser, 1938a

?*Perigonimus robustus* Fraser, 1938a: 7, 17, pl. 3 fig. 12; 1938c: 131, 137, pl. 19 fig. 2; 1939: 157 et seq.; 1943a: 87; 1944a: 59, pl. 7 fig. 30; 1946: 40, 117; 1948: 196; Schmitt, 1948: ix; Rees, 1956: 343; Arai, 1977: 26. *Bougainvillia robusta*: Vervoort, 1968: 93; Cairns et al., 1991: 14; 2002: 50.

Syntype material.— Mexico, Petatlan Bay, 5-10 fm; Isabel Island, 10-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 267-34, Mexico, west of Morro de Petatlan, 17°30'30"N, 101°28'40"W, 25 fm (46 m), sand, 03.iii.1934, one upright monosiphonic colony, 1.5 cm high, unattached, without gonophores, SBMNH 347291 (AHF Holotype No. 14).

Paralectotypes.— *Velero III* station 267-34, as above for lectotype, six upright monosiphonic colonies, to 2.0 cm high, unattached or attached to shell fragments, without gonophores, SBMNH 369443.

*Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25

fm (18-46 m), sand + nullipores, 05.iii.1934, one upright monosiphonic colony, 5.6 cm high, unattached, without gonophores, SBMNH 345840.

Mexico, Petatlan Bay, BCPM 976-202-1 (Arai, 1977).

Remarks.— The lectotype specimen of *Perigonimus robustus* appears to be the same one illustrated as “fig. 12” by Fraser (1938a). The sample with this hydroid (SBMNH 347291) contained the labels “Holotype” and “AHF Holotype No. 14”. Also included in the sample, and removed to a separate vial, were six other colonies. These were assigned paralectotype status, along with specimens from *Velero III* station 277-34 (SBMNH 345840) and material from the Fraser Collection in the Royal British Columbia Museum (BCPM 976-202-1). The sample that contained the original so-called “Paratype” now contains no material and no labels other than one marked “labels and hydroid not found 7-15-02 K. Sellheim.”

This hydroid was assigned with question to *Perigonimus* by Fraser (1938a). *Perigonimus* is, as noted above in remarks on *Perigonimus gracilis*, a junior subjective synonym of *Bougainvillia*. Although Fraser (1938c) later described the gonophores as medusa buds, the generic identity of this species still needs clarification.

Reported range.— Pacific off Mexico (type locality: west of Morro de Petatlan), and Caribbean Sea (Fraser, 1938a, c, 1943a, 1944a, 1946, 1948).

#### Genus *Eudendrium* Ehrenberg, 1834

##### *Eudendrium breve* Fraser, 1938a

*Eudendrium breve* Fraser, 1938a: 18, pl. 3 fig. 13; 1939: 157 et seq.; 1946: 43, 126; 1948: 196; Cooke, 1975: 88, pl. 1 fig. 2; Cairns et al., 1991: 15; 2002: 13; Calder et al., 2003: 1194, 1196, 1204.

Syntype material.— Ecuador, Galápagos Islands, Charles Island, Black Beach, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 161-34, Ecuador, Galápagos Islands, Charles Island, 01°16'40"S, 90°29'46"W, 3 fm (5 m), rock + algae, 17.i.1934, one stolonial colony, 2 mm high, on sponge, without gonophores, SBMNH 345383 (AHF Holotype No. 16).

Paralectotypes.— *Velero III* station 161-34, as above for lectotype, two stolonial colonies, 2 mm high, on sponge, without gonophores, SBMNH 345384.

*Velero III* station 161-34, as above for lectotype, two stolonial colonies, 2 mm high, on calcareous fragments, without gonophores, SBMNH 346372.

Remarks.— Material of this species labeled “Holotype” and “AHF Holotype No. 16” (SBMNH 345383) comprised two colonies, growing on sponges. The larger colony was isolated and selected as the lectotype. The second was combined in a vial with a specimen from the same station labeled “Paratype” and “AHF Paratype No. 175” (SBMNH 345384), with both now being paralectotypes. Two other colonies, in a third vial (SBMNH 346372) from the same station, also represent paralectotype material.

Reported range.— Galápagos Islands (type locality: Charles Island) (Fraser, 1938a, 1946, 1948; Calder et al., 2003); Pacific off Baja California (Fraser, 1948).

##### *Eudendrium certicaule* Fraser, 1938a

*Eudendrium certicaule* Fraser, 1938a: 19, pl. 3 fig. 14; 1939: 157 et seq.; 1946: 43, 124; 1948: 197; Cairns et al., 1991: 15; 2002: 13; Calder et al., 2003: 1204.

Syntype material.— Ecuador, Galápagos Islands, channel between Narborough and Albemarle Islands, 70 fm; James Island, James Bay, 30-50 fm; between Charles and Indefatigable Islands, 60 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 155-34, Ecuador, Galápagos Islands, Albemarle Island, off Tagus Cove, 00°16'45"S, 91°22'52"W, 50-60 fm (91-110 m), rock + nullipores + Bryozoa, 15.i.1934, one erect monosiphonic colony, 2.2 cm high, unattached, with female gonophores, SBMNH 345386.

Paralectotypes.— *Velero III* station 155-34, as above for lectotype, five erect, monosiphonic colonies or colony fragments, to 3.4 cm high, unattached or on calcareous fragments, without gonophores, SBMNH 345385 (AHF Holotype No. 17).

*Velero III* station 183-34, Ecuador, Galápagos Islands, between Albany and James Islands, 00°10'45"S, 90°52'08"W, 50-70 fm (91-128 m), rock + shell, 24.i.1934, one erect and slightly polysiphonic colony, 1.4 cm high, unattached, without gonophores, SBMNH 346391.

*Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.i.1934, four erect monosiphonic colonies, to 1.4 cm high, unattached or on calcareous fragment, one with male gonophores, SBMNH 346392.

Remarks.— The lectotype chosen was a single specimen from a *Velero III* station 155-34 sample labeled "Paratype" and "AHF Paratype No. 176" (SBMNH 345386). It was selected over five other specimens from a second vial in the same collection (*Velero III* station 155-34, SBMNH 345385), labeled "Holotype" and "AHF Holotype No. 17," for several reasons. First, it is almost certainly the hydroid illustrated as "Fig. 14a" (*Eudendrium certicaule*) in Fraser (1938a), the principal illustration of the species. It was also one of the best preserved colonies of the syntype series and corresponded with Fraser's description. The lectotype also bears female gonophores, important in discrimination of species of the genus, while specimens in the other sample bottle were all sterile. Finally, no change in type locality from that given by Schmitt (1948) is necessary. The five specimens in the second vial are now paralectotypes, along with material from *Velero III* stations 183-34 (SBMNH 346391) and 190-34 (SBMNH 346392).

Reported range.— Galápagos Islands (type locality: Albemarle Island, off Tagus Cove) (Fraser, 1938a, 1946); Pacific off Baja California (Fraser, 1948).

*Eudendrium nodosum* Fraser, 1938a

*Eudendrium nodosum* Fraser, 1938a: 7, 19, pl. 4 fig. 15; 1939: 157 et seq.; 1946: 43, 124.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one upright monosiphonic colony, 2.4 cm high, unattached, without gonophores, SBMNH 345387 (AHF Holotype No. 18).

Paralectotypes.— *Velero III* station 209-34, as above for lectotype, 14 upright monosiphonic colonies, to 2.5 cm high, unattached, without gonophores, SBMNH 345388.

Remarks.— All of these hydroids were in poor condition. The best colony, albeit with only three hydranths, was selected as the lectotype and returned to the vial labeled

“Holotype” and “AHF Holotype No. 18” (SBMNH 345387). The 12 remaining specimens from that sample were combined with two others, from a vial labeled “Paratype” and “AHF Paratype No. 177” (SBMNH 345388), as paralectotypes.

Reported range.— Pacific off Ecuador (type locality: off Santa Elena Bay) (Fraser, 1938a, 1946, 1948).

Genus *Hydractinia* van Beneden, 1841

*Hydractinia disjuncta* Fraser, 1938a

*Hydractinia disjuncta* Fraser, 1938a: 7, 21, pl. 4 fig. 16; 1939: 157 et seq.; 1946: 45, 134; Schmitt, 1948: ix; Arai, 1977: 26.

Syntype material.— Panama, Jicarita Island, 30 fm. Costa Rica, Port Culebra, 3-10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 242-34, Panama, off Jicarita Island, 07°13'15"N, 81°49'W, 30 fm (55 m), sand + shell, 20.ii.1934, one encrusting colony, contracted gastrozooids up to 1.5 mm high, on gastropod shell occupied by pagurid crab, with female gonozooids and gonophores, SBMNH 347020 (AHF Holotype No. 19).

Paralectotypes.— *Velero III* station 242-34, as above for lectotype, two encrusting colonies, zooids up to 2 mm high, on gastropod shells, one occupied by pagurid crab and second empty, with female gonozooids and gonophores, SBMNH 347021.

Costa Rica, Port Culebra, 3-10 fm (5-18 m), 24.ii.1934, BCPM 976-217-1 (Arai, 1977).

Remarks.— The lectotype colony is a specimen in good condition, covering much of the shell substrate, in a vial labeled “Holotype” and “AHF Holotype No. 19” (SBMNH 347020). The paralectotypes in the Santa Barbara Museum of Natural History are labeled “Paratype” and “AHF Paratype No. 178” (SBMNH 347021).

Reported range.— Pacific off Central America (type locality: Panama, off Jicarita Island) (Fraser, 1938a, 1939, 1946, 1948).

*Hydractinia epispongia* Fraser, 1938a

*Hydractinia epispongia* Fraser, 1938a: 7, 21, pl. 4 fig. 17; 1939: 157 et seq.; 1946: 45, 134; Schmitt, 1948: ix.

Syntype material.— Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 275-34, Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, one stolonal colony, gastrozooids up to 0.6 mm high, on a bryozoan, without gonophores, SBMNH 347022 (AHF Holotype No. 20).

Paralectotypes.— *Velero III* station 275-34, as above for lectotype, two stolonal colonies, gastrozooids up to 0.6 mm high, on a bryozoan, without gonophores, SBMNH 347023.

Remarks.— The lectotype selected was one of two specimens from a bottle labeled “Holotype” and “AHF Holotype No. 20” (SBMNH 347022). The second specimen was combined with one in a vial from the same station (*Velero III* station 275-34), with labels marked “Paratype” and “AHF Paratype No 179” (SBMNH 347023), as paralectotypes. Another label indicates that the latter sample had dried up and been rehydrated. There

is a contradiction in the locality references: Fraser (1938a) stated that *Velero III* station 275-34 was east of the islets off Navidad Head; in the station list (Fraser, 1943c) it is reported as west of those islets.

We believe that the substrates of these hydroids are bryozoans and not calcareous sponges as thought by Fraser (1938a).

Reported range.— Pacific off Mexico (type locality: Tenacatita Bay) (Fraser, 1938a, 1939, 1946, 1948).

*Hydractinia hancocki* Fraser, 1938a

*Hydractinia hancocki* Fraser, 1938a: 7, 22, pl. 4 fig. 18; 1939: 157 et seq.; 1946: 45, 135; Schmitt, 1948: ix; Calder et al., 2003: 1203.

Syntype material.— Ecuador, Galápagos Islands, Charles Island, Black Beach, at low tide; Charles Island, Post Office Bay, 12-15 fm; Chatham Island, Stephen's Bay, 32 fm; west of South Seymour Island, 5 fm; James Island, Sullivan Bay, 6 fm; Albemarle Island, Cartago Bay, 8-12 fm; between Charles and Indefatigable Islands, 60 fm; Hood Island, Gardner Bay, 20 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 161-34, Ecuador, Galápagos Islands, Charles Island, off Black Beach, 01°16'40"S, 90°29'46"W, 3 fm (5 m), rock + algae, 17.i.1934, one stolonial colony with reticular hydrorhiza, gastrozooids to 3 mm high, on gastropod shell, with female gonozooids and gonophores, SBMNH 347024 (AHF Holotype No. 21).

Paralectotypes.— *Velero III* station 161-34, as above for lectotype, four stolonial colonies with reticular hydrorhizae, gastrozooids to 3 mm high, on gastropod shells, with female and male gonozooids and gonophores, SBMNH 347025.

Remarks.— The lectotype colony was from *Velero III* station 161-34, in a vial labeled "Holotype" and "AHF Holotype No. 21" (SBMNH 347024). It bore female gonozooids with well-developed gonophores. Paralectotypes from the same station are in a vial labeled "Paratype" and "AHF Paratype No. 180" (SBMNH 347025).

Reported range.— Galápagos Islands (type locality: Charles Island, off Black Beach) (Fraser, 1938a, 1939, 1946, 1948).

*Hydractinia longispina* Fraser, 1938a

*Hydractinia longispina* Fraser, 1938a: 7, 22, pl. 4 fig. 19; 1938c: 132; 1939: 157 et seq.; 1946: 45, 135; Schmitt, 1948: ix; Calder et al., 2003: 1203.

Syntype material.— Ecuador, Galápagos Islands, Albemarle Island, Tagus Cove, 10-18 fm; Charles Island, Post Office Bay, 8-10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 157-34, Ecuador, Galápagos Islands, Albemarle Island, off Tagus Cove, 00°16'08"S, 91°22'38"W, 10-18 fm (18-33 m), sand + shell, 15.i.1934, one encrusting colony, gastrozooids to 3 mm high, on gastropod shell occupied by pagurid crab, with female gonozooids having gonophores, SBMNH 347026 (AHF Holotype No. 22).

Paralectotypes.— *Velero III* station 157-34, as above for lectotype, one encrusting colony, gastrozooids to 0.7 mm high, on empty (?) gastropod shell, with male gonozooids with gonophores, SBMNH 369444.



*Velero III* station 167-34, Ecuador, Galápagos Islands, Charles Island, Post Office Bay, 01°14'37"S, 90°28'08"W, 15 fm (27 m), rock, 19.i.1934, one encrusting colony, 2 mm high, on empty (?) gastropod shell, with male gonozooids with gonophores, SBMNH 347027.

Remarks.— Two specimens were present in the sample of this species from *Velero III* station 157-34, labeled "Holotype" and "AHF Holotype No. 22" (SBMNH 347026). The largest and best of these has been selected as the lectotype, and the second was removed to a separate vial as a paralectotype. Another paralectotype is the specimen from *Velero III* station 167-34, in a bottle labeled "Paratype" and "AHF Paratype No. 181" (SBMNH 347027).

Reported range.— Galápagos Islands (type locality: Albemarle Island, off Tagus Cove); Pacific off Peru (Fraser, 1938a, c, 1939, 1946, 1948).

*Hydractinia multispina* Fraser, 1938a

*Hydractinia multispina* Fraser, 1938a: 7, 23, pl. 4 fig. 20; 1938c: 133; 1939: 157 et seq.; 1946: 45, 135; 1948: 199; Schmitt, 1948: ix; Arai, 1977: 26; Calder et al., 2003: 1203.

Syntype material.— Ecuador, Galápagos Islands, between Charles and Indefatigable Islands, 60 fm, on large shells; Charles Island, Post Office Bay, 10 fm and 12-15 fm; Charles Island, Black Beach, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.i.1934, one encrusting colony, gastrozooids to 4 mm high, on empty gastropod shell, with female (?) gonozooids with gonophores, SBMNH 347028 (AHF Holotype No. 23).

Paralectotypes.— *Velero III* station 196-34, Ecuador, Galápagos Islands, Charles Island, Post Office Bay, 01°14'56"S, 90°28'11"W, 8-10 fm (15-18 m), rough rock, 29.i.1934, one encrusting colony, gastrozooids to 3.5 mm high, on gastropod shell occupied by pagurid crab, with female gonozooids having gonophores, SBMNH 347029.

Ecuador, Galápagos Islands, Black Beach, BCPM 976-223-1 (Arai, 1977).

Remarks.— The lectotype is a single specimen from *Velero III* station 190-34, in a bottle labeled "Holotype" and "AHF Holotype No. 23" (SBMNH 347028). We were unsure of the sex of this specimen, although Fraser (1938a) reported all colonies of this species to be female. A paralectotype specimen, in a vial labeled "Paratype" and "AHF Paratype No. 182" from *Velero III* station 196-34 (SBMNH 347029), is unmistakably female.

Reported range.— Galápagos Islands (type locality: east of south end of Albemarle Island) (Fraser, 1938a, c, 1939, 1946, 1948).

*Hydractinia polycarpa* Fraser, 1938a

*Hydractinia polycarpa* Fraser, 1938a: 7, 23, pl. 5 fig. 21; 1939: 157 et seq.; 1946: 45, 135; 1948: 199; Schmitt, 1948: ix; Cairns et al., 1991: 13; 2002: 11.

Syntype material.— Ecuador, Santa Elena Bay, 7-12 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one encrusting colony, gastrozooids to 1.8 mm high, on empty gastropod shell, with female gonozooids having gonophores, SBMNH 347030 (AHF Holotype No. 24).

Paralectotype.— *Velero III* station 208-34, Ecuador, Santa Elena Bay, 02°09'45"S, 80°56'35"W, 7-8 fm (13-15 m), sand + small shells, 09.ii.1934, one encrusting colony, gastrozooids to 2 mm high, on empty gastropod shell, with female gonozooids having gonophores, SBMNH 347031.

Remarks.— We have designated the specimen labeled "Holotype" and "AHF Holotype No. 24" (SBMNH 347030), from *Velero III* station 205-34, as the lectotype of this species. It was much better preserved than the paralectotype colony from *Velero III* station 208-34, labeled "Paratype" and "AHF Paratype No. 183" (SBMNH 347031).

The paralectotype colony differs considerably in morphology from the lectotype (e.g. spines smooth instead of decidedly jagged; gonozooids having distinct tentacles instead of highly reduced ones), and we doubt that the two can be the same species. Fraser's (1938a) description and illustrations of the species are a mix of the two. For example, spines are described as "slender, tapering to a point, slightly rough at the margins," like the paralectotype, while the gonozooids are described as having "no tentacles," as in the lectotype. The name *Hydractinia polycarpa* is hereby linked exclusively to the lectotype.

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay) (Fraser, 1938a, 1946), and off Baja California (Fraser, 1948).

*Hydractinia prolifica* Fraser, 1948

*Hydractinia prolifica* Fraser, 1948: 200, pl. 22 fig. 1; Schmitt, 1948: x.

Syntype material.— Panama, 10 miles southwest of Secas Islands (*Velero III* station 944-39), 30 fm (Fraser, 1948).

Lectotype.— *Velero III* station 944-39, Panama, 10 miles southwest of Secas Islands, 07°51'10"N, 82°12'05"W, 30 fm (55 m), grey sand, 27.iii.1939, one encrusting colony on an erect, horn-like chitinous matrix 2.5 cm high, gastrozooids to 4 mm high, with male gonozooids having gonophores, SBMNH 347032 (AHF Holotype No. 25).

Paralectotype.— *Velero III* station 944-39, as above for lectotype, one encrusting colony on an erect, horn-like chitinous matrix 2.3 cm high, gastrozooids to 4 mm high, with male gonozooids having gonophores, SBMNH 369445.

Remarks.— The vial labeled "*Hydractinia prolifica* Fraser Type" and "AHF Holotype No. 25" from *Velero III* station 944-39 (SBMNH 347032) contained two similar colonies or fragments of colonies. One of these was returned to the original vial as the lectotype, while the other was removed to a separate vial as the paralectotype.

These hydroid colonies are remarkable in forming erect, chitinous, horn-like spikes, armed with large and jagged spines given off from all sides, that provide a substrate for the zooids of the colony. The growths were apparently anchored to some substrate. Fraser (1948) commented that the species grew on a large gastropod shell, but if so these colonies have been removed from it.

We consider *Hydractinia rugosa* Fraser, 1938c, with the same unusual colony form, to be conspecific with *Hydractinia prolifica* Fraser, 1948. *Hydractinia bayeri* Hirohito, 1984, also from the Bay of Panama, should be compared with this species. A related species has recently been described from Alaska by Miglietta (2006) based on material in the RMNH.

Reported range.— Pacific off Panama (type locality: southwest of Secas Islands) (Fraser, 1948).

*Hydractinia quadrigemina* Fraser, 1938a

*Hydractinia quadrigemina* Fraser, 1938a: 7, 24, pl. 5 fig. 22; 1939: 157 et seq.; 1946: 45, 134; Schmitt, 1948: x.

Syntype material.— Mexico, off Isabel Island, 10-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, one encrusting colony, gastrozooids to 2.5 mm high, on gastropod shell occupied by pagurid crab, with male gonozooids having gonophores, SBMNH 347033 (AHF Holotype No. 26).

Paralectotype.— *Velero III* station 277-34, as above for lectotype, one encrusting colony, gastrozooids to 3.5 mm high, on fragments of a gastropod shell, with female gonozooids having gonophores, SBMNH 347034.

Remarks.— We have designated as the lectotype a colony in a vial labeled "Holotype" and "AHF Holotype No. 26" (SBMNH 347033) from *Velero III* station 277-34. The paralectotype, from the same station, is in another vial labeled "Paratype" and "AHF Paratype 184" (SBMNH 347034).

According to Fraser (1938a), no male colonies were observed but we consider the lectotype colony to be male.

Reported range.— Pacific off Mexico (type locality: off Isabel Island) (Fraser, 1938a, 1939, 1946, 1948).

*Hydractinia rugosa* Fraser, 1938c

*Hydractinia rugosa* Fraser, 1938c: 132, 137, pl. 19 fig. 3; 1939: 157 et seq.; 1946: 45, 135; Schmitt, 1948: x.

Syntype material.— Colombia, Octavia Bay, 35-40 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 429-35, Colombia, Octavia Bay, 06°48'40"N, 77°40'50"W, 30-35 fm (55-64 m), coarse sand + gravel, 27.i.1935, one encrusting colony on an erect, horn-like chitinous matrix 1.8 cm high, gastrozooids to 2 mm high, with female gonozooids with gonophores, SBMNH 347036 (AHF Holotype No. 27).

Paralectotype.— *Velero III* station 429-35, as above for lectotype, one encrusting colony on an erect, horn-like chitinous matrix 0.7 cm high, gastrozooids <2 mm high, with female gonozooids with gonophores, SBMNH 347037.

Remarks.— The better of the two specimens examined, labeled "Holotype" and "AHF Holotype No. 27" (SBMNH 347036), is selected as the lectotype of *Hydractinia rugosa*. A second colony from the same station, in rather poor condition, is the paralectotype. It is in a vial labeled "Paratype" and "AHF Paratype No. 185" (SBMNH 347037). As noted above, this species has the same remarkable colony form as *Hydractinia prolifica* Fraser, 1948 and we consider the two to be conspecific. The senior synonym *H. rugosa* Fraser, 1938c is adopted as the valid name of the species.

Reported range.— Pacific off Colombia (type locality: Octavia Bay) (Fraser, 1938c, 1939, 1946, 1948).

Genus *Podocoryna* Lütken, 1850  
*Podocoryne reticulata* Fraser, 1938a

*Podocoryne reticulata* Fraser, 1938a: 8, 24, pl. 5 fig. 23; 1939: 157 et seq.; 1946: 45, 138; Schmitt, 1948: x  
 [*Podocoryne* an incorrect subsequent spelling of *Podocoryna*].

Syntype material.— Ecuador, Santa Elena Bay, 8-12 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one stolonial colony with reticular hydrorhiza, gastrozooids <1 mm high, on empty gastropod shell, with gonozooids (sex not determined) having gonophores, SBMNH 347035 (AHF Holotype No. 28).

Paralectotype.— *Velero III* station 205-34, as above for lectotype, one stolonial colony with reticular hydrorhiza, gastrozooids <1 mm high, on empty gastropod shell, without gonozooids, SBMNH 369446.

0347035) contained two empty gastropod shells, each with hydroids growing on them. The smaller shell provided substrate for a hydractiniid with gastrozooids and gonozooids with gonophores, and that colony is designated as the lectotype. The larger shell bears campanulariids, as well as a few miniscule athecate hydranths appearing to be hydractiniids that represent the paralectotype. It was removed by us to a second vial (SBMNH 369446).

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay) (Fraser, 1938a, 1939, 1946, 1948).

Genus *Ectopleura* L. Agassiz, 1862  
*Ectopleura media* Fraser, 1948

*Ectopleura media* Fraser, 1948: 201, pl. 22 fig. 2; Calder et al., 2003: 1198, 1205.

Syntype material.— Ecuador, Galápagos Islands, off Bindloe Island, 20 fm (*Velero III* station 311-35) (Fraser, 1948).

Lectotype.— *Velero III* station 311-35, Ecuador, Galápagos Islands, off Bindloe Island, 00°17'50"N, 90°30'30"W, 20 fm (37 m), rock, 03.xii.1934, one hydrocaulus and hydranth, 1.5 cm high, unattached, with gonophores, SBMNH 347330 (AHF Holotype No. 29).

Paralectotypes.— None designated.

Remarks.— The hydroid labeled "*Ectopleura media* Fraser Type" and "AHF Holotype No. 29" from *Velero III* station 311-35 (SBMNH 347330) is a single hydranth and hydrocaulus, as well as a small part of the hydrorhiza. This may have been the only specimen available to Fraser (1948) when he described the species, but we prefer not to assume that to be the case (Recommendation 73F, ICZN). Thus, we have designated this hydroid as the lectotype instead of considering it to be the holotype by monotypy.

Reported range.— Galápagos Islands (type locality: off Bindloe Island) (Fraser, 1948; Calder et al., 2003).

Genus *Tubularia* Linnaeus, 1758  
*Tubularia integra* Fraser, 1938a

*Tubularia integra* Fraser, 1938a: 26, pl. 5 fig. 24; 1939: 158 et seq.; 1946: 47, 146; Schmitt, 1948: x; Calder et al., 2003: 1198, 1205.

*Ectopleura integra*: Calder et al., 2003: 1198, 1205.

Syntype material.—Ecuador, Galápagos Islands, Chatham Island, Stephens Bay, 35 fm; west of South Seymour Island, 5 fm. Panama, Pacora Island, 15–25 fm; Medidor Island, at low tide on coral (Fraser, 1938a).

Lectotype.—*Velero III* station 173-34, Ecuador, Galápagos Islands, off South Seymour Island, 00°25'10"S, 90°19'25"W, 5 fm (9 m), sand with rock patches, 22.i.1934, one colony, 3 cm high, on algae, with medusa buds, SBMNH 369447.

Paralectotypes.—*Velero III* station 173-34, as above for lectotype, many fragments including hydranths and hydrocauli, on algae or unattached with medusa buds (residue from sample now containing lectotype), SBMNH 369448.

*Velero III* station 173-34, as above for lectotype, 13 fragments including hydranths and hydrocauli, to 2 cm high, unattached, with medusa buds, SBMNH 347331 (AHF Holotype No. 30).

*Velero III* station 173-34, as above for lectotype, four fragments including hydranths and hydrocauli, 1.7 cm high, unattached, with medusa buds, SBMNH 347332.

*Velero III* station 173-34, as above for lectotype, one lot, in ethanol, USNM 49292.

Ecuador, Galápagos Islands, west of South Seymour Island, 20.i.1934 (22.i.1934?), 5 fm (9 m), BCPM 976-148-1 (Arai, 1977).

Remarks.—The vial from *Velero III* station 173-34, with *Tubularia integra* and labeled "Holotype" and "AHF Holotype No. 30" (SBMNH 347331), contained 13 small unattached fragments. It was not possible to ascertain whether all are part of the same colony. Neither was it possible to tell which of the fragments might have been used by Fraser (1938a) in preparing his description and illustration of the species. Likewise, only small, unattached fragments were present in a second vial from the same station, labeled "Paratype" and "AHF Paratype No. 186" (SBMNH 347332). We have therefore chosen as the lectotype a much larger and more complete colony (SBMNH 369447) from the syntype series, with the remaining syntypes being relegated to paralectotype status.

This species was assigned to the genus *Ectopleura* by Calder et al. (2003), following a generic revision of the Tubulariidae by Petersen (1990). The gonophores of *Ectopleura integra*, as indicated above, are considered to be medusa buds.

Reported range.—Galápagos Islands (type locality: off South Seymour Island); Pacific off Panama (Fraser, 1938a, 1939, 1946, 1948; Calder et al., 2003).

*Tubularia multitentaculata* Fraser, 1938a

*Tubularia multitentaculata* Fraser, 1938a: 8, 26; 1939: 158 et seq.; 1946: 47, 145; 1948: 183; Schmitt, 1948: x; Arai, 1977: 26; Cairns et al., 1991: 16; 2002: 51.

*Tubularia multidentata* Fraser, 1938a: pl. 6 fig. 25 [lapsus].



Syntype material.— Mexico, Thurloe Point, on gorgonids, 8-10 fm; Cedros Island, South Bay, 10-15 fm, on gorgonids (Fraser, 1938a).

Lectotype.— *Velero III* station 283-34, Mexico, Baja California, off Thurloe Head, 27°36'50"N, 114°50'50"W, 8-10 fm (15-18 m), rock with gorgonids, 09.iii.1934, one solitary hydroid, 1.2 cm high, with octocoral growing over base of hydrocaulus, with gonophores, SBMNH 347333 (AHF Holotype No. 31).

Paralectotypes.— *Velero III* station 283-34, as above for lectotype, 44 solitary hydroids, 2 cm high, many associated with octocorals, with gonophores, SBMNH 347334.

*Velero III* station 287-34, Mexico, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one solitary hydroid, 1.4 cm high, unattached, with gonophores, SBMNH 347618.

Mexico, Thurloe Point, BCPM 976-151-1 (Arai, 1977).

Remarks.— None of the specimens examined here could be unequivocally matched with the illustrations provided by Fraser (1938a). The lectotype selected was considered the best preserved of 40 syntype specimens in a vial containing the labels "Holotype" and "AHF Holotype No. 31" from *Velero III* station 283-34 (SBMNH 347333). The remaining 39 specimens from the sample were combined with five others from the same station in another vial, labeled "Paratype" and "AHF Paratype No. 187" (SBMNH 347334). An additional paralectotype specimen was examined from Cedros Island (*Velero III* station 287-34, SBMNH 347618).

Fraser (1938a) applied the name *Tubularia multitentaculata* to this species in the text but used *T. multidentata* for it in the caption to plate 6 fig. 25. We believe the name *T. multidentata* was an unintended error. With respect to the two names, the original description includes the following statement: "Hydranth large, with 20-24 long proximal tentacles and very numerous, up to 100, distal tentacles" (i.e., many or "multi" tentacles) while "teeth" (Latin, "dens" or "dentis") were not mentioned and indeed the name *multidentata* is irrelevant to the species. Moreover, Fraser (1939, 1946, 1948) used only the binomen *T. multitentaculata* in reference to the species. Under the First Reviser Principle in nomenclature we select *Tubularia multitentaculata* as the correct name of the two simultaneous synonyms.

We refer this species to the genus *Ralpharia* Watson, 1980, as *Ralpharia multitentaculata* (Fraser, 1938a), **comb. nov.** Actinula larvae were visible in some of the paralectotype specimens of this species, as noted in the description of Fraser (1938a).

Reported range.— Pacific off Baja California (type locality: off Thurloe Head) (Fraser, 1938a, 1939, 1946, 1948).

#### Order Leptothecata Cornelius, 1992

##### Genus *Bonneviella* Broch, 1909

##### *Bonneviella minor* Fraser, 1938a

*Bonneviella minor* Fraser, 1938a: 8, 27, pl. 7 fig. 26; 1939: 158 et seq.; 1946: 66, 235; Schmitt, 1948: x; Arai, 1977: 27; Calder et al., 2003: 1210.

*Scandia minor*: Calder et al., 2003: 1210.

Syntype material.— Ecuador, Galápagos Islands, channel between Narborough and Albemarle Islands, 70 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 155-34, Ecuador, Galápagos Islands, Albemarle Island, off Tagus Cove, 00°16'45"S, 91°22'52"W, 50-60 fm (91-110 m), rock + nullipores + Bryozoa, 15.i.1934, one colony with part of stolon and two hydrothecae, 5 mm high, unattached, without gonothecae, SBMNH 347006 (AHF Holotype No. 32).

Paralectotypes.— *Velero III* station 153-34, Ecuador, Galápagos Islands, northeast point of Narborough Island, 00°17'S, 91°25'40"W, shore, lava rock + tide pools + mangroves, 14.i.1934, no specimens found in sample, SBMNH 347007.

*Velero III* station 155-34, as above for lectotype, three colony fragments, to 2 mm high, on calcareous fragment and unattached, without gonothecae, SBMNH 369449.

Ecuador, Tagus Cove, BCPM 976-455-1 (Arai, 1977).

Remarks.— The vial of this species from *Velero III* station 155-34 labeled "Holotype" and "AHF Holotype No. 32" (SBMNH 347006) contained four fragments, three comprising a single hydrotheca each and a fourth with two hydrothecae. We designated the latter as the lectotype and returned it to the original vial. The three others were segregated in a second vial as paralectotypes.

No specimens were found in the sample from *Velero III* station 153-34, SBMNH 347007, labeled "Paratype" and "AHF Paratype No. 188;" a note in the vial states: "specimen appears to be missing – K. Sellheim 7-9-02."

Calder et al. (2003) considered this hydroid to be a lafoeid rather than a bonneviellid, after examining the type material, and provisionally assigned the species to the genus *Scandia* Fraser, 1912.

Reported range.— Galápagos Islands (type locality: Albemarle Island, off Tagus Cove) (Fraser, 1938a, 1939, 1946, 1948).

#### Genus *Campanularia* Lamarck, 1816

##### *Campanularia altitheca* Fraser, 1948

*Campanularia altitheca* Fraser, 1948: 202, pl. 23 fig. 3; Schmitt, 1948: x; Ljubenkov, 1980: 46.

*Laomedea altitheca*: Cairns et al., 1991: 23; 2002: 23; Hochberg and Ljubenkov, 1998: 22-23, fig. 1.8.

Syntype material.— USA, California, San Clemente Island, south of Pyramid Cove, 55-69 fm (*Velero III* station 1012-39); Santa Catalina Island, 2½ miles southeast of Seal Rocks, 87-90 fm. Mexico, off Cape San Lucas, San Jaime Bank, 75 fm (*Velero III* station 618-37); Baja California, 4 miles north of Todos Santos Island, 40 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1012-39, USA, California, Los Angeles County, San Clemente Island, south of Pyramid Cove, 32°45'55"N, 118°26'10"W, 55-69 fm (101-126 m), sand + shell, 09.xi.1939, one colony, 27 mm high, unattached, with hydrothecae and gonothecae, SBMNH 144399 (AHF Holotype No. 33).

Paralectotypes: *Velero III* station 618-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 75 fm (142 m), rock + coralline + sponge, 03.iii.1937, three colonies, to 34 mm high, on other hydroids and unattached, with gonothecae, SBMNH 345867.

*Velero III* station 1012-39, as above for lectotype, eight colonies, to 22 mm high, unattached, with gonothecae, SBMNH 345865.

*Velero III* station 1012-39, as above for lectotype, one lot, in ethanol, USNM 49291.

*Velero III* station 1244-41, Mexico, Baja California Norte, 4 miles north of Todos Santos Island, 31°52'20"N, 116°49'15"W, 40 fm (73 m), rock, 24.ii.1941, one colony, 15 mm high, unattached, with gonothecae, SBMNH 345866.

*Velero III* station 1429-41, USA, California, Los Angeles County, Santa Catalina Island, 2½ miles southeast of Seal Rocks, 33°17'20"N, 118°15'35"W, 87-90 fm (159-164 m), rock + sponge + urchins + gorgonians, 25.x.1941, four colonies, to 20 mm high, on other hydroids and unattached, with gonothecae, SBMNH 345868.

Remarks.— Material from *Velero III* station 1012-39, labeled "*Campanularia altitheca* Fraser Type" and "AHF Holotype No. 33" (SBMNH 144399), comprised two colonies or fragments of colonies. One of these, with both hydrothecae and gonothecae and resembling the hydroid illustrated by Fraser (1948: pl. 23 fig. 3c), was designated as the lectotype and returned to its vial. The other fragment, with hydrothecae but no gonothecae, was combined with colonies of the same species in another vial from the same station (*Velero III* station 1012-39). All of the latter were designated as paralectotypes (SBMNH 345865), along with other material assigned by Fraser (1948) to the same species from *Velero III* stations 618-37, 1012-39, 1244-41, and 1429-41, as noted above.

Cairns et al. (1991, 2002) and Hochberg and Ljubenkov (1998) referred this species to *Laomedea*, as *Laomedea altitheca*. We provisionally reassign it to *Campanularia* because the hydroids have a subhydrothecal spherule and an annular thickening at the base of the hydrotheca, as well as fixed sporosacs. Calder (1991) included *C. altitheca* in the synonymy of *Campanularia hincksi* Alder, 1856, but we retain it as a valid species here.

Reported range.— Pacific off Baja California and southern California (type locality: San Clemente Island) (Fraser, 1948; Hochberg and Ljubenkov, 1998).

*Campanularia certidens* Fraser, 1947

*Campanularia* (?) *certidens* Fraser, 1947: 4, pl. 1 fig. 1; Schmitt, 1948: xv; Vervoort, 1968: 96.

Syntype material.— Venezuela, off Tortuga Island, 2-5 fm (*Velero III* station A22-39) (Fraser, 1947).

Lectotype.— *Velero III* station A22-39, Venezuela, off Isla Tortuga, 10°58'30"N, 65°24'00"W, 2-5 fm (4-9 m), coral sand + algae, 13.iv.1939, one colony, to 1.5 mm high, on turtle grass, without gonothecae, SBMNH 347038 (AHF Holotype No. 159).

Paralectotypes.— *Velero III* station A22-39, as above for lectotype, nine stolonial colony fragments, to 2.5 mm high, on *Sargassum*, some with gonothecae, SBMNH 369450.

Remarks.— A vial labeled "*Campanularia* (?) *certidens* Fraser Type" and "AHF Holotype No. 159" (SBMNH 347038) contains only a single, miniscule, sterile specimen, together with sertulariids, on a piece of turtle grass. It is designated here as the lectotype.

Fraser (1947) did not describe the gonosome of this species, although gonothecae are present on syntype material from the same station (SBMNH 369450). We designate the latter specimens as paralectotypes because they must not have been carefully considered by Fraser in his account of the species. These hydroids provide some clue as to the identity of this species, however. They are referable to *Orthopyxis*, as *O. certidens* (Fraser, 1947), **comb. nov.**, and are possibly conspecific with *O. sargassicola* (Nutting, 1915).

Reported range.— Caribbean Sea, Venezuela (type locality: Tortuga Island) (Fraser, 1947).

*Campanularia diversa* Fraser, 1948

*Campanularia* (?) *diversa* Fraser, 1948: 203, pl. 23 fig. 4; Schmitt, 1948: x; Ljubenkov, 1980: 46.

Syntype material.— USA, California, Santa Catalina Island, 6½ miles east-northeast of Long Point, 300 fm (*Velero III* station 1401-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1401-41, USA, California, Los Angeles County, Santa Catalina Island, 6½ miles east-northeast of Long Point, 33°25'30"N, 118°14'50"W, 300 fm (549 m), rocks + cyclostomes, 08.ix.1941, one colony, 26 mm high, unattached, without gonothecae, SBMNH 347039 (AHF Holotype No. 34).

Paralectotypes.— *Velero III* station 1401-41, as above for lectotype, four colonies, to 38 mm high, unattached, without gonothecae, SBMNH 345879.

Remarks.— The sample vial of *Campanularia diversa* Fraser, 1948, labeled "Type" and "AHF Holotype No. 34" (SBMNH 347039) contained two fragments. The better specimen of these two, having many hydrothecae in relatively good condition and resembling the hydroid figured by Fraser (1948: pl. 23 fig. 4a), was chosen as the lectotype. The other specimen comprised the proximal end of a strongly polysiphonic hydrocaulus of a colony, as well as several branches bearing a few hydrothecae. It was transferred to a vial containing other specimens of *C. diversa* (SBMNH 345879) from the same station (*Velero III* station 1401-41), all of which were designated as paralectotypes.

Fraser (1948) assigned this species, with question, to *Campanularia*, and noted the similarity of this hydroid to *Campanularia gelatinosa* (Pallas, 1766). In our opinion it more closely resembles *Obelia bidentata* Clark, 1875 in hydrothecal shape, in the morphology of the hydrothecal cusps, and in colony form, and we refer it to *Obelia*, as *O. diversa* (Fraser, 1948), **comb. nov.**

Reported range.— Pacific off southern California (type locality: Santa Catalina Island) (Fraser, 1948; Ljubenkov, 1980).

*Campanularia emarginata* Fraser, 1938a

?*Campanularia emarginata* Fraser, 1938a: 8, 27, pl. 7 fig. 27; 1938b: 109; 1939: 158 et seq.; 1946: 60, 199; 1948: 204; Schmitt, 1948: x; Arai, 1977: 27; Ljubenkov, 1980: 46; Cairns et al., 1991: 23; 2002: 23, 57.

Syntype material.— Ecuador, La Plata Island, on *Antennularia*, 45-55 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 212-34, Ecuador, off La Plata Island, 01°15'S, 81°04'15"W, 45-55 fm (82-101 m), rock + mud, 10.ii.1934, one colony, mostly stolonal but with a few erect stems to 1.0 cm high, on plumulariid stem, without gonothecae, SBMNH 347040 (AHF Holotype No. 35).

Paralectotypes.— *Velero III* station 212-34, as above for lectotype, two stolonal colonies, to 5 mm high, on plumulariid stems, without gonothecae, SBMNH 347041.

Ecuador, La Plata Island, BCPM 976-345-1, microscope slide (Arai, 1977).

Remarks.— The single colony found in a vial containing the labels "*Campanularia emarginata* Fraser, 1938...Holotype," "Holotype," and "AHF Holotype No. 35" (SBMNH 347040), is selected as the lectotype. Two colony fragments from the same station (*Velero III* station 212-34), in a separate vial (SBMNH 347041) with the labels "Paratype" and "AHF Paratype No. 189," are designated as paralectotypes. Additional paralectotype

material is found on a microslide in the Fraser collection at the Royal British Columbia Museum (BCPM 976-345-1).

We concur with Fraser (1938a) on the assignment of this species to the genus *Campanularia*. Calder (1991: 49) included both *C. emarginata* and *C. altithecata* Fraser, 1948 as synonyms of *C. hincksii* Alder, 1856, but they are all maintained as separate species here pending more detailed study.

Reported range.— Pacific off Ecuador (type locality: off La Plata Island) and Mexico, Gulf of California, southern California (Fraser, 1938a, 1938b, 1939, 1946, 1948; Ljubenkova, 1980).

*Campanularia gracilicaulis* Fraser, 1938a

?*Campanularia gracilicaulis* Fraser, 1938a: 8, 27, pl. 7 fig. 28; 1946: 60, 200; Arai, 1977: 27; Calder et al., 2003: 1210.

*Clytia gracilicaulis*: Calder et al., 2003: 1210.

Syntype material.— Ecuador, Galápagos Islands, west of South Seymour Island, 5 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 173-34, Ecuador, Galápagos Islands, off South Seymour Island, 00°25'10"S, 90°19'25"W, 5 fm (9 m), sand with rock patches, 22.i.1934, one stolonal colony, to 6 mm high, on calcareous rubble, without gonothecae, SBMNH 347042 (AHF Holotype No. 36).

Paralectotype.— Ecuador, South Seymour Island, BCPM 976-351-1, microscope slide (Arai, 1977).

Remarks.— Material of *Campanularia gracilicaulis* designated here as the lectotype of the species consists of a small stolonal colony growing on a calcareous tube. The vial holding this specimen (SBMNH 347042) contains a label marked "AHF Holotype No. 36." Material on a slide from the Fraser Collection at the Royal British Columbia Museum (BCPM 976-351-1) is deemed to be a paralectotype.

Fraser (1938a) assigned this species, with question, to *Campanularia*. Calder et al. (2003) transferred *C. gracilicaulis* to the genus *Clytia*, noting that type material (AHF No. 36; SBMNH 347042) consisted of a stolonal campanulariid having a true diaphragm and lacking a subhydrothecal spherule.

Reported range.— Galápagos Islands (type locality: off South Seymour Island) (Fraser, 1938a, 1946, 1948).

*Campanularia megalocarpa* Fraser, 1947

*Campanularia megalocarpa* Fraser, 1947: 5, pl. 1 fig. 2; Schmitt, 1948: xv.

Type material.— Venezuela, 7 miles north of Margarita Island, 21-22 fm (*Velero III* station A42-39, 11°10'43"N, 64°16'47"W, 38-40 m) (Fraser, 1947).

Lectotype.— None designated; see Remarks.

Paralectotype.— None designated.

Remarks.— Fraser's (1947) account of *Campanularia megalocarpa* was based on a single specimen. That colony, 3 cm high and with gonothecae, was found in a sample from *Velero III* station A42-39, 7 miles north of Isla Margarita, Venezuela (SBMNH



347043, AHF Holotype No. 160). We consider it the holotype by monotypy (ICZN Art. 73.1.2).

The species does not conform with diagnoses of the genus *Campanularia* or the subfamily Campanulariinae, but additional study is necessary to establish whether it should be assigned to the Clytiinae or Obeliinae. Given the uncertainty as to its generic affinities, we simply retain the original name for this hydroid as applied by Fraser (1947).

Reported range.— Caribbean Sea, Venezuela (type locality: off Margarita Island) (Fraser, 1947).

Genus *Clytia* Lamouroux, 1812

*Clytia acutidentata* Fraser, 1938a

*Clytia acutidentata* Fraser, 1938a: 8, 29, pl. 7 fig. 29; 1938b: 109; 1939: 158 et seq.; 1946: 62, 220; 1948: 206; Schmitt, 1948: x; Arai, 1977: 27; Calder, 1991: 62-64; Calder et al. 2003: 1202, 1210.

Syntype material.— Ecuador, Galápagos Islands, Charles Island, Post Office Bay, on coral at low tide. Mexico, north of White Friars Islands, on coral in 5 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 269-34, Mexico, east of White Friars Islands, 17°31'20"N, 101°29'W, 5-10 fm (9-18 m), rock + coral + nullipores, 03.iii.1934, one colony with two cormoids, to 6 mm high, detached from substrate, with two gonothecae, SBMNH 345941.

Paralectotypes.— *Velero III* station 194-34, Ecuador, Galápagos Islands, Onslow Island, north of Charles Island, 01°14'20"S, 90°26'07"W, intertidal crater, coral, 27.i.1934, eight colony fragments, to 8 mm high, unattached, without gonothecae, SBMNH 347046 (AHF Holotype No. 37).

*Velero III* station 194-34, as above, seven colony fragments, to 9 mm high, unattached, without gonothecae, SBMNH 347047 (AHF Paratype No. 190).

*Velero III* station 194-34, as above, one lot, in ethanol, USNM 49290.

*Velero III* station 269-34, as above for lectotype, four colonies, to 7 mm high, detached from substrate, all with gonothecae, SBMNH 369451.

Ecuador, Galápagos Islands, Charles Island, Post Office Bay, BCPM 976-368-1, microscope slide (Arai, 1977).

Remarks.— Of the syntype material listed above (no holotype having been designated by Fraser, 1938a, and no lectotype subsequently fixed), a colony from *Velero III* station 269-34 (east of White Friars Islands, Mexico), was chosen as the lectotype. This specimen, in a vial with four other colony fragments, was isolated and returned to the sample bottle as the name-bearing type (SBMNH 345941). The four fragments separated from the lectotype were placed in another vial, as paralectotypes (SBMNH 369451). Also designated as paralectotypes were colonies in three samples, having the collection numbers SBMNH 347046 (AHF Holotype No. 37), SBMNH 347047, and USNM 49290, from *Velero III* station 194-34, north of Charles Island, Galápagos Archipelago. Material on a microslide from the Fraser Collection at the Royal British Columbia Museum (BCPM 976-368-1) is also part of the paralectotype series.

An explanation and justification for the lectotype designation is warranted because the paralectotypes include material from a vial containing the labels "Holotype" and

"AHF Holotype No. 37" (SBMNH 347046), as well as specimens from another vial containing the labels "Paratype" and "AHF Paratype No. 190" (SBMNH 347047). Moreover, these vials contain material from north of Charles Island, Galápagos Islands (*Velero III* station 194-34), regarded as the type locality of the species by Schmitt (1948). However, specimens in these two samples were infertile while the colony chosen as lectotype had two gonothecae, important in characterization of species in the Campanulariidae. In addition, the lectotype is unquestionably the colony illustrated by Fraser (1938a, pl. 7 fig. 29b) in his original description of the species. This specimen also corresponds well with Fraser's description of *Clytia acutidentata*, which included an account of the gonosome. In short, we believe the specimen chosen as the lectotype is the best representative of the species in the type series, and that it was demonstrably one of the primary specimens used by Fraser in his characterization of the species. We are reluctant to relegate specimens labeled "Holotype" and "Paratype" to paralectotype status, and to change the presumed type locality of the species as given by Schmitt (1948), but such documentation does not provide valid fixation of type status (ICZN Articles 72, 73.2, 74, 76).

*Clytia acutidentata* Fraser, 1938a, *C. carinadentata* Fraser 1938a, and *Gonothyraea serialis* Fraser, 1938a have all been regarded as conspecific with *C. linearis* (Thornely, 1900) by Calder (1991). Of the three nominal species described in the same work by Fraser (1938a), we assign precedence to the name *Clytia acutidentata* over the names *C. carinadentata* and *G. serialis* under the Principle of the First Reviser (ICZN, Art. 24.2.1). This choice was made inasmuch as the name-bearing type of the first nominal species is in the best condition and is a fertile specimen.

Reported range.— Galápagos Islands, Pacific off Mexico (type locality: east of White Friars Islands), Gulf of California (Fraser, 1938a, b, 1939, 1946, 1948; Calder et al., 2003).

*Clytia carinadentata* Fraser, 1938a

?*Clytia carinadentata* Fraser, 1938a: 8, 29, pl. 7 fig. 30; 1939: 158 et seq.; 1946: 62, 220; Schmitt, 1948: x; Calder, 1991: 62-64; Calder et al., 2003: 1202, 1210.

Syntype material.— Ecuador, Galápagos Islands, off the northeast point of Albemarle Island, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 145-34, Ecuador, Galápagos Islands, Albemarle Island, Albemarle Point, 00°08'45"N, 91°21'30"W, 6-7 fm (11-13 m), sand with rock patches, 12.i.1934, one colony with several cormoids, to 6.5 mm high, on bryozoan, without gonothecae, SBMNH 347048 (AHF Holotype No. 38).

Paralectotypes.— None designated.

Remarks.— The lectotype of *Clytia carinadentata* Fraser, 1938a is a small colony, in rather poor condition, preserved in a vial containing the labels "Holotype" and "AHF Holotype No. 38."

This nominal species appears to have been founded on the single colony noted above, although we are not entirely certain. No other specimens identified as *C. carinadentata* were found in Allan Hancock collections at the Santa Barbara Museum of Natural History, and it was not listed by Arai (1977) from the Fraser Collection at the Royal British Columbia Museum. We also found no record of it in collections at the National Museum of Natural History, Washington. While the specimen might be considered as the holotype by monotypy, we prefer to accord it lectotype status.

As noted above, Calder (1991) and Calder et al. (2003) included *Clytia carinadentata* Fraser, 1938a, as well as *C. acutidentata* Fraser, 1938a and *Gonothyrea serialis* Fraser, 1938a, in the synonymy of *C. linearis* (Thornely, 1900). Precedence was assigned to the name *C. acutidentata* over *C. carinadentata* and *G. serialis* under the Principle of the First Reviser because its lectotype bears gonothecae and is in better condition.

Reported range.— Galápagos Islands (type locality: Albemarle Island, Albemarle Point) (Fraser, 1938a, 1939, 1946, 1948; Calder et al., 2003).

*Clytia exilis* Fraser, 1948

*Clytia exilis* Fraser, 1948: 207, pl. 24 fig. 5; Schmitt, 1948: x; Ljubenkov, 1980: 46; Cairns et al., 1991: 23; 2002: 23, 57.

Syntype material.— USA, California, 3½ miles south of Hueneme, 29-30 fm (*Velero III* station 1274-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1274-41, USA, California, Ventura County, 3½ miles south of Hueneme, 34°05'30"N, 119°12'40"W, 29-30 fm (53-55 m), shell + mud, 23.iii.1941, one erect colony, 8 mm high, unattached, with a single gonotheca, SBMNH 347049 (AHF Holotype No. 39).

Paralectotypes.— *Velero III* station 1274-41, as above for lectotype, two colonies, to 8 mm high, unattached, one of them with a single gonotheca, SBMNH 345980.

Remarks.— The lectotype designated herein was one of two colonies in a sample vial from *Velero III* station 1274-41, labeled "*Clytia exilis* Fraser Type" and "AHF Holotype No. 39". It alone was returned to the original vial (SBMNH 347049). A gonotheca is present on this hydroid, and it is much the better of the two colonies. It also corresponds most closely with the original description and illustrations of the species (Fraser, 1948, pl. 24, fig. 5a, b). The other colony was placed in a vial (SBMNH 345980) containing a fragmentary specimen from the same station. Both of these are paralectotypes.

*Clytia exilis* Fraser, 1948, regarded in some works as questionably conspecific with *Clytia gracilis* (e.g., see Calder, 1991), was included as a valid species by Cairns et al. (2002).

Reported range.— Pacific off southern California (type locality: off Hueneme) (Fraser, 1948; Ljubenkov, 1980)

*Clytia fascicularis* Fraser, 1938a

*Clytia fascicularis* Fraser, 1938a: 8, 30, pl. 7 fig. 31; 1938c: 132; 1939: 158; 1946: 62, 220; 1948: 208; Schmitt, 1948: x; Arai, 1977: 27; Ljubenkov, 1980: 416; Cairns et al., 1991: 23; 2002: 23; Cortés, 1997: 325.

Syntype material.— Ecuador, Santa Elena Bay, 8-12 fm. Colombia, Port Utria, on coral at low tide. Mexico, Tangola Tangola, on coral at low tide; east of islands off Navidad Head, 25-35 fm; Isabel Island, 10-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Guayas Province, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one colony with pedicels and several cormoids, to 4.5 mm high, on algae, with gonothecae, SBMNH 347050 (AHF Holotype No. 40).

Paralectotypes.— *Velero III* station 205-34, as above for lectotype, four colonies with

pedicels and several cormoids, to 3 mm high, on hydroid, plant material, and unattached, with gonothecae, SBMNH 347051.

*Velero III* station 205-34, as above for lectotype, nine colony fragments, to 8 mm high, on plant material and unattached, some with gonothecae, SBMNH 345988.

*Velero III* station 205-34, as above for lectotype, one lot, in ethanol, USNM 49289.

*Velero III* station 208-34, Ecuador, Santa Elena Bay, 02°09'45"S, 80°56'35"W, 7-8 fm (13-15 m), sand + small shells, 09.ii.1934, one polysiphonic colony, 2 cm high, unattached, with gonothecae, SBMNH 345987.

*Velero III* station 239-34, Colombia, Port Utria, 05°59'40"N, 77°21'30"W, shore, reef inside outer island, 15.ii.1934, 10 colony fragments, to 6 mm high, on barnacle shells and unattached, without gonothecae, SBMNH 345989.

*Velero III* station 261-34, Mexico, Oaxaca, Tangola Tangola Bay, 15°45'37"N, 96°05'24"W, shallow water, coral, 01.iii.1934, one colony of questionable identity, in poor condition, 5 mm high, unattached, without gonothecae, SBMNH 345990.

*Velero III* station 275-34, Mexico, Jalisco, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, one colony, 1.5 cm high, unattached, without gonothecae, SBMNH 345985.

*Velero III* station 277-34, Mexico, Nayarit, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, 12 or more colonies and colony fragments, to 6.0 cm high, on shell fragments, algae, and unattached, some with gonothecae, SBMNH 345984.

Ecuador, Santa Elena Bay, BCPM 976-374-1, microscope slide (Arai, 1977).

Remarks.— Of two colonies in a sample from *Velero III* station 205-34 labeled "Holotype" and "AHF Holotype No. 40," a specimen on algae was chosen as the lectotype and returned alone to its vial (SBMNH 347050). This colony was selected because it most closely corresponded with the original description and illustrations of the species by Fraser (1938a). It was also the larger of the two and in better condition. The second colony, on the stem of another hydroid, was combined with three colony fragments in a vial from the same station labeled "Paratype" and "AHF Paratype No. 191" (SBMNH 347051). These are paralectotypes. Other paralectotype material is present in samples from Santa Elena Bay, Ecuador (SBMNH 345987, SBMNH 345988; USNM 49289, BCPM 976-374-1), Port Utria, Colombia (SBMNH 345989), Tangola Tangola Bay, Mexico (SBMNH 345990, SBMNH 345985), and Isabel Island, Mexico (SBMNH 345984). The hydroid in a sample from Tangola Tangola Bay (SBMNH 345990) was in poor condition. By contrast, some of the colonies from Isabela Island (SBMNH 345984) were in good condition and bore gonothecae.

The algal substrate upon which the lectotype colony was growing also supports a minute campanulariid, referable to the subfamily Obeliinae, which should not be mistaken as part of the name-bearing type material. It is readily distinguishable from the lectotype of *Clytia fascicularis* Fraser, 1938a in having cusps on the rims of the hydrothecae that are much less distinct.

Reported range.— Pacific off Peru, Ecuador (type locality: Santa Elena Bay), Colombia, Central America, Mexico (including Baja California) and southern California (Fraser, 1938a, c, 1939, 1946, 1948; Ljubenkov, 1980; Cortés, 1997).

*Clytia irregularis* Fraser, 1938a

*Clytia irregularis* Fraser, 1938a: 8, 31, pl. 8 fig. 32; 1938b: 109; 1938c: 132; 1939: 158 et seq.; 1946: 62, 219; 1948: 208; Schmitt, 1948: x; Arai, 1977: 27; Cairns et al., 1991: 23; 2002: 23.

Syntype material.— Mexico, Tangola Tangola, just below low tide, on coral; White Friars Islands, 5-10 and 25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 261-34, Mexico, Oaxaca, Tangola Tangola Bay, 15°45'37"N, 96°05'24"W, shallow water, coral, 01.iii.1934, one colony with two cormoids, to 8 mm high, on unknown substrate, with gonothecae, SBMNH 347052 (AHF Holotype No. 41).

Paralectotypes.— *Velero III* station 259-34, Mexico, Oaxaca, Santa Cruz Bay and Tangola Tangola Bay, 15°45'N, 96°06'12"W, 15-20 fm (27-37 m), sand + gravel + mud, 28.ii.1934, two tiny colony fragments in poor condition, to 5 mm high, unattached, with gonothecae, SBMNH 345999.

*Velero III* station 261-34, as above for lectotype, one colony, 5 mm high, on shell fragment, without gonothecae, SBMNH 347053.

*Velero III* station 261-34, as above for lectotype, one lot, in ethanol, USNM 49285.

*Velero III* station 264-34, Mexico, Guerrero, Petatlan, south of White Friars Islands, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, three colonies, to 2.2 cm high, on shells and unattached, with gonothecae, SBMNH 345997.

Mexico, Tangola Tangola Bay, BCPM 976-377-1, microscope slide (Arai, 1977).

Remarks.— The specimen selected as the lectotype, from *Velero III* station 261-34 (SBMNH 347052), is in a vial containing the labels "Holotype" and "AHF Holotype No. 41." This hydroid is unmistakably the same colony that was illustrated in the original account of the species (Fraser, 1938a, pl. 8 fig. 32). A paralectotype colony from the same station (SBMNH 347053) occurs in a vial containing the labels "Paratype" and "AHF Paratype No. 192."

Specimens from *Velero III* station 264-34, south of White Friars Islands (SBMNH 345997), were part of the syntype series. However, they are probably not conspecific with the lectotype of *Clytia irregularis*, and should be compared instead with *Clytia fascicularis* Fraser, 1938a.

Reported range.— Pacific off Mexico (type locality: Tangola Tangola Bay), including the Gulf of California (Fraser, 1938a, b, 1939, 1946, 1948).

*Clytia macrocarpa* Fraser, 1938c

*Clytia macrocarpa* Fraser, 1938c: 132, 138, pl. 19 fig. 4; 1939: 158 et seq.; 1946: 62, 219; Schmitt, 1948: x; Arai, 1977: 27.

Syntype material.— Peru, Lobos de Afuera Islands, South Bay, 14-16 fm and 20-22 fm; Independencia Bay, 5 fm and 20 fm; Callao, 3 fm; Hormigas de Afuera Islands, 45 fm; San Nicholas Bay, 10-25 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 395-35, Peru, Lambayeque, Lobos de Afuera Islands, South Bay, 06°56'12"S, 80°42'50"W, 14-16 fm (26-29 m), rock, 17.i.1935, one colony, to 7 mm high, on seagrass, with gonothecae, SBMNH 347055 (AHF Holotype No. 42).

Paralectotypes.— *Velero III* station 379-35, Peru, Ica, Independencia Bay, east of Viejas Island, 14°16'05"S, 76°09'30"W, 20 fm (37 m), 13.i.1935, numerous colony fragments, to 1.2 cm high, on algae and unattached, many with gonothecae, SBMNH 346050 (note: label in bottle gives wrong depth).

*Velero III* station 392-35 Peru, Lambayeque, Lobos de Afuera Islands, North Bay, 06°55'07"S, 80°43'53"W, 20-22 fm (37-40 m), sand, 17.i.1935, two vials, with two colonies and fragments, to 1.8 mm high, on algae, with gonothecae, SBMNH 346049.

*Velero III* station 395-35, as above for lectotype, two colonies, to 8 mm high, on seagrasses, with gonothecae, SBMNH 347056.

*Velero III* station 820-38, Peru, Ica, San Nicolas Bay, 15°14'05"S, 75°14'45"W, 10-25 fm (18-46 m), mud, 06.ii.1938, one colony plus fragments, to 9 mm high, on algae, with gonothecae, SBMNH 346051.

Peru, Lobos de Afuera Islands, South Bay, 17.i.1935, one lot, in ethanol, USNM 49286.

Peru, Lobos de Afuera Islands, BCPM 976-386-1, microscope slide (Arai, 1977).

Remarks.— As the lectotype of *Clytia macrocarpa* Fraser, 1938c we selected a colony in a vial labeled "Holotype" and "AHF Holotype No. 42" from *Velero III* station 395-35 (SBMNH 347055). The paralectotype series includes colonies from the same station, with the labels "Paratype" and "AHF Paratype No. 193" (SBMNH 347056), as well as others from *Velero III* station 379-35 (SBMNH 346050), *Velero III* station 392-35 (SBMNH 346049), and *Velero III* station 820-38 (SBMNH 346051). Material from the Fraser Collection, on a microslide at the Royal British Columbia Museum (BCPM 976-386-1), is also a paralectotype. So too is a lot from the type locality, in ethanol, at the NMNH (USNM 49286).

As noted by Fraser (1938c), gonothecae of this species are unusually long for the genus, and the gonothecal walls are marked from end to end by longitudinal grooves.

Reported range.— Pacific off Peru (type locality: Lobos de Afuera Islands) (Fraser, 1938c, 1939, 1946, 1948).

#### *Clytia multidentata* Fraser, 1938a

?*Clytia multidentata* Fraser, 1938a: 8, 32, pl. 8 fig. 33; 1939: 158 et seq.; 1946: 62, 217; Schmitt, 1948: x; Arai, 1977: 27.

Syntype material.— Colombia, Port Utria, 20 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 238-34, Colombia, off Port Utria, 05°59'25"N, 77°21'50"W, 20 fm (37 m), sand + shell + cake urchins, 15.ii.1934, one small, stolonal colony, 3 mm high, on stem of another hydroid, without gonothecae, SBMNH 347054 (AHF Holotype No. 43).

Paralectotype.— Colombia, Port Utria, BCPM 976-388-1, microscope slide (Arai, 1977).

Remarks.— The lectotype chosen here is the single colony found in a sample from *Velero III* station 238-34 (SBMNH 347054). The vial containing this specimen includes the labels marked "Holotype" and "AHF Holotype No. 43." Paralectotype material from the same location exists on a microscope slide in the Fraser Collection at the Royal British Columbia Museum (BCPM 976-388-1).



Fraser (1938a) referred this species, with question, to the genus *Clytia*. No gonothecae are present on the lectotype colony, but characters of the hydrotheca are more like those found in *Campanularia*. These include the presence of a well developed annular thickening at the base of a deeply campanulate hydrotheca, and a distinct subhydrothecal spherule at the distal end of the hydrothecal pedicel. We therefore adopt the binomen *Campanularia multidentata* (Fraser, 1938a), **comb. nov.**, for the species.

Reported range.— Pacific off Colombia (type locality: off Port Utria) (Fraser, 1938a, 1939, 1946, 1948).

*Clytia seriata* Fraser, 1938a

?*Clytia seriata* Fraser, 1938a: 8, 33, pl. 8 fig. 35; 1938c: 132; 1939: 158 et seq.; 1946: 62, 218; 1948: 210; Schmitt, 1948: x; Arai, 1977: 27.

Syntype material.— Mexico, Tangola Tangola, near shore, 15-20 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 259-34, Mexico, Oaxaca, Santa Cruz Bay and Tangola Tangola Bay, 15°45'N, 96°06'12"W, 15-20 fm (27-37 m), sand + gravel + mud, 28.ii.1934, one colony with several cormoids, to 2 cm high, on detritus (?), with a gonotheca, SBMNH 347060.

Paralectotypes.— *Velero III* station 259-34, as above for lectotype, about six colonies and many colony fragments, to 2.5 cm high, unattached and on invertebrate tubes, with a few gonothecae, SBMNH 347059.

*Velero III* station 259-34, as above for lectotype, two colonies plus fragments, to 1.2 cm high, on worm tubes, without gonothecae, SBMNH 346059.

*Velero III* station 259-34, as above for lectotype, one lot, in ethanol, USNM 49315.

Mexico, Tangola Tangola Bay, BCPM 976-394-1, microscope slide (Arai, 1977).

Remarks.— The colony chosen here as the lectotype of *Clytia seriata* Fraser, 1938a, from *Velero III* station 259-34 (SBMNH 347060), is preserved in a vial containing the labels "Paratype" and "AHF Paratype No. 194." We assign specimens from the same station, in another vial with the labels "Holotype" and "AHF Type No. 45" (SBMNH 347059), to the paralectotype series. Our choice of the former colony as the name-bearing type was made because it was one of the best specimens in the original syntype series. In addition, it has a gonotheca that seems most like that illustrated in the original account of the species (Fraser, 1938a, pl. 8, fig. 35b). The type locality remains as indicated earlier in Schmitt (1948). Other paralectotype material, from the same station, exists at the Santa Barbara Museum of Natural History (SBMNH 346059), the National Museum of Natural History (USNM 49315), and the Royal British Columbia Museum (BCPM 976-394-1).

Schmitt (1948) gave the type locality of this species as Port Utria, Colombia (*Velero III* station 239-34). This appears to have been a mistake in the data records of station 239-34 for 259-34.

Fraser (1938a) included this species, with question, in the genus *Clytia*. The lectotype conforms with the diagnosis of that genus in colony form and hydrothecal characters.

Reported range.— Pacific off Central America and Mexico (type locality: Tangola Tangola Bay and Santa Cruz Bay) (Fraser, 1938a, 1938c, 1939, 1946, 1948).

*Clytia similis* Fraser, 1947

*Clytia similis* Fraser, 1947: 6, pl. 1 fig. 3; Schmitt, 1948: xv; Calder, 1991: 58, 60.

*Campanularia (Clytia) similis*: Vervoort, 1968: 96.

Syntype material.— Venezuela, 3 miles north of Coche Island, 19-33 fm (*Velero III* station A32-39); Cubagua Island, shallow water, on algae (Fraser, 1947).

Lectotype.— *Velero III* station A32-39, Venezuela, three miles north of Coche Island, 10°50'30"N, 63°54'30"W, 19-33 fm (35-60 m), sand + shell, 15.iv.1939, one colony, to 6 mm high, on stem of *Eudendrium*, with gonothecae, SBMNH 347061 (AHF Holotype No. 161).

Paralectotypes.— *Velero III* station A28-39, Venezuela, Isla Cubagua, 10°49'25"N, 64°16'00"W, 2 fm (4 m), algae, 15.iv.1939, one colony, to 2 mm high, on bryozoan, without gonothecae, SBMNH 369453.

*Velero III* station A32-39, as above for lectotype, one colony, 3 mm high, with gonothecae, on stem of *Eudendrium*, SBMNH 369452.

Remarks.— The syntype sample of *Clytia similis* Fraser, 1947 from off Isla Coche, Venezuela (SBMNH 347061), containing the labels "Type" and "AHF Holotype No. 161," consisted of two hydroid fragments with gonothecae. The larger of the two was designated as the lectotype and returned to the original vial. The second specimen was placed in a separate vial as part of the paralectotype series (SBMNH 369452). Another paralectotype sample is that from *Velero III* station A28-39, Isla Cubagua, Venezuela (SBMNH 369453).

*Clytia similis* Fraser, 1947 has been regarded as conspecific with *C. hemisphaerica* (Linnaeus, 1767) by authors including Vervoort (1968) and Calder (1991). The genus *Clytia* is in need of major revision, however, and we provisionally retain the hydroids here under the name *Clytia similis*.

Reported range.— Caribbean off Venezuela (type locality: Coche Island) (Fraser, 1947).

Genus *Eucopella* von Lendenfeld, 1883*Eucopella minor* Fraser, 1938a

*Eucopella minor* Fraser, 1938a: 8, 34, pl. 8 fig. 36; 1939: 158; 1946: 66, 209; 1948: 211; Morris and Mogelberg, 1973: 26; Arai, 1977: 27.

*Orthopyxis minor*: Cairns et al., 1991: 24; 2002: 24.

Syntype material.— Ecuador, Santa Elena Bay, on floating *Sargassum* (Fraser, 1938a).

Lectotype.— *Velero III* station 206-34, Ecuador, Guayas Province, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, floating at surface, 08.ii.1934, one stolonial colony, to 2 mm high, on *Sargassum*, with gonothecae, SBMNH 347044 (AHF Holotype No. 46).

Paralectotypes.— *Velero III* station 206-34, as above for lectotype, five stolonial colony fragments, to 1.5 mm high, on *Sargassum*, two of them with gonothecae, SBMNH 347045.

*Velero III* station 206-34, as above for lectotype, one lot, in ethanol, USNM 49314.

Ecuador, Santa Elena Bay, BCPM 976-398-1, microscope slide (Arai, 1977).

Remarks.— The hydroid catalogued as SBMNH 347044, in a vial containing the labels “Holotype” and “AHF Holotype No. 46,” is selected as the lectotype. Gonothecae are present on this colony, and it is in fairly good condition. Paralectotype material, from the same station and on the same substrate, is present in a vial that includes the labels “Paratype” and “AHF Paratype No. 195” (SBMNH 347045). Other material in the paralectotype series is a lot in ethanol at the NMNH (USNM 49314) and a microscope slide in the Fraser Collection at the Royal British Columbia Museum (BCPM 976-398-1).

Fraser (1938a) assigned this species to *Eucopella* von Lendenfeld, 1883, now usually considered congeneric with *Orthopyxis* L. Agassiz, 1862.

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay) (Fraser, 1938a, 1939, 1946, 1948).

Genus *Gonothyraea* Allman, 1864

*Gonothyraea serialis* Fraser, 1938a

*Gonothyraea serialis* Fraser, 1938a: 8, 35, pl. 8 fig. 37; 1938c: 133; 1939: 158 et seq.; 1946: 65, 211; 1948: 212; Arai, 1977: 27; Cortés, 1997: 325.

Syntype material.— Colombia, Port Utria, low tide on stem of *Lytocarpus*. Panama, Bahia Honda, 15-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 239-34, Colombia, Choco, Port Utria, 05°59'40"N, 77°21'30"W, shore, reef inside outer island, 15.ii.1934, one colony with several cormoids, to 5.5 mm high, on aglaopheniid stem, without gonothecae, SBMNH 347062 (AHF Holotype No. 47).

Paralectotypes.— *Velero III* station 249-34, Panama, Veraguas, Bahia Honda, 07°43'16"N, 81°32'55"W, 15-20 fm (27-36 m), rock, 22.ii.1934, four colonies and fragments, to 1.3 cm high, unattached, without gonothecae, SBMNH 347063.

*Velero III* station 249-34, as above, two colonies and a few fragments, to 4 mm high, on unidentified substrates, one colony with gonothecae, SBMNH 347064 (AHF Hypotype No. 48).

*Velero III* station 249-34, as above, one lot, in ethanol, USNM 49313.

Panama, Bahia Honda, BCPM 976-406-1, microscope slide (Arai, 1977).

Remarks.— Syntype material from *Velero III* station 239-34 (Port Utria, Colombia, SBMNH 347062), labeled “Holotype” and “AHF Holotype No. 47,” was sterile. Another syntype sample from *Velero III* station 249-34 (Bahia Honda, Panama, SBMNH 347064), labeled “AHF Hypotype No. 48,” bore gonophores enclosed in gonothecae. We clearly prefer a fertile specimen over a sterile one as the name-bearing type because of the importance of the gonosome in differentiating species in this genus. However, hydrothecae in the latter specimen are in poor condition and the species can scarcely be recognized with confidence. We have therefore chosen the colony from Port Utria, Colombia, as the lectotype and relegated other specimens in the syntype series to paralectotypes, including those from *Velero III* station 249-34 (Bahia Honda, Panama), labeled “Paratype” and “AHF Paratype No. 196” (SBMNH 347063).

As noted above, *Gonothyraea serialis* Fraser, 1938a, as well as *Clytia acutidentata* Fraser, 1938a and *Clytia carinadentata* Fraser, 1938a, were included in the synonymy of *Clytia linearis* (Thornely, 1900) by Calder (1991). Of the three synonymous names

described in the same paper by Fraser (1938a), precedence has been assigned to *C. acutidentata* as discussed above under that nominal species.

Reported range.— Galápagos Islands, Pacific off Ecuador, Colombia (type locality: Port Utria), Central America, and Mexico (Fraser, 1938a, c, 1939, 1946, 1948; Cortés, 1997).

Genus *Obelia* Péron and Lesueur, 1810

*Obelia alternata* Fraser, 1938a

*Obelia alternata* Fraser, 1938a: 8, 35, 36, pl. 8 fig. 38; 1939: 159 et seq.; 1946: 65, 230; 1948: 212; Schmitt, 1948: x; Arai, 1977: 27; Calder et al., 2003: 1211.

Syntype material.— Ecuador, Galápagos Islands, Charles Island, Post Office Bay, 12-15 fm; west of South Seymour Island, 5 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 167-34, Ecuador, Galápagos Islands, Charles Island, Post Office Bay, 01°14'37"S, 90°28'08"W, 15 fm (27 m), rock, 19.i.1934, one colony with several cormoids, to 7 mm high, on algae, with gonothecae, SBMNH 347065 (AHF Holotype No. 49).

Paralectotypes.— *Velero III* station 167-34, as above for lectotype, six colonies or colony fragments, to 4.5 mm high, on algae, with gonothecae, SBMNH 347066.

*Velero III* station 167-34, as above for lectotype, one lot, in ethanol, USNM 49316.

*Velero III* station 173-34, Ecuador, Galápagos Islands, off South Seymour Island, 00°25'10"S, 90°19'25"W, 5 fm (9 m), sand with rock patches, 22.i.1934, indeterminable number of colonies on nine algal fragments, to 1 cm high, gonothecae not seen, SBMNH 346197.

Ecuador, Galápagos Islands, Charles Island, Post Office Bay, BCPM 976-407-1, microscope slide (Arai, 1977).

Remarks.— We selected the hydroid colony in a vial labeled "Holotype" and "AHF Holotype No. 49," from *Velero III* station 167-34 (Post Office Bay, Charles Island, Galápagos Islands), as the lectotype of this species (SBMNH 347065). Paralectotypes included material labeled "Paratype" and "AHF Paratype No. 197" from the same station (SBMNH 347066), as well as from off South Seymour Island (SBMNH 346197). Other material from the type locality in the paralectotype series includes a lot in ethanol at the NMNH (USNM 49316), and a microscope slide from the Fraser Collection at the Royal British Columbia Museum (BCPM 976-407-1).

*Obelia alternata* Fraser, 1938a has been considered conspecific with *O. dichotoma* (Linnaeus, 1758) by Cornelius (1975, 1982), Calder (1991), and others. The validity of the species needs to be reassessed.

Reported range.— Galápagos Islands (type locality: Charles Island, Post Office Bay) (Fraser, 1938a, 1939, 1946, 1948).

*Obelia biserialis* Fraser, 1948

*Obelia biserialis* Fraser, 1948: 184, 213, pl. 24 fig. 6; Schmitt, 1948: x.

Syntype material.— Mexico, Revillagigedo Islands, Clarion Island, off Sulphur Bay, 25-26 fm (*Velero III* station 919-39); north of Clarion Island, 25-26 fm; Socorro Island, off Braithwaite Bay, 17-46 fm (Fraser, 1948).

Lectotype.— *Velero III* station 919-39, Mexico, Colima, Clarion Island, off Sulphur Bay, 18°20'13"N, 114°44'51"W, 25-26 fm (46-48 m), sand + coralline, 17.iii.1939, one polysiphonic colony, 3 cm high, sandy substrate, with gonothecae, SBMNH 347067 (AHF Holotype No. 50).

Paralectotypes.— *Velero III* station 919-39, as above for lectotype, >25 colonies, to 4 cm high, sandy substrate, some with gonothecae, SBMNH 346202 (two vials).

*Velero III* station 919-39, as above for lectotype, one lot, in ethanol, USNM 49312.

*Velero III* station 921-39, Mexico, Colima, north of Clarion Island, 18°23'30"N, 114°45'55"W, 30-56 fm (55-102 m), nullipores, 17.iii.1939, >30 colonies and colony fragments, to 3 cm high, sandy substrate, one developing gonotheca, SBMNH 346201 (two vials).

*Velero III* station 924-39, Mexico, Colima, Socorro Island, off Braithwaite Bay, 18°41'52"N, 110°55'20"W, 17-46 fm (31-84 m), sand + coralline + sea pens, 18.iii.1939, one polysiphonic colony in poor condition, 7 cm high, sandy substrate, without gonothecae, SBMNH 346205.

*Velero III* station 926-39, Mexico, Colima, Socorro Island, west of Cape Rule, 18°42'10"N, 110°58'37"W, 41-45 fm (75-82 m), shell + sea pens, 18.iii.1939, two polysiphonic colonies, to 2.8 cm high, sandy substrate, without gonothecae, SBMNH 346204.

Remarks.— A colony labeled "*Obelia biserialis* Fraser Type" and "AHF Holotype No. 50" from *Velero III* station 919-39, Clarion Island (SBMNH 347067), is selected as the lectotype. Gonothecae are present on this hydroid. Paralectotype material includes specimens from both Clarion Island (SBMNH 346201, SBMNH 346202, USNM 49312) and Socorro Island (SBMNH 346204, SBMNH 346205). The sample from *Velero III* station 921-39, Clarion Island (SBMNH 346201) consists of three vials but only two of them hold paralectotype material (the other contains a haleciid, a eudendriid, and a hebellid, but no specimens of *O. biserialis*).

*Obelia biserialis* Fraser, 1948 has been considered a synonym (Cornelius, 1975, 1982) or questionable synonym (Calder, 1991) of *O. dichotoma* (Linnaeus, 1758). However, the hydrocaulus is quite different from that typically found in *O. dichotoma* in being polysiphonic and rooted in soft sediments by a tuft of stolonal filaments. Branches are alternate and in one plane, and the hydrotheca is deep with walls that tend to be nearly straight. We retain the species as valid here pending further study.

Reported range.— Pacific coast of Mexico (type locality: Clarion Island) (Fraser, 1948).

#### *Obelia equilateralis* Fraser, 1938a

*Obelia equilateralis* Fraser, 1938a: 8, 36, 37, pl. 9 fig. 39; 1939: 159 et seq.; 1944a: 157, pl. 28 fig. 128; 1946: 64, 226; 1947: 7; 1948: 214; Schmitt, 1948: x; Deevey, 1950: 347; 1954: 270; Defenbaugh and Hopkins, 1973: 87-88, pl. 10 fig. 35; Arai, 1977: 27; Cairns et al., 2002: 57.

*Laomedea (Obelia) equilateralis*: Vervoort, 1968: 97.

Syntype material.— Ecuador, Santa Elena Bay, 8-12 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Guayas Province, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one miniscule colony, cormoids to 4 mm high, on shell fragment, with one gonotheca, SBMNH 347068 (AHF Holotype No. 51).

Paralectotypes.— *Velero III* station 205-34, as above for lectotype, ca. 10 tiny colony fragments, to 6 mm high, on worm tube and unattached, a few with gonothecae, SBMNH 347069.

*Velero III* station 205-34, as above for lectotype, one lot, in ethanol, USNM 49311.

Ecuador, Santa Elena Bay, BCPM 976-418-1, microscope slide (Arai, 1977).

Remarks.— The sample of *Obelia equilateralis* Fraser, 1938a labeled “Holotype” and “AHF Holotype No. 51” (SBMNH 347068) contained five miniscule colonies and colony fragments. Although not in particularly good condition, one of the best of these, with a gonotheca, was chosen as the lectotype. The rest were combined with others from the same station in a vial labeled “Paratype” and “AHF Paratype No. 198” (SBMNH 347069) as paralectotypes. Additional paralectotypes include material from the type locality at the NMNH (USNM 49311) and the Royal British Columbia Museum (BCPM 976-418-1).

*Obelia equilateralis* has been considered conspecific with *Obelia dichotoma* (Linnaeus, 1758) by various authors (e.g., Cornelius, 1976, 1982; Calder, 1991). Given the limited amount of evidence currently available, we prefer to treat it as a valid species on account of its small and shallow hydrothecae that are shaped essentially like an equilateral triangle, on its miniscule colony size, and even on biogeographic grounds.

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay), Gulf of Mexico (Fraser, 1938a, 1939, 1946, 1948; Deevey, 1950, 1954; Defenbaugh and Hopkins, 1973).

#### *Obelia microtheca* Fraser, 1938a

*Obelia microtheca* Fraser, 1938a: 8, 37, pl. 9 fig. 40; 1938c: 133; 1939: 159 et seq.; 1946: 65, 229; 1948: 184; Schmitt, 1948: xi; Arai, 1977: 27.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, Guayas Province, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one colony with several cormoids, to 3 mm high, on bryozoan overgrowing algae, with gonothecae, SBMNH 347071.

Paralectotypes.— *Velero III* station 209-34, as above for lectotype, six colonies/colony fragments, to 6 mm high, on algae and a barnacle, with gonothecae, SBMNH 347070 (AHF Holotype No. 52).

*Velero III* station 209-34, as above for lectotype, indeterminable number of colonies/colony fragments, to 1 cm high, on bryozoans, octocoral stems, many with gonothecae, SBMNH 346262.

*Velero III* station 209-34, as above for lectotype, one lot, in ethanol, USNM 49310.

Ecuador, Santa Elena Bay, BCPM 976-437-1, specimen in glycerol; BCPM 976-437-2, microscope slide (Arai, 1977).

Remarks.— A syntype colony from *Velero III* station 209-34, Santa Elena Bay (SBMNH 347071), labeled “Paratype” and “AHF Paratype No. 199,” was chosen as the lectotype of *Obelia microtheca* Fraser, 1938a. It was in better condition than those labeled “Holotype” and “AHF Holotype No. 52” from the same station (SBMNH 347070). The latter specimens are designated as part of the paralectotype series, along with other hydroids from the same station in collections at the Santa Barbara Museum of Natural History (SBMNH 346262), the National Museum of Natural History (USNM 49310), and the Royal British Columbia Museum (BCPM 976-437-1, BCPM 976-437-2).



*Obelia microtheca* Fraser, 1938a was included in the synonymy of *O. dichotoma* (Linnaeus, 1758) by Cornelius (1975, 1982) and Calder (1991). A new revision of the species assigned to *Obelia* is warranted, however, and we retain *O. microtheca* as valid for the present.

Reported range.— Pacific off Peru, Ecuador (type locality: Santa Elena Bay) and Panama (Fraser, 1938a, c, 1939, 1946, 1948).

*Obelia tenuis* Fraser, 1938a

*Obelia tenuis* Fraser, 1938a: 8, 38, pl. 9 fig. 42; 1938c: 133; 1939: 159 et seq.; 1946: 65, 230; 1948: 185; Schmitt, 1948: xi; Brusca, 1973: 47; Arai, 1977: 27; Calder et al., 2003: 1211.

Syntype material.— Ecuador, Santa Elena Bay, low tide to 12 fm. Mexico, off Morro de Petatlan, 10-15 fm; off Tenacatita Point, 10 fm; South Bay, Cerros (Cedros) Island, 10-15 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 205-34, Ecuador, Guayas Province, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, one colony with several cormoids, to 9 mm high, on a gastropod shell, with gonothecae, SBMNH 347073 (AHF Holotype No. 54).

Paralectotypes.— *Velero III* station 205-34, as above for lectotype, four colonies, to 7 mm high, on algae and a worm tube, with gonothecae, SBMNH 347074.

*Velero III* station 205-34, as above for lectotype, ca. 8 colonies, to 3 mm high, on worm tubes and woody fragment, some with gonothecae, SBMNH 346288 (two vials).

*Velero III* station 205-34, as above for lectotype, one lot, in ethanol, USNM 49309.

*Velero III* station 207-34, Ecuador, Guayas Province, south of Point Santa Elena, 02°12'23"S, 81°00'05"W, shore, rock, 08.ii.1934, likely one colony but in several fragments, in poor condition, to 1 cm high, on a bryozoan, with gonothecae, SBMNH 346289.

*Velero III* station 208-34, Ecuador, Guayas Province, Santa Elena Bay, 02°09'45"S, 80°56'35"W, 7-8 fm (13-15 m), sand + small shells, 09.ii.1934, three colonies, to 6 mm high, on worm tubes, with gonothecae, SBMNH 346290.

*Velero III* station 267-34, Mexico, west of Morro de Petatlan, 17°30'30"N, 101°28'40"W, 25 fm (46 m), sand, 03.iii.1934, >14 colony fragments, to 13 mm high, on fragments of an echinoid test, with gonothecae, SBMNH 346291.

*Velero III* station 271-34, Mexico, Jalisco, Tenacatita Bay, 19°17'57"N, 104°50'35"W, 10 fm (18 m), mud + shell + sand, 04.iii.1934, ca. 10 detached cormoids, to 6 mm high, unattached, without gonothecae, SBMNH 346292.

*Velero III* station 287-34, Mexico, Baja California, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one stolon system with a few cormoids, to 3 mm high, unattached, without gonothecae, SBMNH 346293.

Ecuador, Santa Elena Bay, BCPM 976-450-1, specimen in spirit; BCPM 976-450-2, microscope slide (Arai, 1977).

Remarks.— A colony from *Velero III* station 205-34, Santa Elena Bay, Ecuador (SBMNH 347073) has been selected as the lectotype. This specimen, in good condition and with numerous gonothecae containing medusa buds, occurs on a gastropod shell. It was one

of three colonies in a vial labeled "Holotype" and "AHF Holotype No. 54." The other two colonies were placed together with two hydroids from the same station in a vial labeled "Paratype" and "AHF Paratype No. 200" (SBMNH 347074). Other paralectotype material is from west of Morro de Petatlan, Mexico (SBMNH 346291), Tenacatita Bay, Mexico (SBMNH 346292), and Cedros Island, Mexico (SBMNH 346293), as well as Santa Elena Bay, Ecuador (SBMNH 346288, SBMNH 346289, SBMNH 346290, USNM 49309, BCPM 976-450-1, BCPM 976-450-2).

Additional research is warranted to determine the validity of this nominal species. It has been regarded as conspecific with *Obelia dichotoma* (Linnaeus, 1758) by Cornelius (1975, 1982) and Calder (1991), but their opinion needs to be reassessed.

Reported range.— Galápagos Islands, Pacific coasts of Ecuador (type locality: Santa Elena Bay) and Mexico (including Gulf of California) (Fraser, 1938, c, 1939, 1946, 1948; Brusca, 1973).

Genus *Campanulina* van Beneden, 1847

*Campanulina indivisa* Fraser, 1948

*Campanulina* (?) *indivisa* Fraser, 1948: 216, pl. 24 fig. 7; Schmitt, 1948: xi; Vervoort, 1966: 106; Ljubenkova, 1980: 48.

Syntype material.— USA, California, Santa Catalina Island, 6¾ miles east of Long Point, 267-347 fm (488-634 m) (*Velero III* station 1424-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1424-41, USA, California, Santa Catalina Island, 6¾ miles east of Long Point, 33°24'45"N, 118°14'20"W, 267-347 fm (488-634 m), rocks, 28.ix.1941, one colony with several erect and monosiphonic cormoids, 1.2 cm high, on tube of a benthic invertebrate, without gonothecae, SBMNH 347075 (AHF Holotype No. 55).

Paralectotypes.— *Velero III* station 1424-41, as above for lectotype, eight monosiphonic cormoids, 1.3 cm high, unattached, without gonothecae, SBMNH 369454.

*Velero III*, station 1424-41 (two vials), as above for lectotype, one colony with several upright and monosiphonic cormoids, and eight fragments, to 1.7 cm high, on tube of benthic invertebrate and unattached, without gonothecae, SBMNH 345935.

Remarks.— The lectotype specimen is from a collection off Santa Catalina Island, California (*Velero III* station 1424-41, SBMNH 347075), labeled "*Campanulina* (?) *indivisa* Fraser Type" and "AHF Holotype No. 55." Eight additional cormoids in the same sample, although likely from the same colony, have been isolated in a new vial as paralectotypes (SBMNH 369454).

Fraser (1938a) referred this hydroid, with question, to the genus *Campanulina*. It was tentatively assigned to *Opercularella* by Vervoort (1966), who considered *C. indivisa* possibly conspecific with *Campanulina denticulata* Clarke, 1907. Calder and Vervoort (1986) suggested that the species might be referable to the genus *Plicatotheca* Calder and Vervoort, 1986 and we concur, assigning it here to *P. indivisa* (Fraser, 1948), **comb. nov.**

Reported range.— Southern California (type locality: Santa Catalina Island) (Fraser, 1948; Ljubenkova, 1980).

*Campanulina ramosa* Fraser, 1938a

?*Campanulina ramosa* Fraser, 1938a: 9, 39, pl. 9 fig. 43; 1939: 159 et seq.; 1946: 68, 243; Schmitt, 1948: xi; Arai, 1977: 26; Calder et al., 2003: 1206.

*Opercularella ramosa*: Calder et al., 2003: 1206.

Syntype material.— Ecuador, Galápagos Islands, Albemarle Island, Tagus Cove, 30 fm; between Charles and Indefatigable Islands, 60 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 147-34, Ecuador, Galápagos Islands, Albemarle Island, Tagus Cove, 00°16'38"S, 91°22'44"W, 30 fm (55 m), rock + coral + nullipores, 13.i.1934, one erect colony, slightly polysiphonic basally, 4 mm high, substrate unknown, without gonothecae, RBCM 976-283-1 (microscope slide).

Paralectotype.— *Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.vi.1934, one stolonial colony, 2 mm high, on coralline algae, without gonothecae, RBCM 976-282-1.

Remarks.— Type material of *Campanulina ramosa* in the Allan Hancock hydroid collections at the Santa Barbara Museum of Natural History is missing. We therefore examined syntypes from the Fraser Collection at the Royal British Columbia Museum. These consisted of a slide bearing two fragments of what is presumed to be a single colony (RBCM 976-283-1), and a vial with a colony in alcohol (RBCM 976-282-1). Of these two specimens, the slide-mounted colony from Tagus Cove (RBCM 976-283-1) is in much better condition and most like the description and illustration of the species by Fraser (1938a), and is chosen as the lectotype. The colony in alcohol from Charles Island (RBCM 976-282-1) is designated as the paralectotype. This specimen was reported in Fraser (1938a) as having been collected from waters between Charles and Indefatigable islands, but the AHF records (Fraser, 1943c) describe the station as being located east of the south end of Albemarle Island. The locations in fact are not contradictory.

*Campanulina ramosa* Fraser, 1938a was assigned to the genus *Opercularella* Hincks, 1868, as *O. ramosa*, by Calder, et al. (2003: 1206).

Reported range.— Galápagos Islands (type locality: Albemarle Island, off Tagus Cove) (Fraser 1938a, 1939, 1946).

Genus *Egmundella* Stechow, 1921a*Egmundella polynema* Fraser, 1948

*Egmundella polynema* Fraser, 1948: 185, 218, pl. 25 fig. 8; Schmitt, 1948: xi; Vervoort, 1966: 109.

Syntype material.— Mexico, 8 miles west of Cedros Island, 64-65 fm (*Velero III* station 1253-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1253-41, Mexico, 8 miles west of Cedros Island, 28°05'50"N, 115°31'00"W, 64-65 fm (64-65 m), gravel + loose rock, 26.ii.1941, one largely stolonial colony, with pedicels and short hydrocauli to 3.6 mm high, on unknown substrate, with gonothecae, SBMNH 347076 (AHF Holotype No. 57).

Paralectotype.— None designated.

Remarks.— The specimen from *Velero III* station 1253-41 (SBMNH 347076) was in a vial with the labels "*Egmundella polynema* Fraser Type" and "AHF Holotype No. 57."

This may be the only type material of the species in existence, but we prefer to designate it as a lectotype rather than risk listing it as a holotype by monotypy in case other material exists elsewhere.

Reported range.— Pacific off Baja California (type locality: Cedros Island) (Fraser, 1948).

Genus *Lovenella* Hincks, 1868

*Lovenella nodosa* Fraser, 1938a

*Lovenella nodosa* Fraser, 1938a: 9, 40, pl. 9 fig. 44; 1938c: 133; 1939: 159 et seq.; 1946: 67, 247; 1948: 185, 218; Schmitt, 1948: xi; Arai, 1977: 26; Lees, 1986: 115, 116.

Syntype material.— Ecuador, Santa Elena Bay, 7-8 fm. Mexico, off Morro de Petatlan, 25 fm; off Tenacatita Point, 10 fm; Isabel Island, 10-25 fm; off Thurloe Point, 30 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 208-34, Ecuador, Santa Elena Bay, 02°09'45"S, 80°56'35"W, 7-8 fm (13-15 m), sand + small shells, 09.ii.1934, one erect monosiphonic colony, 2.5 cm high, on bivalve shell, with gonothecae, SBMNH 347077 (AHF Holotype No. 58).

Paralectotypes.— *Velero III* station 208-34, as above for lectotype, one lot, in ethanol, USNM 49283.

*Velero III* station 267-34, Mexico, west of Morro de Petatlan, 17°30'30"N, 101°28'40"W, 25 fm (46 m), sand, 03.iii.1934, one colony and one fragment, 1.5 cm high, on bivalve shell and unattached, without gonothecae, SBMNH 347078.

*Velero III* station 271-34, Mexico, Tenacatita Bay, 19°17'57"N, 104°50'35"W, 10 fm (18 m), mud + shell + sand, 04.iii.1934, two young colonies, to 0.7 cm high, on shells of a bivalve and a keyhole limpet, without gonothecae, SBMNH 346185.

*Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, one colony and one fragment, to 5 cm high, on shell fragment and unattached, without gonothecae, SBMNH 346180.

*Velero III* station 284-34, Mexico, Baja California, off Thurloe Head, 27°37'10"N, 114°52'20"W, 30 fm (55 m), coarse sand, 09.iii.1934, one colony, 1.2 cm high, on shell fragment, without gonothecae, SBMNH 346188.

Mexico, Petatlan Bay, 03.iii.1934, 5-10 fm (9-18 m), BCPM 976-296-1; Petatlan Bay, BCPM 976-296-2 (Arai, 1977).

Remarks.— The lectotype colony of *Lovenella nodosa* is from Santa Elena Bay, Ecuador (SBMNH 347077) in a vial labeled "Holotype" and "AHF Holotype No. 58." Specimens with the labels "Paratype" and "AHF Paratype No. 201" from *Velero III* station 267-34, west of Morro de Petatlan, Mexico (SBMNH 347078), are paralectotypes. Other paralectotype material is as listed above.

The specimens examined are much as described and illustrated by Fraser (1938a), although the bases of the opercular valves are not distinctly demarcated from the hydrotrocha as shown in Fraser's figures (1938a, pl. 9 fig. 44a, b).

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay), Central America, Mexico (Fraser, 1938a, c, 1939, 1946, 1948).

*Lovenella rugosa* Fraser, 1938c

*Lovenella rugosa* Fraser, 1938c: 133, 138, pl. 19 fig. 5; 1939: 159 et seq.; 1946: 67, 246; 1948: 219; Schmitt, 1948: xi; Ljubenkova, 1980: 48; Cairns et al., 1991: 22; 2002: 19.

Syntype material.— Mexico, Tenacatita Bay, 5 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 485-35, Mexico, Tenacatita Bay, 19°18'N, 104°50'W, 5 fm (9 m), sand + shell, 15.ii.1935, one colony with stolonial and erect cormoids, <2 mm high, on algae, no gonothecae seen, SBMNH 347079 (AHF Holotype No. 59).

Paralectotypes.— *Velero III* station 485-35, as above for lectotype, one colony with stolonial and erect cormoids, up to 2 mm high, on algae, with gonothecae, SBMNH 347080.

Mexico, Tenacatita Bay, BCPM 976-301-1 (Arai, 1977).

Remarks.— Syntype material is all from Tenacatita Bay, Mexico. The lectotype, from *Velero III* station 485-35 (SBMNH 347079), is in a vial labeled "Holotype" and "AHF Holotype No. 59." Paralectotype material, from the same station, is labeled "Paratype" and "AHF Paratype No. 202" (SBMNH 347080).

The genus to which this species should be assigned needs to be reviewed.

Reported range.— Pacific off Mexico (type locality: Tenacatita Bay) and southern California (Fraser, 1938c, 1939, 1946, 1948).

Genus *Endothecium* Fraser, 1935*Endothecium paucinodum* Fraser, 1947

*Endothecium paucinodum* Fraser, 1947: 8, pl. 1 fig. 4, pl. 2 fig. 4; 1948: 185, 220; Schmitt, 1948: xi.  
*Halecium paucinodum*: Cairns et al., 2002: 20.

Syntype material.— USA, California, west-northwest of Anacapa Island, 41-43 fm. Panama, Caledonia Bay, handline to rocky reef (*Velero III* station A55-39). Aruba, 8 miles southwest of San Nicolaas Bay, 23-24 fm (*Velero III* station A18-39) (Fraser, 1947).

Lectotype.— *Velero III* station 1269-41, USA, California, Santa Barbara County, 1 mile west-northwest of Anacapa Island, 34°01'25"N, 119°27'20"W, 41-43 fm (75-79 m), rock + sponge, 16.iii.1941, one polysiphonic colony, ca. 5 cm high, unattached, without gonothecae, SBMNH 347005 (AHF Holotype No. 60).

Paralectotypes.— *Velero III* station A55-39, Panama, Caledonia Bay, 08°53'40"N, 77°40'27"W, reef, 27.iv.1939, no hydroids present, SBMNH 347057.

*Velero III* station 1188-40, USA, California, Los Angeles County, Santa Catalina Island, 5½ miles off south end, 33°15'50"N, 118°13'20"W, 145-150 fm (265-274 m), gravel + rock, 29.ix.1940, one small colony fragment, 1 cm high, unattached, without gonothecae, SBMNH 346618.

*Velero III* station 1269-41, as above for lectotype, ca. 7 colony fragments, to 3 cm high, on sponge and unattached, some with and some without gonothecae, SBMNH 369455.

*Velero III* station 1269-41, as above for lectotype, one polysiphonic colony fragment, 3 cm high, unattached, without gonothecae, SBMNH 346619.

Remarks.— Fraser (1947) described this species in a report on hydroids from the Allan Hancock Caribbean Sea Expedition. His account of the trophosome was based on specimens from *Velero III* station 1269-41, off Anacapa Island, California, while that of

the gonosome was made from Atlantic material collected at *Velero III* station A55-39, Caledonia Bay, Panama, that he believed was the same species.

Several specimens were present in the vial containing the labels "*Velero III* station 1269-41," "*Endothecium paucinodum* Fraser Type" and "AHF Holotype No. 60" (SBMNH 347005). One of these is a large and polysiphonic colony, lacking gonothecae, that most closely resembles the hydroid illustrated in Fraser (1947, pl. 1 fig. 4a). It is selected here as the lectotype and has been returned alone to the vial together with the original labels.

Among other specimens that we found in the vial with the lectotype (SBMNH 347005) were both sterile and fertile colonies, even though Fraser (1947: 2) clearly indicated that the Pacific hydroids of *Endothecium paucinodum* lacked gonothecae. Meanwhile, the vial intended for Panama material of the species, labeled "AHF Hypotype No. 162" (SBMNH 347057), lacks any hydroids and contains a note "hydroid appears to be missing—K. Sellheim 7-9-02." It seems possible that fertile Atlantic specimens have at some time been mixed in with infertile Pacific material. Nevertheless, we have deposited all of these extraneous specimens in a new vial and included them as part of the paralectotype series (SBMNH 369455). Further taxonomic study is warranted to establish whether the Panama hydroids are conspecific with those from California.

Additional paralectotypes include material from Santa Catalina Island, California (SBMNH 346618) and from Anacapa Island, California (SBMNH 346619).

The generic name *Endothecium* Fraser, 1935, an invalid junior homonym of *Endothecium* Koker, 1924 (Anthozoa), has been replaced by *Sagamihydra* (see Hirohito, 1995). However, the genus to which *E. paucinodum* should be assigned is uncertain because of the absence of gonothecae in the lectotype and because of doubts whether fertile material from the Caribbean is the same species. For now we prefer to combine the specific name with the genus name *Halecium*, as *H. paucinodum*, following Cairns et al. (2002). Indeed, some authors (e.g., Bouillon, 1985) have regarded *Endothecium* (= *Sagamihydra*), as congeneric with *Halecium*.

Reported range.— Pacific off southern California (type locality: off Anacapa Island); Caribbean Sea near Aruba (Fraser, 1947, 1948).

Genus *Halecium* Oken, 1815  
*Halecium exiguum* Fraser, 1948

*Halecium exiguum* Fraser, 1948: 185, 222, pl. 25 fig. 9; Schmitt, 1948: xi; Calder et al., 2003: 1206.

Syntype material.— Ecuador, Galápagos Islands, off Bindloe Island, 20 fm (*Velero III* station 311-35). Peru, off Lobos de Afuera Islands, 25-30 fm (Fraser, 1948).

Lectotype.— *Velero III* station 311-35, Ecuador, Galápagos Islands, off Bindloe Island, 00°17'50"N, 90°30'30"W, 20 fm (37 m), rock, 03.xii.1934, one upright and monosiphonic colony, 1 cm high, unattached, without gonothecae, SBMNH 346996 (AHF Holotype No. 61).

Paralectotypes.— *Velero III* station 311-35, as above for lectotype, ca. 8 upright and monosiphonic colonies and fragments, 1.9 cm high, unattached, without gonothecae, SBMNH 346521.

*Velero III* station 311-35, as above for lectotype, ca. 6 upright and monosiphonic colonies and fragments, 1.5 cm high, on bryozoans and unattached, without gonothecae, SBMNH 346522.



*Velero III* station 843-38, Peru, off Lobos de Afuera Islands, 06°53'50"S, 80°43'30"W, 25-30 fm (46-55 m), sand, 14.ii.1938, several upright and monosiphonic colonies, 1.5 cm high, on algae, without gonothecae, SBMNH 346520.

Remarks.— The sample of *Halecium exiguum* from Bindloe Island, Galápagos Islands, labeled "*Halecium exiguum* Fraser Type" and "AHF Holotype No. 61" (SBMNH 346996) contained some six colonies or colony fragments. None of these corresponded well enough with Fraser's (1948) illustrations of the species to be recognizable as the exact specimen he was portraying. We have chosen the colony that we consider the best of these as the lectotype and returned it to the vial. The others have been combined with paralectotype material from the same station (SBMNH 346521). Other paralectotype material is from *Velero III* station 843-38, off Lobos de Afuera Islands, Peru (SBMNH 346520). This sample contained a mix of several hydroid species, including specimens resembling *Halecium exiguum*, growing on algae.

Reported range.— Galápagos Islands (type locality: off Bindloe Island); Pacific off Peru (Fraser, 1948).

*Halecium fasciculatum* Fraser, 1938a

*Halecium fasciculatum* Fraser, 1938a: 9, 42, pl. 10 fig. 45; 1939: 159 et seq.; 1946: 74, 272; 1948: 185, 222; Schmitt, 1948: xi; Arai, 1977: 27; Calder et al., 2003: 1206.

Syntype material.— Ecuador, Galápagos Islands, between Charles and Indefatigable Islands, 60 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.i.1934, one upright, basally polysiphonic colony, 2.5 mm high, unattached, with a gonotheca, SBMNH 346899 (AHF Holotype No. 62).

Paralectotype.— Ecuador, Charles Island, BCPM 976-475-1 (Arai, 1977).

Remarks.— The single hydroid colony catalogued as SBMNH 346899 and labeled "Holotype" and "AHF Holotype No. 62," is designated as the lectotype of the species. This is believed to be the specimen illustrated by Fraser (1938a, pl. 10 fig. 45a). Although the specimen was unattached, a calcareous bryozoan colony was present with the hydroid in the sample.

Reported range.— Galápagos Islands (type locality: off Albemarle Island); Gulf of California (Fraser, 1938a, 1939, 1946, 1948).

*Halecium flexum* Fraser, 1948

*Halecium flexum* Fraser, 1948: 185, 223, pl. 25 fig. 10; Schmitt, 1948: xi.

Syntype material.— Ecuador, Santa Elena Bay, off La Playa, 2-7 fm (*Velero III* station 14-33). Mexico, Gulf of California, Isla Partida, off White Rock, 45 fm (Fraser, 1948).

Lectotype.— *Velero III* station 14-33, Ecuador, Santa Elena Bay, off La Playa, 02°12'30"S, 80°56'35"W, 2-7 fm (4-13 m), sand + rock patches, 20.i.1933, one upright, monosiphonic colony fragment, 9 mm high, unattached, without gonothecae, SBMNH 346997 (AHF Holotype No. 63).

Paralectotypes.— *Velero III* station 14-33, as above for lectotype, four upright, monosiphonic colonies and fragments, to 1.1 cm high, on unknown substrate and unattached, without gonothecae, SBMNH 346525.

*Velero III* station 557-36, Mexico, Gulf of California, Isla Partida, off White Rock, 28°55'30"N, 113°05'35"W, 45 fm (82 m), sand + gravel + sponge, 08.iii.1936, nine upright, monosiphonic and polysiphonic colonies and fragments, to 1 cm high, on other hydroids and unattached, without gonothecae, SBMNH 346526.

Remarks.— Three specimens were found in a vial with the labels "*Halecium flexum* Fraser" "Type" and "AHF Holotype No. 63" from Santa Elena Bay, Ecuador (SBMNH 346997). We have designated the best of these as the lectotype, and combined the other two with those in a sample from the same station (*Velero III* station 14-33, SBMNH 346525). Further study is needed to confirm whether the specimens from *Velero III* station 557-36 from the Gulf of California (SBMNH 346526), are the same species as those from Santa Elena Bay.

Reported range.— Pacific off Ecuador (type locality: Santa Elena Bay); Gulf of California (Fraser, 1948).

#### *Halecium insolens* Fraser, 1938a

*Halecium insolens* Fraser, 1938a: 9, 43, pl. 10 fig. 46; 1938c: 133; 1939: 159 et seq.; 1946: 74, 268; 1948: 185, 223; Schmitt, 1948: xi; Arai, 1977: 27; Ljubenkova, 1980: 50; Cairns et al., 1991: 22; 2002: 20.

Syntype material.— Mexico, Isabel Island, 15-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (27-46 m), sand + nullipores, 05.iii.1934, one colony, <2 cm high, on algae, with female gonothecae, SBMNH 346989 (AHF Paratype No. 203).

Paralectotypes.— *Velero III* station 277-34, as above for lectotype, some eight colonies and fragments, <2 cm high, on algae and sponge, with female gonothecae, SBMNH 346988 (AHF Holotype No. 64).

*Velero III* station 277-34, as above for lectotype, one lot, in ethanol, USNM 49281.

Mexico, Isabel Island, BCPM 976-481-1 (Arai, 1977).

Remarks.— We chose as the lectotype of this species a syntype colony of *Halecium insolens* from Isabel Island, Mexico, labeled "Paratype" and "AHF Paratype No. 203" (SBMNH 346989) because of its superior condition. Specimens from the same station labeled "Holotype" and AHF Holotype No. 64" (SBMNH 346988), are part of the paralectotype series.

Reported range.— Pacific off Mexico (type locality: off Isabel Island), Gulf of California, southern California (Fraser, 1938a, c, 1939, 1946, 1948; Ljubenkova, 1980).

#### *Halecium regulare* Fraser, 1938a

*Halecium regulare* Fraser, 1938a: 9, 43, 44, pl. 10 fig. 47; 1938c: 133; 1939: 159 et seq.; 1946: 74, 269; 1948: 185, 225, pl. 25 fig. 11; Schmitt, 1948: xi; Arai, 1977: 27.

Syntype material.— Panama, Jicarón Island, 15 fm. Mexico, north of White Friars Islands, 5-10 fm; east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 241-34, Panama, off Jicarita Island, 07°13'05"N, 81°48'30"W, 15 fm (27 m), rough rock, 20.ii.1934, one exceedingly delicate upright monosiphonic colony, 4 mm high, on calcareous tube of a polychaete, without gonothecae, SBMNH 346998 (AHF Holotype No. 65).

Paralectotypes.— *Velero III* station 241-34 (two vials), as above for lectotype, ca. 5 upright, monosiphonic colonies and fragments, to 6 mm high, on calcareous fragments and unattached, without gonothecae, SBMNH 346999.

*Velero III* station 241-34, as above for lectotype, one lot, in ethanol, USNM 49278.

Panama, Jicarita Island, BCPM 976-493-1 (Arai, 1977).

Remarks.— The lectotype specimen was chosen from several colonies in a sample, labeled "Holotype" and "AHF Holotype No. 65" (SBMNH 346998), from *Velero III* station 241-34, off Jicarita Island, Mexico. In our opinion, this specimen showed the colony form better than other specimens in the sample. The latter hydroids were combined with material from the same station, labeled "Paratype" and "AHF Paratype No. 204" (SBMNH 346999), as part of the paralectotype series.

A vial from *Velero III* station 557-36, off Isla Partida, Gulf of California (SBMNH 347000) contained labels marked "gonosome?" and "AHF Hypotype 66," but the two colonies present are not part of the syntype series and are not paralectotypes. No gonosomes were found on these colonies.

Reported range.— Pacific off Panama and Mexico (type locality: off Jicarita Island); Gulf of California (Fraser, 1938a, c, 1939, 1946, 1948).

#### *Halecium tenue* Fraser, 1938c

*Halecium tenue* Fraser, 1938c: 133, 139, pl. 20 fig. 6; 1939: 159; 1946: 74, 267; 1948: 186, 225; Schmitt, 1948: xi; Arai, 1977: 27; Calder et al., 2003: 1207.

Syntype material.— Ecuador, Galápagos Islands, off Daphne Minor Island, 70-80 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 792-38, Ecuador, Galápagos Islands, off Daphne Minor Island, 00°24'30"S, 90°22'40"W, 70-80 fm (128-146 m), mud, 20.i.1938, one upright branched colony, 1.1 cm high, unattached, with gonothecae, SBMNH 347001 (AHF Holotype No. 67).

Paralectotypes.— *Velero III* station 792-38, as above for lectotype, six upright colonies, to 7 mm high, on sponge, worm tubes, other hydroids, and unattached, with gonothecae, SBMNH 347002.

*Velero III* station 792-38, as above for lectotype, one lot, in ethanol, USNM 49282.

Ecuador, Daphne Minor Island, BCPM 976-500-1 (Arai, 1977).

Remarks.— The lectotype colony was selected from six specimens collected at *Velero III* station 792-38 (Daphne Minor Island), in a vial labeled "Holotype" and "AHF Holotype No. 67" (SBMNH 347001). The other five colonies/fragments were combined with a specimen from the same station (SBMNH 347002) in a vial labeled "Paratype" and "AHF Paratype No. 205."

Hirohito (1995) regarded *Halecium tenue* as conspecific with *H. tenellum* Hincks, 1861.

Reported range.— Galápagos Islands (type locality: off Daphne Minor Island), Gulf of California (Fraser, 1938c, 1939, 1946, 1948).

*Halecium tortum* Fraser, 1938a

*Halecium tortum* Fraser, 1938a: 9, 44, pl. 10 fig. 48; 1938c: 133; 1939: 159 et seq.; 1946: 74, 273; 1948: 186; Schmitt, 1948: xi; Arai, 1977: 27.

Syntype material.— Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 275-34, Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, one erect and polysiphonic colony, 1.1 cm high, unattached, without gonothecae, SBMNH 347003 (AHF Holotype No. 68).

Paralectotype.— Mexico, Tenacatita Bay, BCPM 976-501-1 (Arai, 1977).

Remarks.— The lectotype is a specimen from *Velero III* station 275-34, Tenacatita Bay, Mexico (SBMNH 347003), in a vial labeled "Holotype" and "AHF Holotype No. 68." Paralectotype material from the type locality is in the Royal British Columbia Museum (BCPM 976-501-1). A sample from Octavia Bay, Colombia (*Velero III* station 429-35, SBMNH 347004), in a vial labeled "Paratype" and "AHF Paratype No. 206," is not part of the syntype series and is not a paralectotype.

Reported range.— Pacific off Colombia and Mexico (type locality: Tenacatita Bay) (Fraser, 1938a, c, 1939, 1946, 1948).

*Halecium vagans* Fraser, 1938a

*Halecium vagans* Fraser, 1938a: 9, 44, pl. 10 fig. 49; 1939: 159 et seq.; 1946: 74, 266; 1948: 186, 225; Schmitt, 1948: xi; Arai, 1977: 27; Ljubenkov, 1980: 50; Cairns et al., 1991: 23; 2002: 20.

Syntype material.— Ecuador, south of La Plata Island, 45-55 fm; San Francisco Bay, 3-8 fm. Panama, Pacora Island, 15-25 fm; Secas Islands, 25 fm. Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 212-34, Ecuador, off La Plata Island, 01°15'S, 81°04'15"W, 45-55 fm (82-101 m), rock + mud, 10.ii.1934, one erect and monosiphonic colony, 1.6 cm high, unattached, without gonothecae, SBMNH 345389 (AHF Holotype No. 69).

Paralectotypes.— *Velero III* station 212-34, as above for lectotype, 10 erect and monosiphonic colonies, 1 cm high, unattached, without gonothecae, SBMNH 345390.

*Velero III* station 212-34, as above for lectotype, ca. six erect and monosiphonic colonies, 1.7 cm high, on pebble and unattached, without gonothecae, SBMNH 345391.

*Velero III* station 212-34, as above for lectotype, one lot, in ethanol, USNM 49284.

*Velero III* station 215-34, Ecuador, San Francisco Bay, 00°38'40"N, 80°05'40"W, 2 fm (4 m), mud + debris, 11.ii.1934, one small erect colony, 0.5 cm high, on calcareous fragment, without gonothecae, SBMNH 345392.

*Velero III* station 245-34, Panama, off Bahia Honda, off Pacora Island, 07°44'19"N, 81°35'23"W, 15-25 fm (27-46 m), rock + shell + nullipores, 21.ii.1934, three erect and monosiphonic colonies, 0.8 cm high, on octocoral and worm tubes, with gonothecae, SBMNH 345393.

*Velero III* station 250-34, Panama, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, ca. four erect and monosiphonic or slightly polysiphonic

colonies or fragments, 1.2 cm high, on worm tubes and unattached, without gonothecae, SBMNH 345394.

*Velero III* station 275-34, Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, ca. three erect and monosiphonic or slightly polysiphonic colonies, 1.1 cm high, unattached, without gonothecae, SBMNH 345395.

Ecuador, La Plata Island, BCPM 976-502-1 (Arai, 1977).

Remarks.— As lectotype of *Halecium vagans* we chose a colony from *Velero III* station 212-34 (SBMNH 345389) from among hydroids in a vial labeled "Holotype" and "AHF Holotype No. 69." The remaining seven fragments of that sample were placed together with those in a vial (SBMNH 345390) labeled "Paratype" and "AHF Paratype 207" from the same station.

Other hydrozoan taxa conspicuous in the paralectotype sample from *Velero III* station 212-34, off La Plata Island (SBMNH 345391), included eudendriids and campanulariids, while halopteridids were prevalent in the sample from *Velero III* station 245-34, off Pacora Island, Panama (SBMNH 345393). Two quite different species of haleciids were present in the sample from *Velero III* station 275-34, Tenacatita Bay, Mexico (SBMNH 345395).

Reported range.— Pacific off Ecuador (type locality: off La Plata Island), Panama, Mexico and southern California (Fraser, 1938a, 1939, 1946, 1948; Ljubenkov, 1980).

#### Genus *Ophiodissa* Stechow, 1919

##### *Ophiodissa alternata* Fraser, 1938c

*Ophiodissa alternata* Fraser, 1938c: 133, 139, 140, pl. 20 fig. 7; 1939: 159; 1944b: 37; 1946: 75, 282; 1948: 186, 226; Arai, 1977: 28.

*Diplocyathus alternata*: Leloup, 1939: 5.

*Hydrodendron alternatum*: Rees and Vervoort, 1987: 22; Cairns et al., 1991: 23; 2002: 20.

Syntype material.— Panama, Secas Islands, 14 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 450-35, Panama, Secas Islands, 07°57'N, 82°01'35"W, 14 fm (26 m), shell + nullipores, 05.ii.1935, one erect colony with monosiphonic or slightly polysiphonic cormoids, 0.5 cm high, on aglaopheniid hydroid, with gonothecae, SBMNH 346900 (AHF Holotype No. 70).

Paralectotypes.— *Velero III* station 450-35, as above for lectotype, five erect monosiphonic or slightly polysiphonic colonies or fragments, 0.9 cm high, on aglaopheniid hydroid or unattached, with gonothecae, SBMNH 346990.

*Velero III* station 450-35, as above for lectotype, two tiny colonies, 0.2 cm high, on unknown substrate, without gonothecae, SBMNH 346623.

*Velero III* station 450-35, as above for lectotype, one lot, in ethanol, USNM 49279.

Panama, Secas Islands, BCPM 976-511-1 (Arai, 1977).

Remarks.— A colony labeled "Holotype" and "AHF Holotype No. 70" from *Velero III* station 450-35, Secas Islands, Panama (SBMNH 346900), is designated as the lectotype. Paralectotypes include samples of material from the same location (SBMNH 346990, SBMNH 346623, USNM 49279, BCPM 976-511-1), the first of these three containing the labels "Paratype" and "AHF Paratype No. 208."

Rees and Vervoort (1987) revised the genus *Hydrodendron* Hincks, 1874 and included *Ophiodissa* Stechow, 1919 as a synonym.

Reported range.— Pacific off Panama (type locality: Secas Islands) and Baja California (Fraser, 1938c, 1939, 1946, 1948).

*Ophiodissa expansa* Fraser, 1948

*Ophiodissa expansa* Fraser, 1948: 186, 227, pl. 25 fig. 12; Ljubenkov, 1980: 50.

*Hydrodendron expansum*: Rees and Vervoort, 1987: 22; Cairns et al., 1991: 23; 2002: 20.

Syntype material.— USA, California, 5 miles—152° from San Pedro breakwater, 17-19 fm (*Velero III* station 1232-41); 2 miles northwest of buoy, Cortes Bank, 42-45 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1232-41, USA, California, 5 miles—152° from San Pedro breakwater, 33°38'15"N, 118°12'15"W, 17-19 fm (31-35 m), coarse sand + shell + clay, 15.ii.1941, one erect colony, 1.5 cm high, on calcareous fragment, with gonothecae, SBMNH 346991 (AHF Holotype No. 71).

Paralectotypes.— *Velero III* station 1232-41, (two vials), as above for lectotype, 11 erect colonies, to 1 cm high, on calcareous fragments and unattached, with gonothecae, SBMNH 346626.

*Velero III* station 1232-41, as above for lectotype, one lot, in ethanol, USNM 49277.

*Velero III* station 1336-41, USA, California, Cortes Bank, 2 miles northwest of buoy, 32°27'45"N, 119°09'15"W, 42-45 fm (77-82 m), fine sand + broken rock, 09.vi.1941, no specimen found in sample, SBMNH 346627.

Remarks.— The lectotype specimen is from *Velero III* station 1232-41, off the San Pedro breakwater, California (SBMNH 346991). This sample contained the labels "*Ophiodissa expansa* Fraser Type" and "AHF Holotype No. 71."

One of the vials with paralectotypes (SBMNH 346626) contains a specimen of *Ophiodissa* having a different morphotype, being especially distinct in the shape of the gonothecae. These are spade-shaped and laterally flattened, and occur on the hydrocaulus and branches. This hydroid merits additional study. Syntheciids and a plumulariid were also present in this vial.

Reported range.— Southern California (type locality: off San Pedro) (Fraser, 1948; Ljubenkov, 1980).

*Ophiodissa laxa* Fraser, 1938a

*Ophiodissa laxa* Fraser, 1938a: 9, 45, pl. 10 fig. 50; 1938c: 133; 1944b: 37; 1946: 75, 281; 1948: 186, 227; Arai, 1977: 28.

*Diplocyathus laxa*: Leloup, 1939: 5.

*Hydrodendron laxum*: Rees and Vervoort, 1987: 22.

Syntype material.— Panama, Secas Islands, 15 and 25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 250-34, Panama, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, one upright monosiphonic branched cormoid of a colony, 1.1 cm high, unattached, without gonothecae, SBMNH 346992 (AHF Holotype No. 72).



Paralectotypes.— *Velero III* station 250-34, as above for lectotype, 15 upright monosiphonic or slightly polysiphonic colonies or fragments, to 1.2 cm high, unattached or on a small sponge fragment, without gonothecae, SBMNH 346993.

*Velero III* station 250-34, as above for lectotype, one lot, in ethanol, USNM 49280.

Panama, Secas Islands, BCPM 976-513-1, BCPM 976-513-2, BCPM 976-513-3 (Arai, 1977).

Remarks.— As lectotype of *Ophiodissa laxa* we chose the single colony we considered the best eligible representative of the species in the collection, a detached cormoid found in a sample from *Velero III* station 250-34, Secas Islands, Panama (SBMNH 346992) labeled “Holotype” and “AHF Holotype No. 72.” Eleven other cormoids from this vial were combined with four colony fragments from the same station (*Velero III* station 250-34, SBMNH 346993) in a vial labeled “Paratype” and “AHF Paratype No. 209,” as paralectotypes.

Reported range.— Pacific off Panama (type locality: Secas Islands) and Mexico (Fraser, 1938a, c, 1946, 1948).

#### *Ophiodissa negligens* Fraser, 1938a

*Ophiodissa negligens* Fraser, 1938a: 9, 46, pl. 11 fig. 51; 1944b: 37; 1946: 75, 281; 1948: 186; Arai, 1977: 28.

*Diplocyathus negligens*: Leloup, 1939: 5.

*Hydrodendron negligens*: Rees and Vervoort, 1987: 22.

Syntype material.— Colombia, Port Utria, 40 and 15 fm, and at low tide on coral (Fraser, 1938a).

Lectotype.— *Velero III* station 236-34, Colombia, off Port Utria, 06°00'15"N, 77°23'10"W, 40 fm (73 m), shell + dead leaves, 15.ii.1934, one small colony, 3 mm high, detached but apparently on sponge originally, without gonothecae, SBMNH 346994 (AHF Holotype No. 73).

Paralectotypes.— *Velero III* station 236-34, as above for lectotype, two fragments of a colony, to 3 mm high, on sponge and unattached, without gonothecae, SBMNH 369456.

*Velero III* station 238-34, Colombia, off Port Utria, 05°59'25"N, 77°21'50"W, 20 fm (37 m), sand + shell + cake urchins, 15.ii.1934, ca. five small, erect colonies, to 4 mm high, on calcareous fragments and sponges, without gonothecae, SBMNH 346630.

*Velero III* station 239-34, Colombia, Port Utria, 05°59'40"N, 77°21'30"W, shore, reef inside outer island, 15.ii.1934, three tiny, erect colonies, <2 mm high, on calcareous fragments and algae, with one developing gonotheca, SBMNH 346995.

Colombia, Port Utria, BCPM 976-514-1 (Arai, 1977).

Remarks.— The lectotype of *Ophiodissa negligens* selected here is from *Velero III* station 236-34 off Port Utria, Colombia (SBMNH 346994), in a sample labeled “Holotype” and “AHF Holotype No. 73.” This specimen was the one illustrated by Fraser (1938a, pl. 11 fig. 51a) in the original description of the species. Several detached fragments in the vial with this specimen, although likely part of the same colony, were removed to a new vial as part of the paralectotype material (SBMNH 369456).

One of the colonies in a paralectotype sample (SBMNH 346995) labeled “AHF Paratype No. 210” bore a developing gonotheca. Fraser (1938a) reported not observing the gonosome of this species.

Reported range.— Pacific off Colombia (type locality: off Port Utria) (Fraser, 1938a, 1946, 1948).

Genus *Scandia* Fraser, 1912  
*Scandia corrugata* Fraser, 1938a

*Scandia corrugata* Fraser, 1938a: 9, 46, pl. 11 fig. 52; 1938b: 110; 1938c: 133; 1939: 159 et seq.; 1946: 58, 192; 1948: 186, 228; Schmitt, 1948: xi; Arai, 1977: 29; Hirohito, 1983: 6, 22; Boero et al., 1997: 31-32.

*Hebella corrugata*: Cairns et al., 1991: 24; 2002: 56; Boero et al., 1997: 31-32.

Syntype material.— Mexico, White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 264-34, Mexico, south of White Friars Islands, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, one stolonal colony, <1 mm high, on hydrocaulus of the hydroid *Hincksella*, with gonothecae, SBMNH 347010 (AHF Holotype No. 74).

Paralectotypes.— *Velero III* station 264-34, as above for lectotype, one stolonal colony, <1 mm high, on hydrocaulus of the hydroid *Hincksella*, without gonothecae, SBMNH 347011.

*Velero III* station 275-34 (two vials), Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, four colony fragments, >1 mm high, on hydrocauli of the hydroid *Hincksella*, without gonothecae, SBMNH 346691.

Mexico, White Friars Islands, BCPM 976-958-1 (Arai, 1977).

Remarks.— The colony of *Scandia corrugata* labeled "Holotype" and "AHF Holotype No. 74" (SBMNH 347010) bore gonothecae and was chosen as the lectotype of the species. Specimens labeled "Paratype" and "AHF Paratype No. 211" from the same station are in poor condition and are part of the paralectotype material (SBMNH 347011). Also included in the sample with those paralectotypes were two species of *Hincksella*. A slide (RMNH slide 2633) of this species from *Velero III* station 450-35, Secas Islands, Panama, on hydrothecae of *Thyroscyphus fruticosus* (Esper, 1793), does not belong to the paralectotype series.

The corrugations on the walls of the hydrothecae are distinct but not as exaggerated as indicated in the illustrations of Fraser (1938a, pl. 11 fig. 52).

This species was assigned to the genus *Hebella* by Cairns et al. (1991). Later, Cairns et al. (2002: 56) suggested that a new genus may be warranted for the species given the unique morphology of its gonothecae. Secondary homonymy exists between *Scandia corrugata* Fraser, 1938a and *Campanularia corrugata* Thornely, 1904, when these species are combined in the same genus (whether *Hebella* or *Scandia* or possibly *Hebellopsis*).

Reported range.— Pacific off Colombia, Panama, and Mexico (type locality: White Friars Islands), including the Gulf of California (Fraser, 1938a, b, c, 1939, 1946, 1948).

*Scandia expansa* Fraser, 1938c

?*Scandia expansa* Fraser, 1938c: 133, 140, pl. 20 fig. 8; 1939: 159 et seq.; 1946: 58, 191; 1948: 186, 228; Schmitt, 1948: xi; Arai, 1977: 29; Calder et al., 2003: 1209.

*Hebellopsis expansa*: Cairns et al., 1991: 22; 2002: 22; Calder et al., 2003: 1209.

*Hebella expansa*: Boero et al., 1997: 37; Calder et al., 2003: 1209.

Syntype material.— Colombia, north of Gorgona Island, 10-20 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 851-38, Colombia, north of Gorgona Island, 03°01'25"N, 78°10'W, 10-20 fm (18-36 m), mud + rock, 24.ii.1938, one stolonial colony, <2 mm high, on hydrocaulus of the hydroid *Nemertesia*, without gonothecae, SBMNH 347012 (AHF Holotype No. 75).

Paralectotypes.— *Velero III* station 851-38, as above for lectotype, one stolonial colony, <2 mm high, on hydrocaulus of the hydroid *Nemertesia*, without gonothecae, SBMNH 347013.

Colombia, Gorgona Island, BCPM 976-959-1 (Arai, 1977).

Remarks.— All of the syntype material examined was from a single collection (*Velero III* station 851-38, north of Gorgona Island, Colombia) and in rather poor condition. The lectotype (SBMNH 347012), labeled "Holotype" and "AHF Holotype No. 75," was better than the paralectotype (SBMNH 347013), labeled "Paratype" and AHF Paratype No. 212."

This species, with a diaphragm present at the base of the hydrotheca, was assigned to the genus *Hebellopsis* by Cairns et al. (1991, 2002) and to *Hebella* by Boero et al. (1997).

Reported range.— Galápagos Islands, Pacific off Colombia (type locality: north of Gorgona Island), Mexico, and southern California (Fraser, 1938c, 1939, 1946, 1948).

#### Genus *Lafoea* Lamouroux, 1821

*Lafoea intermedia* Fraser, 1938a

*Lafoea intermedia* Fraser, 1938a: 9, 47, 48, pl. 11 fig. 53; 1938c: 134; 1939: 160 et seq.; 1946: 57, 178; 1948: 186, 231; Schmitt, 1948: xi; Arai, 1977: 27; Ljubenkova, 1980: 48; Calder et al., 2003: 1209.

Syntype material.— Ecuador, Galápagos Islands, north of Wenman Island, 100-150 fm; James Island, James Bay, 50-70 fm; Albemarle Island, Cartago Bay, 32 fm; between Charles and Indefatigable Islands, 60 fm. Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 183-34, Ecuador, Galápagos Islands, between Albany and James Islands, 00°10'45"S, 90°52'08"W, 50-70 fm (91-128 m), rock + shell, 24.i.1934, 20 mm long stem fragment with some branches, one of which bears a small coppinia, SBMNH 347318 (registered as syntype) (AHF Holotype No. 77).

Paralectotypes.— *Velero III* station 143-34, Ecuador, Galápagos Islands, off Wenman Island, 01°23'10"N, 91°48'45"W, 100-150 fm (183-274 m), coral + nullipores + worm tubes, 11.i.1934, remains of one colony, 80 mm high, partly covered by Bryozoa, no coppiniae, SBMNH 346835 (registered as voucher).

*Velero III* station 182-34, Ecuador, Galápagos Islands, James Island, off James Bay, 00°10'56"N, 90°52'14"W, 30 fm (55 m), coarse sand, 24.i.1934, one well preserved colony, 45 mm high, no coppiniae, SBMNH 346836 (registered as voucher).

*Velero III* station 183-34, as above for lectotype, tangled mass of colonies and branches, some attached to worm tube, several coppinia present, SBMNH 347319 (registered as syntype) (AHF Paratype No. 214).

*Velero III* station 183-34, as above for lectotype, one lot, in ethanol, USNM 44250.

*Velero III* station 183-34, as above for lectotype, two slides, RMNH 2640.

*Velero III* station 186-34, Ecuador, Galápagos Archipelago, Albemarle Island, Cartago

Bay, 00°34'12"S, 90°52'31"W, 32 fm (59 m), coarse sand + nullipores, 25.i.1934, three specimens, one colony 20 mm high and two fragments, no coppiniae, SBMNH 346838 (registered as voucher).

*Velero III* station 190-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 00°55'S, 90°30'W, 58-60 fm (106-110 m), sand + nullipores, 26.i.1934, three specimens, a tangled mass of stems, branches, and fragments, some coppiniae present, SBMNH 346839 (registered as voucher; this may not be a paralectotype as the locality is not specifically mentioned by Fraser (1938a) in the 'Distribution' paragraph).

Ecuador, Galápagos Islands, James Bay, BCPM 976-331-1 (Arai, 1977).

Remarks.— In the tube with the "AHF Holotype" label there were initially two more or less identical stem fragments of the sterile stem, and a detached coppinia. One was placed with the paralectotype from the same station. The lectotype is in good condition; the coppinia agrees with Fraser's (1938a) account and does not appear to differ from that observed in *Lafaea dumosa* (Fleming, 1820). The characters of this species are as follows: stem and principal branches polysiphonic, fairly weak, unable to give support when taken out of fluid. Hydrotheca slightly asymmetrical, adcauline wall slightly convex, abcauline wall almost straight. Hydrothecal pedicel with one or two twists. Coppinia ovoid, composed of gonothecae that are polygonal to rounded in cross section, distally narrowing into a short neck. Coppinia traversed by many elongated hydrothecae ('hydrothecal tubes').

This species was considered by Fraser (1938a) to be intermediate between *Lafaea gracillima* (Alder, 1857) and *L. fruticosa* (M. Sars, 1851), species that currently are considered by some to fall in the synonymy of *Lafaea dumosa* (Fleming, 1820). Possible differences between the gonosomes of *L. intermedia* and these species should be checked in future research.

Reported range.— Galápagos Islands (type locality: between Albany and James Islands), Pacific off Baja California; Gulf of California; southern California (Fraser, 1938a, c, 1939, 1946, 1948; Ljubenkov, 1980).

#### *Lafaea regia* Fraser, 1948

*Lafaea regia* Fraser, 1948: 231, pl. 26 fig. 13; Schmitt, 1948: xii; Ljubenkov, 1980: 48.

Syntype material.— USA, California, 1½ miles west-northwest of Santa Barbara Island, 70 fm (*Velero III* station 983-39); 6 miles southeast of Catalina Island, 150-155 fm; 2½ miles southeast of Seal Rocks, 87-90 fm (Fraser, 1948).

Lectotype.— *Velero III* station 983-39, USA, California, Santa Barbara County, 1½ miles north-northwest of Santa Barbara Island, 33°43'30"N, 119°09'20"W, 70 fm (128 m), sponges + boulders, 29.v.1939, one colony fragment, 4 cm high, without coppiniae, SBMNH 347320 (registered as syntype) (AHF Holotype No. 78).

Paralectotypes.— *Velero III* station 1188-40, USA, California, Los Angeles County, Santa Catalina Island, 5½ miles off southeast end, 33°15'50"N, 118°13'20"W, 145-150 fm (265-274 m), gravel + rock, 29.ix.1940, one specimen, SBMNH 346857 (registered as voucher).

*Velero III* station 1429-41, USA, California, Los Angeles County, Santa Catalina Island, 2½ miles southeast of Seal Rocks, 33°17'20"N, 118°15'35"W, 87-95 fm (159-174 m),

rock + sponge + urchin + gorgonians + lumpy grey sand + hermits, 25.x.1941, eight specimens and some fragments, SBMNH 346858 (registered as voucher).

*Velero III* station 1429-41, as above, three slides, RMNH 2636.

Remarks.— According to Fraser (1948), this species differs in the size of the hydrothecae, that are said to be much larger than those of *Lafoea fruticosa* (with which it was directly compared). The stem is composed of fewer tubes than is usual in *Lafoea dumosa*, the number at the base of the stem in the type is five or six, gradually diminishing as branches are split off. Fraser mentioned that the branches are mainly on one side of the stem, but that can not be considered to represent a taxonomically meaningful character. The hydrothecae are directed mainly towards the front of the colony, though a few are facing backwards. The rim of the hydrotheca is slightly flared and may be duplicated. No coppiniae have been described. Fraser (1948) referred to this hydroid as “the queen of American species of *Lafoea*.” His description was based on a 4 cm high fragment, evidently the colony from *Velero III* station 983-39, here designated lectotype, which is exactly as in Fraser’s figure (1948, pl. 26 fig. 13a). As far as the hydrothecal size is concerned, the inspection of the paralectotypes shows that that size is varied in these specimens and some of the stems in the sample from *Velero III* station 1429-41 have branches on both sides. We believe that the hydrothecal size falls within the latitude of variability observed in *Lafoea dumosa* (Fleming, 1820) and we doubt the reliability of the number of axial tubes as a diagnostic character.

Reported range.— Pacific off southern California (type locality: off Santa Barbara Island) (Fraser, 1948; Ljubenkov, 1980).

Genus *Eucryptolaria* Fraser, 1938c

*Eucryptolaria pinnata* Fraser, 1938c

*Eucryptolaria pinnata* Fraser, 1938c: 134, 140, pl. 20 fig. 9; Fraser, 1943a: 78, 90, pl. 17 fig. 6; 1944a: 214, pl. 43 fig. 195; 1944b: 37; 1946: 53, 175; 1948: 186; Deevey, 1954: 270; Vervoort, 1968: 100; Arai, 1977: 26; Cairns et al., 1991: 24; 2002: 56; Calder et al., 2003: 1209.

*Cryptolaria pinnata*: Rees and Vervoort, 1987: 50-51; Calder et al., 2003: 1209.

Syntype material.— Ecuador, Galápagos Islands, off Daphne Minor Island, 70-80 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 792-38, Ecuador, Galápagos Islands, off Daphne Minor Island, 00°24'30"N, 90°22'40"W, 70-80 fm (128-146 m), mud, 20.i.1938, 32 mm high colony, SBMNH 347317 (registered as syntype) (AHF Holotype No. 76).

Paralectotypes.— *Velero III* station 792-38, as above for lectotype, one lot, in ethanol, USNM 44249.

*Velero III* station 792-38, as above for lectotype, BCPM 976-318-1 (Arai, 1977).

Remarks.— Only one colony is left of the syntypes at the Santa Barbara Museum of Natural History (SBMNH 347317), and it is designated as the lectotype of *Eucryptolaria pinnata* Fraser, 1938. In the bottle containing the lectotype is a tube with a label reading “hydroid and vial labels not found. 5/17/02. K. Sellheim.” The tube also contains a blue bead. A hydroid from the same station (*Velero III* station 792-38), originally labeled “Paratype No. 213,” has become lost (see Rees and Vervoort, 1987: 51); the jar could not be traced. Paralectotype specimens exist at the NMNH (USNM 44249) and the Royal British Columbia Museum (BCPM 976-318-1).

The principal characteristics of this species, according to Fraser (1938c), are: stem erect, stiff, polysiphonic, composed of many tubules that diminish in number with each set of side branches that are sub-opposite in arrangement and in one plane with the hydrothecae. Hydrotheca gracefully curved, adnate for about half the adcauline wall, adnate part becoming gradually covered by the secondary tubules; arrangement of hydrothecae alternate, aperture parallel to stem or branch, rim circular, scarcely everted. Nematothecae numerous, inserting on the secondary tubules and without any apparent regularity, distributed over the colony. Gonosome unknown.

Fraser used this species as the type of his new genus *Eucryptolaria* Fraser, 1938; there is nothing, however, to distinguish that genus from *Cryptolaria* Busk, 1857. *Eucryptolaria pinnata* Fraser, 1938, after inspection of the lectotype, should be considered a junior subjective synonym of *Cryptolaria pectinata* (Allman, 1888).

Reported range.— Galápagos Islands (type locality: off Daphne Minor Island) (Fraser, 1938c, 1943a, 1946, 1948); also reported from the West Indies (Fraser, 1944a; 1946, Deevey, 1954).

Genus *Lictorella* Allman, 1888  
*Lictorella adhaerens* Fraser, 1938a

*Lictorella adhaerens* Fraser, 1938a: 9, 48, pl. 11 fig. 54; 1939: 160 et seq.; 1946: 54, 187; 1948: 186, 232; Schmitt, 1948: xii; Arai, 1977: 27; Ljubenkov, 1980: 48; Calder et al., 2003: 1209.

*Cryptolaria adhaerens*: Rees and Vervoort, 1987: 50, 83.

*Zygophylax adhaerens*: Fraser, 1944b: 37; Cairns et al., 1991: 24; 2002: 23; Calder et al., 2003: 1209; Vervoort and Watson, 2003: 53.

Syntype material.— Ecuador, Galápagos Islands, between Charles and Indefatigable Islands, 120 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 192-34, Ecuador, Galápagos Islands, east of south end of Albemarle Island, 01°04'S, 90°39'W, 120 fm (219 m), rough rock, 27.i.1934, completely fragmented colony with a few stem parts, a complete hydrocladium and a top part several mm high, no coppiniae, SBMNH 347321 (registered as syntype) (AHF Holotype No. 79).

Paralectotype.— Ecuador, Galápagos Islands, Charles Island, BCPM 976-333-1 (Arai, 1977).

Remarks.— Of the syntypes, the remnants of one colony from *Velero III* station 192-34 exist at the Santa Barbara Museum of Natural History. It is designated here as the lectotype of *Lictorella adhaerens* Fraser, 1938. The only hydrocladium present is in good condition and shows the structure and arrangement of the hydrothecae. The specimen at the Royal British Columbia Museum (BCPM 976-333-1) is designated as a paralectotype.

Fraser (1938a) ascribed the following characters to this species: stem rigid and polysiphonic, up to 50 mm high; individual tubes branching off as hydrocladia (higher parts of the stem) or as branches (in lower parts of the stem, initially as hydrocladia); branches and hydrocladia sub-opposite. Hydrothecae curved, more or less tubular, narrowing proximally into a short pedicel with which they are inserted on a slight apophysis of the supporting tube. Hydrothecae free from supporting tube on the



hydrocladia, covered by secondary tubes on stem and branches. Nematothecae present on secondary tubes and on apophysis near insertion of hydrothecal pedicel. Coppinia unknown.

This species was previously referred to *Cryptolaria* by Rees and Vervoort (1987: 50, 83). Material referred to *Lictorella adhaerens* by Fraser (1948: 232), collected at *Velero III* station 1269-41, 1 mile west-northwest of Anacapa Island, California, 16 March 1941, 41-43 fm (75-79 m) (RMNH slide 2634), was studied by Vervoort and Watson (2003: 53); this is plainly a species of *Zygophylax* Quelch, 1885, in which genus it should stand as *Zygophylax adhaerens* (Fraser, 1938a). This slide (RMNH 2634) does not belong to the lectotype or paralectotype series.

Reported range.— Galápagos Islands (type locality: off Albemarle Island), Pacific off Baja California and southern California, Gulf of California (Fraser, 1938a, 1939, 1946, 1948; Vervoort and Watson, 2003).

*Lictorella reflexa* Fraser, 1948

*Lictorella reflexa* Fraser, 1948: 186, 233, pl. 26 fig. 14; Schmitt, 1948: xii; Ljubenkov, 1980: 48.

*Zygophylax reflexa*: Rees and Vervoort, 1987: 83.

*Zygophylax reflexus*: Cairns et al., 1991: 24; Cairns et al., 2002: 23, 57; Vervoort and Watson, 2003: 69.

Syntype material.— Mexico, off Cedros Island, Ranger Bank, 78-83 fm (*Velero III* station 1246-41); off Cape San Lucas, San Jaime Bank, 120 fm; Gulf of California, north of Isla Partida, 46-75 fm; off San Pedro Nolasco Island, 55-57 fm. USA, California, Santa Rosa Island, 13 miles SSE of East Point, 71-75 fm; 10¾ miles west of Point Dume, 47-48 fm; north of Santa Barbara Island, 37-40 fm; Santa Catalina Island, 6¼ miles southeast of Long Point, 46 fm; 4 miles east of Church Rock, 106-110 fm; 1 mile south of Ben Weston Point, 45-49 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1246-41, Mexico, Baja California Norte, off Cedros Island, Ranger Bank, 28°33'44"N, 115°30'00"W, 78-83 fm (143-152 m), coral + loose rock + pebbles + shell, 25.ii.1941, one colony, 48 mm high, one branch, coppiniae at base of stem, SBMNH 347322 (registered as syntype) (AHF Holotype No. 80).

Paralectotypes.— *Velero III* station 619-37, Mexico, Baja California Sur, Off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 120 fm (219 m), granite rock + coralline + sponge, 03.iii.1937, 1 colony, 28 mm high, and 2 fragments, dirty material with only a few hydrothecae left, SBMNH 346887 (registered as voucher; probably same species as lectotype).

*Velero III* station 1081-40, Mexico, Baja California Norte, Gulf of California, north of Isla Partida, 28°56'00"N, 113°02'45"W, 46-76 fm (84-139 m), coralline + rock, 05.ii.1940, three colonies, up to 55 mm high, no coppiniae, SBMNH 346888 (registered as voucher).

*Velero III* station 1085-40, Mexico, Sonora, Gulf of California, off San Pedro Nolasco Island, 27°58'25"N, 111°23'35"W; 55-57 fm (101-104 m), rock, 06.ii.1940, one specimen, 35 mm high, no coppiniae, SBMNH 346889 (registered as voucher).

*Velero III* station 1177-40, USA, California, Santa Barbara County, north of Santa Barbara Island, 33°30'58"N, 119°00'50"W, 37-40 fm (68-73 m), grey sand, 09.ix.1940, five complete colonies and some fragments, one with coppiniae, SBMNH 346891 (registered as voucher).

*Velero III* station 1276-41, USA, California, Los Angeles County, 10<sup>3</sup>/<sub>4</sub> miles west of Point Dume, 34°00'20"N, 119°01'20"W, 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, three colonies, between 15 and 35 mm, and a fragment, no coppiniae, SBMNH 346892 (registered as voucher).

*Velero III* station 1316-41, USA, California, Los Angeles County, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 33°20'55"N, 118°30'25"W, 45-49 fm (82-90 m); mud + sand + gravel, 17.v.1941, four complete colonies and several fragments, no coppiniae, SBMNH 346894 (registered as voucher).

*Velero III* station 1355-41, USA, California, Los Angeles County, Santa Catalina Island, 4 miles east of Church Rock, 33°18'30"N, 118°15'00"W; 106-110 fm (194-201 m), grey sand, 12.vi.1941, 14 mm long stem fragment without hydrothecae, unidentifiable, SBMNH 346895 (registered as voucher).

Remarks.— The lectotype is evidently the same specimen figured by Fraser (1948: pl. 26 fig. 14b). This is a distinct species of *Zygophylax* Quelch, 1885 that should stand as *Zygophylax reflexus* (Fraser, 1948) (cf. Vervoort and Watson, 2003: 69). A slide (RMNH 2638) from *Velero III* station 1385-41, south-southeast of East Point, Santa Rosa Island, does not belong to the lectotype or paralectotype series.

The characters ascribed to this species by Fraser (1948) are: stem erect, up to 45 mm high, polysiphonic, branched, branches given off at a wide angle. Hydrocladia subopposite, all in one plane with branches, polysiphonic by apposition of secondary tubes in the proximal parts of the colonies, monosiphonic and divided into internodes in the distal parts of the colonies. Hydrocladial internodes separated by distinct, slightly oblique nodes and with small, distal apophysis; apophyses of the various internodes alternately directed left and right, supporting a curved, free hydrotheca inserted on the apophysis by means of a short pedicel. Hydrotheca a curved tube, narrowing basally into the short pedicel from which it is separated by a distinct, strong diaphragm. Adcauline wall of hydrotheca smoothly curved; abcauline wall rather strongly flexed some distance from margin; rim circular, occasionally renovated. Nematothecae small, tubular, one on each apophysis supporting hydrotheca. Nematophores also occur on the secondary tubules. Gonosome a coppinia in proximal region of stem, composed of a dense aggregation of ovoid, bottle-shaped gonothecae, narrowing distally into a short, slightly curved neck with one or two circular openings. Nematophorous tubules numerous, projecting outwards from between the gonothecae and overtopping those by half their length. Tubules bifurcated at their apex, each (short) branch terminating into a small nematotheca.

Reported range.— Gulf of California, Pacific off Baja California (type locality: off Cedros Island), southern California (Fraser, 1948; Ljubenkov, 1980; Vervoort and Watson, 2003).

#### *Lictorella rigida* Fraser, 1948

*Lictorella rigida* Fraser, 1948: 186, 233, pl. 26 fig. 15, pl. 27 fig. 15; Ljubenkov, 1980: 48.

*Zygophylax rigida*: Rees and Vervoort, 1987: 83-84.

*Zygophylax rigidus*: Cairns et al., 1991: 25; 2002: 23, 57.

Syntype material.— Mexico, Gulf of California, north of Isla Partida, 46-76 fm (*Velero III* station 1081-40). USA, California, Santa Catalina Island, 1 mile south of Ben Weston Point, 45-49 fm (Fraser, 1948).

Lectotype: *Velero III* station 1081-40, Mexico, Baja California Norte, Gulf of California, north of Isla Partida, 28°56'00"N, 113°02'45"W, 46-76 fm (84-139 m), coralline + rock, 05.ii.1940, 65 mm high colony with 2 opposite branches and small coppinia, SBMNH 347323 (registered as syntype) (AHF Holotype No. 81).

Paralectotypes: *Velero III* station 1081-40, as above for lectotype, four colonies, 35-80 mm high, with coppiniae, SBMNH 346897 (registered as voucher).

*Velero III* station 1081-40, as above for lectotype, one lot, in ethanol, USNM 49254.

*Velero III* station 1081-40, as above for lectotype, three slides, RMNH 2639.

Remarks.— The lectotype is the hydroid figured by Fraser (1948, pl. 26 fig. 15a), although Fraser did not illustrate the coppinia of this specimen. This is evidently not a species of *Lictorella* (= *Zygophylax* Quelch, 1885) but of *Cryptolaria* Busk, 1857, where it is a junior subjective synonym of *Cryptolaria pectinata* (Allman, 1888).

Material identified as this species from *Velero III* station 1316-41, off Santa Catalina Island, California, is not a species of *Zygophylax* or *Cryptolaria*, but a species of *Lafoea*, probably *Lafoea dumosa* (Fleming, 1820). Hydrothecae occur all around the stem, no nematothecae are present, and the hydrothecal pedicel has a weak twist.

The diagnostics of this species are: colony composed of strong, erect, polysiphonic stem and opposite to sub-opposite branches that, as with the majority of the hydrocladia, are covered by secondary tubules. Hydrothecae in two series along the hydrocladia, alternately arranged and in the same plane as branches and hydrocladia, rapidly being covered by secondary tubules and only the distal portion free. Hydrocladia not divided into internodes, with double row of short apophyses supporting the hydrothecae that initially are free from the hydrocladium. Hydrothecae curved and tubular, narrowing proximally into a short pedicel; no diaphragm or node being visible, both adcauline and abcauline walls are smooth. Hydrothecal rim circular, occasionally renovated. As mentioned, hydrocladia and hydrothecae rapidly become covered by secondary tubules; only distal part of hydrotheca protruding from stem, branches and older hydrocladia. Initially there is one tubular nematotheca on each hydrocladial apophysis, but as the secondary tubules cover the proximal parts of hydrothecae in older parts of the colony their relationship to the hydrothecae gets lost and the visible nematothecae occur on the secondary tubules in varied numbers. Gonosome a coppinia, being an oval mass of gonothecae around stem or branches. Gonotheca closely adnate, elongated bottle-shaped, distally narrowing into a hooded neck opening by means of two opposed, laterally directed openings. There are no nematophorous branches or protruding hydrothecae.

Reported range.— Gulf of California (type locality: off Isla Partida), Pacific off southern California (but see second paragraph of "Remarks" above) (Fraser, 1948; Ljubenkov, 1980).

Genus *Synthecium* Allman, 1872  
*Synthecium projectum* Fraser, 1938a

*Synthecium projectum* Fraser, 1938a: 9, 49, pl. 11 fig. 55; 1938c: 134; 1946: 71, 255; 1948: 186, 235; Arai, 1977: 29; Cairns et al., 1991: 25.

*Hincksella projecta*: Cairns et al., 2002: 24, 58.

Syntype material.— Panama, Bahia Honda, 15-25 fm. Mexico, White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm; Santa Maria Bay, low tide; Thurloe Point, 8-10 fm; Cedros Island, South Bay, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 249-34, Panama, Bahia Honda, 07°43'16"N, 81°32'55"W, 15-20 fm (27-36 m), rock, 22.ii.1934, one colony, with stolon and three cormoids, 10 mm high, unattached, without gonothecae, SBMNH 347325.

Paralectotypes.— *Velero III* station 249-34, as above for lectotype, six cormoids, to 9 mm high, unattached, without gonothecae, SBMNH 347324 (AHF Holotype No. 82).

*Velero III* station 249-34, as above for lectotype, one lot, in ethanol, USNM 49252.

*Velero III* station 264-34, Mexico, south of White Friars, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, three cormoids, to 1 cm high, unattached, without gonothecae, SBMNH 347602.

*Velero III* station 275-34 (two vials), Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, ca. 6 colonies, to 1 cm high, on sponges and unattached, without gonothecae, SBMNH 347603.

*Velero III* station 282-34, Mexico, Baja California, Santa Maria Bay, Hughes Point, 24°44'20"N, 112°16'W, shore, rock, 07.iii.1934, ca. 2 colonies, 8 mm high, on algae, without gonothecae, SBMNH 347604.

*Velero III* station 283-34, Mexico, Baja California, off Thurloe Head, 27°36'50"N, 114°50'50"W, 8-10 fm (15-18 m), rock with gorgonids, 09.iii.1934, one colony, 1 cm high, unattached, without gonothecae, SBMNH 347605.

*Velero III* station 288-34, Mexico, Cedros Island, South Bay, 28°05'20"N, 115°20'20"W, shore, rock, 10.iii.1934, two colonies, to 5 cm high, on algae, without gonothecae, SBMNH 347606.

Panama, Bahia Honda, BCPM 976-964-1 (Arai, 1977).

Remarks.— Specimens of *Synthecium projectum* in two vials, the first labeled "Holotype," and "AHF Holotype No. 82" (SBMNH 347325) and the second labeled "Paratype," and "AHF Paratype No. 215" (SBMNH 347324) are all from the same station in Bahia Honda, Panama (*Velero III* station 249-34). Although we would have preferred choosing a specimen from the former as the primary name-bearing type, a colony from the second bottle is in the best condition and shows characters of the species more clearly. We have therefore designated it as the lectotype. The type locality as indicated by Schmitt (1948, Bahia Honda, Panama) does not change.

We are doubtful whether specimens from *Velero III* station 275-34 (SBMNH 347603), *Velero III* station 282-34 (SBMNH 347604), *Velero III* station 283-34 (SBMNH 347605), and *Velero III* station 288-34 (SBMNH 347606) are conspecific with the lectotype, but this needs to be verified by further taxonomic study.

Two slides (RMNH 2612) from *Velero III* station 450-35, Secas Islands, Panama, do not belong to the lectotype or paralectotype series.

*Synthecium projectum*, with the characters of syntheceiid hydroids but with alternate hydrothecae, is referred here to the genus *Hincksella* Billard, 1918 (see also Cairns et al., 2002: 58).

In our opinion there is little difference between *Synthecium projectum* Fraser, 1938a and *S. rigidum* Fraser 1938a, and they may prove conspecific.

Reported range.— Pacific off Panama (type locality: Bahia Honda) and Mexico (Fraser, 1938a, 1938c, 1946, 1948).

*Syntheicum rigidum* Fraser, 1938a

*Syntheicum rigidum* Fraser, 1938a: 9, 49, pl. 11 fig. 56; 1939: 160 et seq.; 1946: 71, 256; 1948: 186; Schmitt, 1948: xii; Arai, 1977: 29.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm. Mexico, White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one colony with several cormoids, 8 mm high, unattached, without gonothecae, SBMNH 347326 (AHF Holotype No. 83).

Paralectotypes.— *Velero III* station 209-34, as above for lectotype, two colonies in poor condition, to 10 mm high, unattached, without gonothecae, SBMNH 347327.

*Velero III* station 209-34, as above for lectotype, one lot, in ethanol, USNM 44248.

Mexico, Tenacatita Bay (off Navidad Head), BCPM 976-965-1 (Arai, 1977).

Remarks.— The specimen of *Syntheicum rigidum* from *Velero III* station 209-34, labeled "Holotype" and "AHF Holotype No. 83" has been selected as the lectotype (SBMNH 347326). A paralectotype (SBMNH 347327), labeled "Paratype" and "AHF Paratype No. 216", is from the same station and location.

As noted above, *Syntheicum rigidum* and *S. projectum* are much alike and may represent a single species, referable to the genus *Hincksella* Billard, 1918.

Reported range.— Pacific off Ecuador (type locality: off Santa Elena Bay) and Mexico (Fraser, 1938a, 1939, 1946, 1948).

*Syntheicum symmetricum* Fraser, 1938a

*Syntheicum symmetricum* Fraser, 1938a: 9, 50, pl. 12 fig. 57; 1938c: 134; 1939: 160 et seq.; 1946: 71, 256; 1948: 186, 235; Schmitt, 1948: xii; Arai, 1977: 29; Cairns et al., 1991: 25; 2002: 24.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm; San Francisco Bay, 2-8 fm. Colombia, Port Utria, 20 and 40 fm. Panama, Jicaron Island, 15 fm; Pacora Island, 15-25 fm; Secas Islands, 25 fm. Mexico, north of White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 264-34, Mexico, south of White Friars Islands, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, one upright, branched colony, 2.1 cm high, unattached, with gonothecae, SBMNH 347328 (AHF Holotype No. 84).

Paralectotypes.— *Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, no specimens of *Syntheicum symmetricum* found, SBMNH 347607.

*Velero III* station 215-34, Ecuador, San Francisco Bay, 00°38'40"N, 80°05'40"W, 2 fm (4 m), mud + debris, 11.ii.1934, one erect and branched colony, 0.9 cm high, unattached, without gonothecae, SBMNH 347608.

*Velero III* station 238-34 (two vials); Colombia, off Port Utria, 05°59'25"N, 77°21'50"W, 20 fm (37 m), sand + shell + cake urchins, 15.ii.1934, one colony and two fragments, 1 cm high, on bryozoan and unattached, without gonothecae, SBMNH 347609.



*Velero III* station 241-34, Panama, off Jicarita Island, 07°13'05"N, 81°48'30"W, 15 fm (27 m), rough rock, 20.ii.1934, seven small colonies and fragments, 0.9 cm high, unattached, without gonothecae, SBMNH 347610.

*Velero III* station 250-34, Panama, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, ca. seven upright branched colonies and/or fragments, 2.5 cm high, unattached, without gonothecae, SBMNH 347611.

*Velero III* station 264-34, as above for lectotype, eight cormoids, 2.3 cm high, unattached, one with gonothecae, labeled "Paratype," SBMNH 347329.

*Velero III* station 264-34, as above for lectotype, ca. 20 colonies and/or cormoids, 2 cm high, on sponges and unattached, without gonothecae, SBMNH 347613.

*Velero III* station 264-34, as above for lectotype, one lot, in ethanol, USNM 49253.

*Velero III* station 268-34, Mexico, north of White Friars, 17°31'30"N, 101°29'27"W, 25 fm (46 m), coarse sand, 03.iii.1934, five upright fragments, 1 cm high, unattached, without gonothecae, SBMNH 347614.

*Velero III* station 275-34 (four vials), Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W; 25-35 fm (46-64 m), rock, 04.iii.1934, >50 upright, branched colonies and/or cormoids, 2.5 cm high, unattached, without gonothecae, SBMNH 347615.

Mexico, White Friars Islands, BCPM 976-966-1, BCPM 976-966-2 (Arai, 1977).

Remarks.— The specimen chosen as the lectotype (SBMNH 347328), labeled "Holotype" and "AHF Holotype No. 84," was collected south of White Friars, Mexico (*Velero III* station 264-34) at a depth of 25 fm (46 m). This is the type locality of the species as given by Schmitt (1948). Fraser's (1938a) original account of *Synthecium symmetricum* gave as a collection locale "North of White Friars, 25 fathoms;" we conclude that this was an error. A paralectotype sample (SBMNH 347607) from the same station is labeled "Paratype" and "AHF Paratype No. 217."

One sample from Secas Islands, Panama, 25 fm (*Velero III* station 250-34, SBMNH No. 347611) coincided with Fraser's distribution list, but another from 15 fm (27 m) (*Velero III* station 251-34, SBMNH No. 347612) did not and has been excluded as a paralectotype. Three slides (RMNH 2611) from *Velero III* station 431-35, off Octavia Rocks, Columbia, do not belong to the lectotype or paralectotype series.

No specimens of *Synthecium symmetricum* were found in the sample from *Velero III* station 209, off Santa Elena Bay, Ecuador (SBMNH 347607). A label in the vial notes "no hydroid present, H.H., 10/31/47."

The hydrothecal rim of this species is saddle-shaped in lateral view, with projecting adcauline and abcauline lips separated by broad, U-shaped bays.

Reported range.— Pacific off Ecuador, Colombia, Panama, Mexico (type locality: off White Friars Islands), and southern California (Fraser, 1938a, c, 1939, 1946, 1948).

#### Genus *Abietinaria* Kirchenpauer, 1884

##### *Abietinaria expansa* Fraser, 1938b

*Abietinaria expansa* Fraser, 1938b: 110, 112, pl. 16 fig. 1; 1939: 160, 173; 1946: 83, 316; 1948: 186, 236; Schmitt, 1948: xii; Arai, 1977: 28; Ljubenkov, 1980: 49; Cairns et al., 1991: 25; Vervoort, 1993: 99; Cairns et al., 2002: 24.



Syntype material.— Mexico, Rosario Bay, 10-15 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 491-36, Mexico, Baja California, Rosario Bay, 29°55'N, 115°48'30"W, 10-15 fm (18-27 m), rock + kelp, 15.ii.1936, one colony, 4 cm high, unattached, with gonothecae, SBMNH 347293 (AHF Holotype No. 85).

Paralectotypes.— *Velero III* station 491-36, as above for lectotype, two colonies, 1.6 cm and 2.8 cm high, unattached, with gonothecae, SBMNH 369457.

Mexico, Rosario Bay, BCPM 976-523-1 (Arai, 1977).

Remarks.— The vial containing hydroids of *Abietinaria expansa* from *Velero III* station 491-36, as well as the labels "Holotype" and "AHF Holotype No. 85" (SBMNH 347293), contained four colonies. One colony has been chosen as the lectotype of the species and returned to the vial. The other three were removed to a second bottle (SBMNH 369457). Only two of these three colonies are assigned to *A. expansa* and are paralectotypes. The third specimen lacks gonothecae and is considered referable to another species.

One slide (RMNH 2599) from *Velero III* station 1284-41, one mile south of East Point, Santa Rosa Island, California, is not a part of the lectotype or paralectotype series.

Reported range.— Pacific off Central America, Baja California (type locality: Rosario Bay), and southern California (Fraser, 1938b, 1939, 1946, 1948; Ljubenkov, 1980).

Genus *Selaginopsis* Allman, 1876

*Selaginopsis constans* Fraser, 1948

*Selaginopsis constans* Fraser, 1948: 186, 239, pl. 27 fig. 17; Schmitt, 1948: xii; Ljubenkov, 1980: 49.

Syntype material.— USA, California, Santa Rosa Island, 2¼ miles east of South Point, 23-28 fm (*Velero III* station 1283-41); north of Santa Barbara Island, 100 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1283-41, USA, California, Santa Rosa Island, 2¼ miles east of South Point, 33°53'20"N, 120°03'50"W, 23-28 fm (42-51 m), gravel + sand, 10. iv.1941, one colony, 5.5 cm high, unattached, without gonothecae, SBMNH 347295 (AHF Holotype No. 87).

Paralectotypes.— *Velero III* station 1176-40, USA, California, west of Santa Barbara Island, 33°29'30"N, 119°06'45"W, 100 fm (183 m), grey sand, 09.ix.1940, two colonies, 3 cm and 4 cm high, unattached, without gonothecae, SBMNH 347579.

*Velero III* station 1283-41, as above for lectotype, one colony, 6 cm high, unattached, without gonothecae, SBMNH 347580.

*Velero III* station 1283-41, as above for lectotype, one slide, RMNH 2594.

Remarks.— The lectotype of this species is the single colony from *Velero III* station 1283-41 (SBMNH 347295), labeled as "*Selaginopsis constans* Fraser Type" and "AHF Holotype No. 87." Paralectotype material is as listed above.

This species corresponds to the restricted diagnosis of *Selaginopsis* Allman, 1876 adopted by Cairns et al. (2002).

Reported range.— Pacific off southern California (type locality: off Santa Rosa Island) (Fraser, 1948; Ljubenkov, 1980).

Genus *Sertularella* Gray, 1848  
*Sertularella ampullacea* Fraser, 1938a

*Sertularella ampullacea* Fraser, 1938a: 9, 51, pl. 12 fig. 58; 1938b: 110; 1938c: 134; 1939: 160 et seq.; 1946: 78, 293; 1948: 197; Schmitt, 1948: xii; Arai, 1977: 28; Vervoort, 1993: 189; Calder et al., 2003, 1190, fig. 13. *Sertularella rugosa*: Fraser, 1938a: 9, 52 [part] [not *Sertularella rugosa* (Linnaeus, 1758)].

Syntype material.— Colombia, Port Utria, 15-20 fm. Panama, Pacora Island, 15-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 235-34, Colombia, off Port Utria, 05°58'30"N, 77°21'25"W, 15-20 fm (27-37 m), sand + shell + urchins, 14.ii.1934, one colony with two erect cormoids, 6 mm high, detached from substrate, without gonothecae, SBMNH 347296 (AHF Holotype No. 88).

Paralectotypes.— *Velero III* station 235-34, as above for lectotype, eight colonies and/or fragments, 6 mm high, detached from substrate, without gonothecae, SBMNH 369458.

*Velero III* station 245-34, Panama, off Bahia Honda, off Pacora Island, 07°44'19"N, 81°35'23"W, 15-25 fm (27-46 m), rock + shell + nullipores, 21.ii.1934, 10 colonies and/or fragments, both stolonal and erect, to 7 mm high, on other hydroids and unattached, without gonothecae, SBMNH 347297.

*Velero III* station 245-34, as above, one lot, in ethanol, USNM 44247.

Colombia, Port Utria, BCPM 976-583-1 (Arai, 1977).

Remarks.— Several small colonies and fragments of colonies were found in a vial of *Sertularella ampullacea* labeled "Holotype" and "AHF Holotype No. 88" from *Velero III* station 235-34 (SBMNH 347296). None of these corresponded exactly with the colony illustrated by Fraser (1938a), but the specimen most like it has been selected as the lectotype and returned to that vial. Others from the same sample have been removed to a new vial as part of the paralectotype material (SBMNH 369458). Also comprising paralectotype specimens are those from *Velero III* station 245-34 (SBMNH 347297), labeled "Paratype" and "AHF Paratype No. 218," USNM 44247, and BCPM 976-583-1. Two slides (RMNH 2600), Panama City, Panama, shore, are not part of the lectotype or paralectotype series.

Hydroids identified by Fraser (1938a) as *Sertularella rugosa* (Linnaeus, 1758), from Albemarle Island, Galápagos (*Velero III* station 150-34; *Velero III* station 154-34), were re-examined by Calder et al. (2003) and assigned to *Sertularella ampullacea* instead. Other material identified as *S. rugosa*, from South Seymour Island, Galápagos (*Velero III* station 174-34), was identified as a species of *Symplectoscyphus*.

*Sertularella ampullacea* is similar morphologically to *S. solitaria* Nutting, 1904 from the Bahamas.

Reported range.— Pacific coasts of Colombia (type locality: off Port Utria) and Panama to the Gulf of California; Galápagos Islands (Fraser, 1938a, b, c, 1946, 1948; Calder et al., 2003).

*Sertularella erecta* Fraser, 1938c

*Sertularella erecta* Fraser, 1938c: 134, 141, pl. 21 fig. 11; 1939: 160 et seq.; 1940: 41, pl. 1 fig. 2; 1946: 78, 296; Hewatt, 1946: 197; Fraser, 1948: 241; Schmitt, 1948: xii; Arai, 1977: 28; Ljubenkov, 1980: 49; Calder et al., 2003: 1212.

*Sertularia erecta*: Fraser, 1940: 42.

*Amphisbetia erecta*: Cairns et al., 1991: 25; 2002: 24; Calder et al., 2003: 1212.

Syntype material.— Ecuador, north end of Albemarle Island, 6-7 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 145-34, Ecuador, Galápagos Islands, Albemarle Island, Albemarle Point, 00°08'45"N, 91°21'30"W, 6-7 fm (11-13 m), sand with rock patches, 12.i.1934, one erect and unbranched colony, 1 cm high, detached from substrate, without gonothecae, SBMNH 347299 (AHF Holotype No. 90).

Paralectotypes.— *Velero III* station 145-34, as above for lectotype, two erect colonies, one branched and one unbranched, to 2 cm high, detached from substrate, without gonothecae, SBMNH 347300.

*Velero III* station 145-34, as above for lectotype, one lot, in ethanol, USNM 49251.

Ecuador, Galápagos Islands, Albemarle Island, BCPM 976-595-1 (Arai, 1977).

Remarks.— Two colonies were present in a vial containing *Sertularella erecta*, labeled as "Holotype" and "AHF Holotype No. 90," from *Velero III* station 145-34 (SBMNH 347299). One specimen was chosen as the lectotype and returned to the vial. The other was combined with a specimen from a sample (SBMNH 347300) labeled "Paratype" and "AHF Paratype No. 219" from the same station (*Velero III* station 145-34). The two of them are paralectotypes, as are specimens from the NMNH (USNM 49251) and the Royal British Columbia Museum (BCPM 976-595-1). One slide (RMNH 2598) from *Velero III* station 1260-41, Dewey Channel, opposite San Eugenio Point, Mexico, is not a part of the lectotype or paralectotype series.

As noted by Calder et al. (2003), *Sertularella erecta* Naumov and Stepanjants, 1962 is an invalid junior primary homonym of *Sertularella erecta* Fraser, 1938c and needs to be replaced. Dr Stepanjants has been advised of this matter.

This species was assigned to *Amphisbetia* L. Agassiz, 1862 by Cairns et al. (1991, 2002) and Calder et al. (2003).

Reported range.— Galápagos Islands (type locality: off Albemarle Island), Pacific off Baja California and southern California (Fraser, 1938c, 1939, 1940, 1946, 1948; Hewatt, 1946; Ljubenkov, 1980).

#### *Sertularella exilis* Fraser, 1938a

*Sertularella exilis* Fraser, 1938a: 9, 51, pl. 12 fig. 59; 1939: 160 et seq.; 1946: 78, 293; 1948: 187, 241; Schmitt, 1948: xii; Arai, 1977: 28; Vervoort, 1993: 190.

Syntype material.— Panama, Bahia Honda, 15-25 fm. Mexico, White Friars Islands, 25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 245-34, Panama, off Bahia Honda, off Pacora Island, 07°44'19"N, 81°35'23"W, 15-25 fm (27-46 m), rock + shell + nullipores, 21.ii.1934, one erect and unbranched colony, 1.2 cm high, unattached, without gonothecae, SBMNH 347301 (AHF Holotype No. 91).

Paralectotypes.— *Velero III* station 245-34, as above for lectotype, 16 erect and unbranched or slightly branched colonies and/or fragments, to 2.3 cm high, unattached, without gonothecae, SBMNH 347302.

*Velero III* station 245-34, as above for lectotype, one lot, in ethanol, USNM 49300.

Panama, Bahia Honda, BCPM 976-597-1; Mexico, White Friars Islands, 02.iii.1934, 25 fm (46 m), BCPM 976-598-1 (Arai, 1977).

Remarks.— Some 15 colonies and colony fragments of *Sertularella exilis*, from *Velero III* station 245-34, were present in a vial containing the labels “Holotype” and “AHF Holotype No. 91” (SBMNH 347301). From these we chose one specimen as the lectotype and returned it to the original vial. The remaining 14, together with two specimens from a sample labeled “Paratype” and “AHF Paratype No. 219” from the same station (*Velero III* station 145-34), represent paralectotype material (SBMNH 347302). So too do specimens in collections at the NMNH (USNM 49300) and the Royal British Columbia Museum (BCPM 976-597-1, BCPM 976-598-1). One slide (RMNH 2597) from *Velero III* station 1080-40, north of Isla Partida, Gulf of California, is not part of the lectotype or paralectotype series.

This is an especially diminutive species of the genus *Sertularella*.

Reported range.— Pacific off Panama (type locality: off Bahia Honda) and Mexico, Gulf of California (Fraser, 1938a, 1939, 1946, 1948).

*Sertularella incisa* Fraser, 1938a

*Sertularella incisa* Fraser, 1938a: 9, 52, pl. 12 fig. 60; 1939: 160; 1946: 78, 294; 1948: 187; Schmitt, 1948: xii; Arai, 1977: 28.

*Symplectoscyphus incisus*: Cairns et al., 1991: 27; 2002: 58.

Syntype material.— Mexico, Cerros (Cedros) Island, South Bay, 10-15 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 287-34, Mexico, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one erect colony, with branched and unbranched cormoids to 2 cm high, on calcareous algae, without gonothecae, SBMNH 347303 (AHF Holotype No. 92).

Paralectotypes.— *Velero III* station 287-34, as above for lectotype, five erect colonies, with branched and unbranched cormoids to 1.7 cm high, some on calcareous algae and others unattached, without gonothecae, SBMNH 347304.

*Velero III* station 287-34, as above for lectotype, specimens not referable to *Sertularella incisa*, SBMNH 347570.

*Velero III* station 287-34, as above for lectotype, one lot, in ethanol, USNM 49298.

Mexico, Cedros Island, BCPM 976-604-1 (Arai, 1977).

Remarks.— The vial of *Sertularella incisa* from *Velero III* station 287-34 (SBMNH 347303), marked “Holotype” and “AHF Holotype No. 92,” included four colonies. One closely resembling Fraser’s (1938a) description and illustration of the species was returned to the vial as the lectotype. The other three were placed together with two colonies from the same station in a vial labeled “Paratype” and AHF Paratype No. 221” as paralectotypes (SBMNH 347304). A third vial from *Velero III*, station 287-34 contains hydroids identified as *Sertularella incisa* but they are a different species. Material from Cedros Island in the NMNH (USNM 49298) and the Royal British Columbia Museum (BCPM 976-604-1) needs to be re-examined because it could be either of these two species.

The number of cusps on the hydrothecal rim of these hydroids was not easy to es-

publish. The original description by Fraser (1938a) indicated that three cusps were present, and on that basis the species was assigned to *Symplectoscyphus* by Cairns et al. (1991, 2002). We conclude, from an examination of the type material, that four cusps are indeed present and we reassign the species to *Sertularella*.

Reported range.— Pacific off Baja California (type locality: off Cedros Island) (Fraser, 1938a, 1939, 1946, 1948).

*Sertularella multinoda* Fraser, 1948

*Sertularella multinoda* Fraser, 1948: 187, 242, pl. 28 fig. 18; Schmitt, 1948: xii.

*Symplectoscyphus multinodus*: Cairns et al., 1991: 27; 2002: 58.

Syntype material.— Mexico, Cedros Island, South Bay, 10-15 fm (*Velero III* station 287-34) (Fraser, 1948).

Lectotype.— *Velero III* station 287-34, Mexico, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one erect colony with two cormoids, one unbranched and one with two branches, 2.2 cm high, on calcareous algae, with gonothecae, SBMNH 347305 (AHF Holotype No. 93).

Paralectotypes.— *Velero III* station 287-34, as above for lectotype, two erect colonies, with branched and unbranched cormoids, 2 cm high, one colony on calcareous algae and one unattached, with gonothecae, SBMNH 347586.

*Velero III* station 287-34, as above for lectotype, one (?) large colony with many fragments, with branched and unbranched cormoids, to 2 cm high, on calcareous algae and with unattached fragments, with gonothecae, SBMNH 347582.

*Velero III* station 287-34, as above for lectotype, one microscope slide, RMNH 2596.

Remarks.— Two pieces of this hydroid were present in the vial labeled "*Sertularella multinoda* Fraser Type" and "AHF Holotype No. 93" (SBMNH 347305). The larger of these, and the one with more gonothecae, was selected as the lectotype and returned to its vial. The second hydroid, an unattached fragment, was combined in a vial with a specimen from the same station, and the two are listed as the first paralectotype sample above (SBMNH 347586). Additional paralectotype material was found in a vial labeled as *Sertularella multinoda*, and listed as the second paralectotype record above (SBMNH 347582). Specimens of this species on a microscope slide (RMNH 2596), from the same station, are also paralectotype material.

As listed in Cairns et al. (1991, 2002), this species is referable to *Symplectoscyphus*, having three well-developed cusps on the rim of the hydrotheca. Although relatively small, these hydroids are robust with perisarc that is thick, internodes that are short and broad, and hydrothecae and gonothecae that are strongly corrugated.

As noted below under *Sertularella similis*, there is an error in the captions of Fraser's (1948) original illustrations of this species. On plate 28, figure 18a strongly resembles the lectotype designated here and is probably correct, but figures 18b and 18c are much more like *S. similis*. Figures 19b and 19c, indicated as *S. similis*, more closely resemble *S. multinoda*.

Reported range.— Pacific off Baja California (type locality: Cedros Island) (Fraser, 1948).

*Sertularella similis* Fraser, 1948

*Sertularella similis* Fraser, 1948: 185, 244, pl. 28 fig. 19; Schmitt, 1948: xii; Vervoort, 1993: 192.

Syntype material.— Mexico, Gulf of California, south of Isla Partida, 70 fm (*Velero III* station 561-36) (Fraser, 1948).

Lectotype.— *Velero III* station 561-36, Mexico, Gulf of California, south of Isla Partida, 28°51'20"N, 113°03'45"W, 70 fm (128 m), coral + sand, 09.iii.1936, one erect and slightly branched colony, 2.9 cm high, unattached, without gonothecae, SBMNH 347306 (AHF Holotype No. 94).

Paralectotype.— *Velero III* station 561-36, as above for lectotype, one erect and unbranched part of a colony, 1.2 cm high, unattached, without gonothecae, SBMNH 369459.

Remarks.— The syntype sample of *Sertularella similis* from *Velero III* station 561-36 contained two fragments, neither in good condition. The better of these was selected as the lectotype and returned to the vial labeled "*Sertularia similis* Fraser Type" and "AHF Holotype No. 94" (SBMNH 347306). The other fragment was removed to a second vial and has been recorded as paralectotype material (SBMNH 369459). Two slides (RMNH 2610) from *Velero III* station 558-36, south of Isla Partida, Gulf of California, do not belong to the lectotype or paralectotype series.

Plate 28 in Fraser's (1948) original account of this species contains a numbering error, with figures 18b and 18c and 19b and 19c reversed. Gonothecae were reported as "not observed" in the description of *S. similis*, and examination of the lectotype confirms this. Yet pl. 28 fig. 19c, given as *S. similis*, shows a part of a colony with two gonothecae. Both figures 19b and 19c resemble *S. multinoda*, while figures 18b and 18c portray *S. similis*. Pl. 28 fig. 19a very closely resembles the lectotype of *S. similis* and seems correct.

In his description of this species Fraser (1948) reported that there were four teeth (cusps) on the hydrothecal rim. We observed three marginal cusps in the present material, and have referred the species to *Symplectoscyphus* as *S. similis* (Fraser, 1948), **comb. nov.**

Reported range.— Gulf of California (type locality: off Isla Partida) (Fraser, 1948).

*Sertularella sinuosa* Fraser, 1948

*Sertularella sinuosa* Fraser, 1948: 187, 245, pl. 28 fig. 20; Schmitt, 1948: xii; Ljubenkova, 1980: 49.  
*Symplectoscyphus sinuosus*: Cairns et al., 1991: 27; 2002: 25; Vervoort, 1993: 241.

Syntype material.— USA, California, off San Pedro, depth not given; Santa Rosa Island, ¾ mile east of South Point, 17-20 fm; Santa Rosa Island, 2¼ miles east of South Point, 23-28 fm; Santa Rosa Island, 2½ miles east of South Point, 17-18 fm; Santa Rosa Island, 3 miles east of South Point, 17-20 fm; Santa Rosa Island, 4.6 miles southwest/west of East Point, 40 fm; 4½ miles northeast of Sandy Point, 35-36 fm; Santa Cruz Island, 1 mile southeast of Smugglers Cove, 15-21 fm; Anacapa Island, ¾ mile southeast of Cat Rock, 23-25 fm; Laguna Beach, low tide; Santa Catalina Island, 1 mile northwest of White Cove, 2-3 fm; off San Nicolas Island, 30 fm; west of Dutch Harbor, 8-9 fm; Tan-



ner Bank, 25-28 fm; 2<sup>3</sup>/<sub>4</sub> miles off Point Loma, 9-13 fm. Mexico, Cedros Island, South Bay, 10-15 fm; Baja California, 4 miles north of Dewey Channel, 24-25 fm; Baja California, Dewey Channel, opposite San Eugenio Point, 21-24 fm (Fraser, 1948).

Lectotype.— *Velero III*, no station number, USA, California, off San Pedro, no collection data, one colony, 1.7 cm high, unattached, with two gonothecae, SBMNH 347307 (AHF Holotype No. 95).

Paralectotypes.— *Velero III*, as above for lectotype, five colonies, 1 cm high, on coralline algae, pebble, and unattached, one with a gonotheca, SBMNH 369460.

*Velero III* station 287-34, Mexico, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one colony and fragments, to 1.5 cm high, on a bryozoan and unattached, without gonothecae, SBMNH 369461.

*Velero III* station 1122-40, USA, California, off San Nicolas Island, 33°18'00"N, 119°24'10"W, 30 fm (55 m), sand + rock + shell, 11.iv.1940, three colonies and fragments, to 0.7 cm high, on coralline algae and unattached, without gonothecae, SBMNH 347571.

*Velero III* station 1218-40, USA, California, Laguna Beach, site of old pier, reefs at low tide, no other data; material of *Plumularia* sp. only, SBMNH 347584.

*Velero III* station 1243-41, USA, California, San Diego, 2<sup>3</sup>/<sub>4</sub> miles off Point Loma, 32°37'45"N, 117°12'35"W, 9-13 fm (16-24 m), broken shell + worms, 23.ii.1941, indeterminate number of colonies and fragments, to 0.5 cm high, on algae, an ascidian, and unattached, without gonothecae, SBMNH 347572.

*Velero III* station 1260-41 (two vials), Mexico, Baja California, Dewey Channel, opposite San Eugenio Point, 27°49'50"N, 115°06'05"W, 21-26 fm (38-48 m), coralline + rock, 27.ii.1941, numerous colonies, to 1.5 cm high, on bryozoans and algae, and unattached, with gonothecae, SBMNH 347573.

*Velero III* station 1261-41, Mexico, Baja California, 4 miles north of Dewey Channel, 27°54'15"N, 115°06'40"W, 24-25 fm (44-46 m), grey-green sand, 27.ii.1941, six colonies and fragments, to 1 cm high, on algae and unattached, with gonothecae, SBMNH 347574.

*Velero III* station 1271-41, USA, California, Anacapa Island, <sup>3</sup>/<sub>4</sub> miles southeast of Cat Rock, 33°59'50"N, 119°24'30"W, 23-25 fm (42-46 m), coralline + grey coarse sand, 16.iii.1941, indeterminate number of colonies and fragments, to 1.5 cm high, on algae, coralline algae, bryozoans, and unattached, without gonothecae, SBMNH 347575.

*Velero III* station 1282-41, USA, California, Santa Rosa Island, 2<sup>1</sup>/<sub>2</sub> miles east of South Point, 33°53'45"N, 120°03'40"W, 17-18 fm (31-33 m), gravel + red algae, 10.iv.1941, material of *Synthecium* sp. only, SBMNH 347576.

*Velero III* station 1295-41 (two separate vials), USA, California, Santa Cruz Island, 1 mile southeast of Smugglers Cove, 34°00'25"N, 119°31'30"W, 15-21 fm (27-38 m), coralline + sand + pebbles, 12.iv.1941, 7 colonies and fragments, to 1.1 cm high, on coralline algae and unattached, without gonothecae, SBMNH 347577.

*Velero III* station 1339-41, USA, California, Tanner Bank, 32°41'30"N, 119°06'35"W, 25-28 fm (46-51 m), rock + coralline, 10.vi.1941, numerous colonies, to 2 cm high, on coralline algae and unattached, with gonothecae, SBMNH 347581.

*Velero III* station 1391-41, USA, California, Santa Rosa Island, 4.6 miles southwest/west of East Point, 33°51'10"N, 119°59'40"W, 40 fm (73 m), urchins + red algae, 26.viii.1941, two small colonies, to 1 cm high, unattached, without gonothecae, SBMNH 347585.

*Velero III* station 1410-41, (two vials), USA, California, Santa Rosa Island, 3 miles east of South Point, 34°53'35"N, 120°03'15"W, 17-20 fm (31-37 m), sand + kelp, 15.ix.1941, seven colonies and fragments, 1 cm high, on bryozoans, algae, a bivalve shell, and unattached, without gonothecae, SBMNH 347578.

*Velero III* station 1417-41, USA, California, Santa Rosa Island, 4¼ miles northeast of Sandy Point, 34°04'05"N, 120°13'12"W, 35-36 fm (64-66 m), flat rocks, 16.ix.1941, one fragment, 0.9 cm high, unattached, without gonothecae, SBMNH 347583.

Remarks.— Six colonies of hydroids were originally present in the vial (SBMNH 347307) containing the labels "*Sertularella sinuosa* Fraser," "Type," and "AHF Holotype No. 95" from a *Velero III* station with no data other than the location being off San Pedro. The largest of these colonies with gonothecae was saved as the lectotype and returned to the vial. The other five were placed in a separate vial and marked as paralectotypes (SBMNH 369460).

A sample (SBMNH 347584) identified as this species from the intertidal zone at Laguna Beach (*Velero III* station 1218-40) contained a species of *Plumularia* and not *Sertularella*. Similarly, another sample (SBMNH 347576), from Santa Rosa Island, 2½ miles east of South Point, 17-18 fm (*Velero III* station 1282-41), contained a colony of *Synthecium* sp. A slide (RMNH 2609) of material from off Santa Elena Bay, Ecuador, is not part of the paralectotype series.

This species, with three cusps on the hydrothecal rim, was referred to the genus *Symplectoscyphus* by Cairns et al. (1991, 2002) as *S. sinuosus*.

Reported range.— Pacific off Baja California and southern California (type locality: off San Pedro) (Fraser, 1948; Ljubenkova, 1980).

#### Genus *Sertularia* Linnaeus, 1758

##### *Sertularia anceps* Fraser, 1938a

*Sertularia anceps* Fraser, 1938a: 10, 53, pl. 13 fig. 61; 1938c: 135; 1939: 160 et seq.; 1946: 82, 307; 1948: 187; Schmitt, 1948: xii; Arai, 1977: 28; Calder et al., 2003: 1212.

*Dynamena anceps*: Cairns et al., 1991: 25; 2002: 58; Calder et al., 2003: 1212.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm and on floating *Sargassum*. Panama, Secas Islands, 15 and 25 fm. Mexico, Isabel Island, 10-25 fm; off Thurloe Point, 8-10 fm; Cerros (Cedros) Island, South Bay, 10-15 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 250-34, Panama, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, one colony with several upright cormoids, to 2.5 cm high, on a gastropod shell, without gonothecae, SBMNH 347308 (AHF Holotype No. 96).

Paralectotypes.— *Velero III* station 206-34, Ecuador, Santa Elena Bay, off La Libertad, 02°10'36"S, 80°55'50"W, 8-12 fm (15-22 m), sand + shell, 08.ii.1934, five small unbranched colonies, to 0.6 cm high, on *Sargassum*, without gonothecae, SBMNH 347587.

*Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, two fragmentary colonies, to 1.6 cm high, unattached, without gonothecae, SBMNH 347588.

*Velero III* station 250-34, as above for lectotype, nine colonies and fragments, to 7.5 cm high, on a shell fragment and unattached, without gonothecae, SBMNH 347309.

*Velero III* station 250-34, as above for lectotype, one lot, in ethanol, USNM 49299.

*Velero III* station 251-34, Panama, Secas Islands, 07°57'50"N, 82°01'15"W, 15 fm (27 m), rock + nullipores, 22.ii.1934, two fragmentary colonies, to 1.6 cm high, unattached, without gonothecae, SBMNH 347589.

*Velero III* station 277-34, Mexico, off Isabel Island, 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, at least six fragmentary colonies, to 3 cm high, on shell fragments, worm tubes, and unattached, without gonothecae, SBMNH 347590.

*Velero III* station 283-34, Mexico, Baja California, off Thurloe Head, 27°36'50"N, 114°50'50"W, 8-10 fm (15-18 m), rock with gorgonids, 09.iii.1934, at least three small colonies, to 1.2 cm high, on algae and unattached, without gonothecae, SBMNH 347591.

*Velero III* station 287-34, Mexico, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one small colony, 1 cm high, unattached, without gonothecae, SBMNH 347592.

Panama, Secas Islands, BCPM 976-639-1 (Arai, 1977).

Remarks.— The sample of *Sertularia anceps* from *Velero III* station 250-34, labeled "Holotype" and "AHF Holotype No. 96," contained an attached colony growing on a gastropod shell as well as seven loose fragments. While these fragments were likely part of the same colony, only the attached specimen was designated as the lectotype and returned to the vial (SBMNH 347308). The others were combined with specimens from the same station labeled "Paratype" and "AHF Paratype No. 222," as paralectotypes (SBMNH 347309). Four slides (RMNH 2607) from *Velero III* station 275-37, west of islets off Navidad Head, Tenacatita Bay, Mexico, do not belong to the lectotype and paralectotype series.

Specimens identified as *Sertularia anceps* on floating *Sargassum* from Santa Elena Bay, Ecuador (*Velero III* station 206-34, SBMNH 347587), and from South Bay, Cedros Island (*Velero III* station 287-34, SBMNH 347592) have been included in the paralectotype list above, but the identifications are considered questionable.

Cairns et al. (1991, 2002) referred this species to *Dynamena*, as *D. anceps*.

Reported range.— Pacific off Ecuador, Panama (type locality: Secas Islands), and Mexico (Fraser, 1938a, c, 1939, 1946, 1948).

### *Sertularia dispar* Fraser, 1938a

*Sertularia dispar* Fraser, 1938a: 10, 54, pl. 13 fig. 62; 1938c: 135; 1939: 160 et seq.; 1946: 82, 308; 1948: 186; Arai, 1977: 28.

*Dynamena dispar*: Cairns et al., 1991: 26; 2002: 24.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm; San Francisco Bay, 2 fm. Mexico, Santa Maria Bay, 10 fm; Cedros Island, South Bay, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one colony with several unbranched cormoids, to 7 mm high, on coralline alga, without gonothecae, SBMNH 347310 (AHF Holotype No. 97).

Paralectotypes: *Velero III* station 209-34, as above for lectotype, one tangled colony, to 9 mm high, on coralline alga, without gonothecae, SBMNH 347593.

*Velero III* station 209-34, as above for lectotype, one colony, to 0.7 cm high, on coral-line alga, without gonothecae, SBMNH 369462.

*Velero III* station 209-34, as above for lectotype, three (?) colonies and colony fragments, to 1.1 cm high, unattached, with gonothecae, SBMNH 347311.

*Velero III* station 209-34, as above for lectotype, one lot, in ethanol, USNM 49297.

*Velero III* station 209-34, as above for lectotype, two slides, RMNH 2606.

*Velero III* station 214-34, Ecuador, off Cape San Francisco, 00°39'30"N, 80°06'30"W, 2 fm (3.5 m), mud + rock, 11.ii.1934, five (?) colonies, to 1.2 cm high, on coralline algae and unattached, with at least one gonotheca, SBMNH 347594.

*Velero III* station 279-34, Mexico, Baja California, Santa Maria Bay, off Hughes Point, 24°44'45"N, 112°15'20"W, 10 fm (18 m), rough rock, 07.iii.1934, one colony, 1 cm high, on calcareous fragment, without gonothecae, SBMNH 347595.

Ecuador, San Francisco Bay, BCPM 976-647-1 (Arai, 1977).

Remarks.— Two specimens were found in the vial of *Sertularia dispar* from *Velero III* station 209-34 labeled "Holotype" and "AHF Holotype No. 97." The better specimen was returned to the vial as the lectotype (SBMNH 347310), while the other was removed to a second vial as a paralectotype (SBMNH 347593).

Hydroids from Santa Maria Bay, Mexico (*Velero III* station 279-34, SBMNH 347595) are referable to a different species of sertulariid from the lectotype, in our opinion. Most noticeably, the fine striations ornamenting the hydrothecae in *Sertularia dispar*, easily overlooked and not mentioned in Fraser's (1938a) original description, are lacking in this material.

Cairns et al. (1991, 2002) listed this species as *Dynamena dispar*.

Reported range.— Pacific off Ecuador (type locality: off Santa Elena Bay) and Baja California (Fraser, 1938a, c, 1939, 1946, 1948).

#### *Sertularia notabilis* Fraser, 1947

*Sertularia notabilis* Fraser, 1947: 11, pl. 2 fig. 5; Schmitt, 1948: xii, xv; Vervoort, 1968: 106; Calder, 1991: 95; Migotto and Vervoort, 1998: 89-100, figs 1-14.

Syntype material.— Venezuela, Tortuga Island, 2-5 fm (*Velero III* station A22-39) (Fraser, 1947).

Lectotype.— *Velero III* station A22-39, Venezuela, Tortuga Island, 10°58'30"N, 65°24'00"W, 2-5 fm (4-9 m), coral sand + algae, 13.iv.1939, one specimen consisting of a number of stems from a stolon on *Sargassum* sp., with gonothecae, SBMNH 347312 (registered as syntype; labels "Holotype" and "AHF Holotype No. 163" in jar as well as a green bead).

Paralectotypes.— *Velero III* station A22-39, as above for lectotype, several large fragments of *Sargassum* sp. with numerous colonies, with gonothecae, SBMNH 369463.

*Velero III* station A22-39, as above for lectotype, two slides, RMNH 2593.

Remarks.— There is an additional bottle in the Allan Hancock collection from the same locality but without a station number. This is a voucher specimen. One slide (RMNH 2592) from Tobago, collected 13 April 1939, does not belong to the lectotype or paralectotype series.

This species has been redescribed and figured after Brazilian material and compared with type material by Migotto and Vervoort (1998).

*Sertularia notabilis* is diagnosed as follows: a small sertulariid, up to 5 mm high, with unbranched stem divided into slender internodes by means of straight septa. On each internode a pair of curved, tubular hydrothecae in proximal half; hydrothecae frontally adnate for about half of adcauline wall; on the back these are separate but proximally parallel. Distal portion of hydrotheca curved outwards. Hydrothecal rim with three minute cusps, one abcauline, two lateral; operculum of the usual *Sertularia* type: a roof-shaped adcauline plate and an abcauline valve. Gonotheca elongated, about 2 mm long, cylindrical with a slight swelling proximally and there rounded, attached with a short pedicel to the basal internode just under the pair of hydrothecae. Gonotheca strongly ribbed, each rib provided with a distinct carina. Apex of gonotheca truncated, with circular opening.

Reported range.— Venezuela (type locality: Tortuga Island) (Fraser, 1947); Brazilian coastal waters (Migotto and Vervoort, 1998).

*Sertularia stabilis* Fraser, 1948

*Sertularia stabilis* Fraser, 1948: 249, pl. 29 fig. 21; Schmitt, 1948: xii.

*Dynamena stabilis*: Cairns et al., 1991: 26; 2002: 58.

Syntype material.— Mexico, Gulf of California, Georges Island, 11½-13 fm (*Velero III* station 1075-40) (Fraser, 1948).

Lectotype.— *Velero III* station 1075-40, Mexico, Gulf of California, inside Georges Island, 31°00'40"N, 113°16'15"W, 12-13 fm (22-24 m), sand + shell, 03.ii.1940, one colony with five branched and unbranched cormoids, to 1.9 cm high, unattached, without gonothecae, SBMNH 347313 (AHF Holotype No. 98).

Paralectotypes.— *Velero III* station 1075-40 (one vial and one bottle), as above for lectotype, numerous colonies with branched and unbranched cormoids, and fragments, to 6 cm high, on bivalve shells and unattached, without gonothecae, SBMNH 347597.

*Velero III* station 1075-40, as above for lectotype, two slides, RMNH 2604.

*Velero III* station 1075-40, as above for lectotype, one slide, RMNH 2605.

Remarks.— The vial labeled "*Sertularia stabilis* Fraser Type" and "AHF Holotype No. 98" from *Velero III* station 1075-40 (SBMNH 347313) contained eight colonies or fragments of colonies. We isolated what we considered to be the best specimen of these as the lectotype and placed it back in the vial. The remaining seven specimens were combined with others from the same station, all of them being paralectotypes (SBMNH 347597).

Many of the specimens of *Sertularia stabilis* examined here provided substrate for the hydroid *Hebellopsis scandens* (Bale, 1888). *Sertularia stabilis* was assigned to the genus *Dynamena*, as *D. stabilis*, by Cairns et al. (1991, 2002).

Reported range.— Gulf of California (type locality: Georges Island) (Fraser, 1948).

Genus *Thuiaria* Fleming, 1828  
*Thuiaria insociabilis* Fraser, 1948

*Thuiaria insociabilis* Fraser, 1948: 251, pl. 29 fig. 22; Schmitt, 1948: xii; Ljubenkov, 1980: 49.

Syntype material.— USA, California, 5 miles northeast of Anacapa Island lighthouse, 125-135 fm (*Velero III* station 1273-41) (Fraser, 1948).



Lectotype.— *Velero III* station 1273-41, USA, California, 5 miles northeast of Anacapa Island lighthouse, 34°05'10"N, 119°18'00"W, 125-135 fm (229-247 m), coarse sand, 23.iii.1941, one small colony, broken off basally, 1.4 cm high, unattached, without gonothecae, SBMNH 347314 (AHF Holotype No. 99).

Paralectotypes.— None designated.

Remarks.— Fraser's (1948) original description and illustrations of this species appear to have been based on a single small colony. The specimen labeled "*Thuiaria insociabilis* Fraser," "Type," and "AHF Holotype No. 99" (SBMNH 347314) appears to be this hydroid. While it could be considered the holotype by monotypy, we prefer to designate it as the lectotype in case other specimens or fragments of the colony exist elsewhere.

Additional material identified as this species, from the same station (*Velero III* station 1273-41, SBMNH 347598), was present in the collections examined here. This sample contained a mix of two sertulariid species, one of which is likely *Thuiaria insociabilis*. These colonies are much larger and better developed than the lectotype specimen, but were clearly not considered by Fraser (1948) during preparation of his account of the species. We do not believe it is syntype material, and have not designated it as a paralectotype.

Reported range.— Pacific off southern California (type locality: off Anacapa Island) (Fraser, 1948).

#### *Thuiaria simplex* Fraser, 1938a

*Thuiaria simplex* Fraser, 1938a: 10, 55, pl. 13 fig. 63; 1938c: 135; 1939: 160; 1946: 81, 336; 1948: 251; Schmitt, 1948: xii; Arai, 1977: 28.

*Tridentata simplex*: Cairns et al., 1991: 27; 2002: 58.

Syntype material.— Ecuador, Santa Elena Bay, 10 fm; San Francisco Bay, 2 fm. Colombia, Gorgona Island, 5-6 fm. Mexico, east of islands off Navidad Head, 25-35 fm; Cerros (Cedros) Island, South Bay, low tide (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one unbranched colony, 13 mm high, unattached, without gonothecae, SBMNH 347315 (AHF Holotype No. 100).

Paralectotypes: *Velero III* station 209-34, as above for lectotype, three colonies, to 5 mm high, on algae and unattached, without gonothecae, SBMNH 369464.

*Velero III* station 217-34, Ecuador, off Cape San Francisco, 00°40'N, 80°08'50"W, 2 fm (6 m), rock + reef, 11.ii.1934, one (?) unbranched colony, 5 mm high, on coralline algae, without gonothecae, SBMNH 347599 (specimens have at some time been dry).

*Velero III* station 275-34 (two vials), Mexico, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, three unbranched colonies, to 1.7 mm high, unattached, without gonothecae, SBMNH 347600.

*Velero III* station 288-34, Mexico, Cedros Island, South Bay, 28°05'20"N, 115°20'20"W, shore, rock, 10.iii.1934, no hydroids of *Thuiaria simplex* found, SBMNH 347601.

*Velero III* station 288-34, as above, 8 mm high colony arising from stolon, creeping on stone, no gonothecae, mixed with species of *Plumularia/Halopteris*, two slides, RMNH 2603.



Colombia, Gorgona Island, BCPM 976-753-1 (Arai, 1977).

Remarks.— Four small colonies and fragments of colonies were present in the vial of *Thuiaria simplex* from *Velero III* station 209-34 labeled “Holotype” and “AHF Holotype No. 100” (SBMNH 347315). The specimen chosen as the lectotype was the largest of these, and it was close to the original description and illustration. Others were removed to a separate vial as paralectotypes (SBMNH 369464).

We discovered a taxonomic problem with specimens labeled as paratypes. This species was originally described from material collected during the 1934 Allan Hancock Pacific Expedition, with syntype material as listed above. Specimens of *Thuiaria simplex* labeled “Paratype” and “AHF Paratype No. 224,” are from Secas Islands, Panama (*Velero III* station 450-35, SBMNH 347316), collected during the 1935 Allan Hancock Pacific Expedition. Accordingly, they are not part of the syntype series, as listed above, and are excluded from the paralectotypes. A record of *T. simplex* from the Secas Islands, likely based on these specimens, was given in a subsequent paper by Fraser (1938c).

A sample examined from South Bay, Cedros Island, Mexico (*Velero III* station 288-34), does not include any hydroids that can be assigned to *Thuiaria simplex*. Instead, the specimens include a sertulariid with hydrothecae in strictly opposite pairs, not alternate as in *Thuiaria simplex*, as well as a species of *Plumularia* and a campanulariid. However, two slides of *Thuiaria simplex* from this station are present in the National Museum of Natural History, Leiden, as RMNH 2603.

A discrepancy exists between location data given by Fraser (1938a) for specimens from the Tenacatita Bay area and that of the official station record in Fraser (1943c) (compare record of syntype material with the paralectotype from *Velero III* station 275-34). This is believed to be an error and the material from station 275-34 is indeed considered paralectotype material.

Difficulties in determining the character of the marginal cusps, and the lack of gonothecae, make the generic assignment of this species unclear. Unlike in *Thuiaria*, there appear to be at least two distinct cusps on the hydrothecal rim. The species was referred to *Tridentata* by Cairns et al. (1991, 2002), but the hydrothecae appear to more closely resemble those of *Sertularia*.

Reported range.— Pacific off Ecuador (type locality: off Santa Elena Bay), Colombia, and Mexico (Fraser, 1938a, 1938c, 1946, 1948).

Genus *Aglaophenia* Lamouroux, 1812

*Aglaophenia dispar* Fraser, 1948

(fig. 3)

*Aglaophenia dispar* Fraser, 1948: 252, pl. 29, 30, fig. 23; Schmitt, 1948: xii; Ljubenkov, 1980: 50; Lees, 1986: 116; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, San Luis Obispo Bay, 8-14 fm (*Velero III* station 885-38); Monterey Bay, near mouth of Salinas River, 10-13 fm; off Point Arguello, 15-30 fm; off El Segundo, 30-31 fm; off Huntington Beach, 3-5 fm (Fraser, 1948).

Lectotype.— *Velero III* station 885-38, USA, California, San Luis Obispo County, San Luis Obispo Bay, 35°09'15"N, 120°44'15"W, 8-14 fm (15-26 m), rock, 04.viii.1938, one colony fragment, 60 mm long, with two corbulae, SBMNH 347195 (registered as syntype) (AHF Holotype No. 101).

Paralectotypes.— *Velero III* station 885-38, as above for lectotype, one colony fragment, 110 mm long with five side branches (fig. 3A), and three detached side-branches, no corbulae, SBMNH 369465.

*Velero III* station 885-38, as above for lectotype, two slides, RMNH 2645.

*Velero III* station 885-38, as above for lectotype, SBMNH 347335 (fig. 3B of detached branch with corbula) (registered as voucher). (Note: the station number on the label in this sample is erroneously given as 885-39; the collection data correspond to *Velero III* 885-38).

*Velero III* station 888-38, USA, California, Monterey County, Monterey Bay, near mouth of Salinas River, 36°44'30"N, 121°49'30"W, 10-13 fm (18-24 m), sand, 08.viii.1938, SBMNH 347337 (registered as voucher).

*Velero III* station 893-38, USA, California, Santa Barbara County, off Point Arguello, 34°34'20"N, 120°40'W, 15-30 fm (27-55 m), 10.viii.1938, SBMNH 347338 (registered as voucher).

*Velero III* station 1126-40, USA, California, Los Angeles County, off Huntington Beach, 33°37'02"N, 118°01'55"W, 8-15 fm (15-27 m), sand, 20.iv.1940, colony 150 mm high, composed of pseudodichotomously branched axis; individual plumes 30-70 mm long, hydrocladia pinnately arranged, closely set, 6-12 mm long, SBMNH 347339 (registered as voucher).

*Velero III* station 1126-40, as above, two slides, RMNH 2630.

*Velero III* station 1141-40, USA, California, Los Angeles County, off El Segundo, 33°53'25"N, 118°28'40"W, 28-31 fm (51-57 m), gray-green sand, 06.v.1940, SBMNH 347336 (registered as voucher).

Remarks.— The material labeled AHF Holotype No. 101 (SBMNH 347195) included five colony fragments. While these may have all been from the same colony, we isolated the single branch having corbulae as the lectotype. The remaining pieces were placed in a separate bottle (SBMNH 369465) as part of the paralectotype series. The largest of these fragments resembles Fraser's figure (1948, pl. 29 fig. 23a) in colony structure, but it is unclear whether or not the figures were made from this specimen.

Reported range.— Coast of California (type locality: San Luis Obispo Bay) (Fraser, 1948).

*Aglaophenia diversidentata* Fraser, 1948

*Aglaophenia diversidentata* Fraser, 1948: 253, pl. 30 fig. 24; Schmitt, 1948: xii; Ljubenkov, 1980: 50; Cairns et al., 1991: 28; 2002: 21.



Fig. 3. *Aglaophenia dispar* Fraser, 1948. A, B, paralectotypes from *Velero III* station 885-38, USA, California, San Luis Obispo County, San Luis Obispo Bay, 35°09'15"N, 120°44'15"W, 8-14 fm (15-26 m), rock, 04.viii.1938.

Syntype material.— USA, California, San Diego Bay, piles of Standard Oil pier, littoral on ascidians (Fraser, 1948).

Lectotype.— No *Velero III* station number, USA, California, San Diego County, San Diego Bay, piles of Standard Oil Pier, 32°39'00"N, 117°08'00"W, littoral on ascidians, 16.xi.1941, one fragment of a colony, 22 mm long, detached from substrate, with a corbula, SBMNH 347196 (AHF Holotype No. 102).

Paralectotypes.— As above for lectotype, three fragments, 5, 5, and 17 mm long, detached from substrate, without corbulae, SBMNH 369466.

As above for lectotype, one slide, RMNH 2650.

Remarks.— The vial labeled "AHF Holotype 102" (SBMNH 347196) originally contained four colony fragments. We could not be certain that these were all part of a single colony. The largest of these, and the only one bearing a corbula, was returned to this vial as the lectotype; the other three were placed in a separate sample bottle as paralectotypes (SBMNH 369466).

From Fraser's description it is clear that he saw only fragments of colonies, the highest being 40 mm high. Although the structure of the basal part of the stem thus remains unknown, this is a species with a distinctive hydrotheca and corbula. It can be redescribed from the colony fragments included in the type series. Fraser's figure (1948, pl. 30 fig. 24a) depicts a species of *Aglaophenia* with widely spaced hydrocladia, a peculiarity also born out by the lectotype.

Reported range.— Coast of California (type locality: San Diego Bay) (Fraser, 1948).

*Aglaophenia epizoica* Fraser, 1948  
(fig. 4)

*Aglaophenia epizoica* Fraser, 1948: 254, pl. 30 fig. 25; Schmitt, 1948: xii; Ljubenkov, 1980: 50; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, Santa Cruz Island, 1 mile east of Smugglers Cove, 19-20 fm (*Velero III* station 1296-41); San Miguel Island, 1 mile north of Point Bennett, 40-46 fm; Santa Rosa Island, 2¼ miles east of South Point, 23-28 fm; Santa Rosa Island, 2½ miles east of South Point, 17-18 fm and 15-20 fm; Santa Rosa Island, 1 mile south of East Point, 15-16 fm; Santa Rosa Island, 2.6 miles east of East Point, 47-49 fm; Santa Rosa Island, 6¼ miles southeast of East Point, 46 fm; Santa Cruz Island, 3 miles southeast of Fraser Point, 15-19 fm; 0.3 mile west of Pelican Bay, 35 fm; 1 mile north of San Pedro Point, 45-46 fm; 3½ miles northeast of San Pedro Point, 46-47 fm; ½ mile east of San Pedro Point, 26-40 fm; ½ mile north of Platt Point, 36-47 fm; east of Gull Island, 11-19 fm; Anacapa Passage, 25-26 fm; north of Anacapa Island, 15 fm; Anacapa Island, 1 mile north of west end, 45-46 fm; Anacapa Island, 1 mile south of west end, 25-26 fm; northeast of Anacapa Island, 45 fm; east of Santa Barbara Island, 41-47 fm; 1 mile east of Santa Barbara Island, 20-40 fm; Santa Barbara Island, 4 miles east of landing, 40 fm; 3½ miles off Huntington Beach, 74-77 fm; 5 miles from San Pedro breakwater, 17-19 fm; south of San Nicolas Island, 20-34 fm; Dutch Harbor, 15-22 fm; 9 miles off San Diego, 78-81 fm; San Diego Bay, 5-7 fm. Mexico, Cedros Island, Ranger Bank, 78-83 fm; 1 mile south of San Benito Island, 40-49 fm; 5½ miles south of San Benito Island, 69-81 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1296-41, USA, California, Santa Barbara County, Santa Cruz Island, 1 mile east of Smuggler's Cove, 34°01'10"N, 119°31'20" W, 19-20 fm (35-37 m), rock + kelp, 12.iv.1941, a 120 mm long, unbranched plume basally attached to a short stolon, bearing 8 corbulae, SBMNH 347197 (AHF Holotype No. 103) (fig. 4).

Paralectotypes.— *Velero III* station 874-38, USA, California, Santa Barbara County, northeast of Anacapa Island, 34°01'30"N, 119°21'W, shell, 45 fm (82 m), 01.viii.1938, two colonies, 100 and 80 mm, and a fragment, hydrocladia 18 mm long, two corbulae, SBMNH 347340.

*Velero III* station 875-38, USA, California, Santa Barbara County, northeast of Anacapa Island, 34°02'30"N, 119°20'W, 50 fm (91 m), rock + sponges, 01.viii.1938, single 80 mm long plume, without corbulae, SBMNH 347341.

*Velero III* station 878-38, USA, California, Santa Barbara County, north of Anacapa Island, 34°00'45"N, 119°24'30" W, 15 fm (27 m), sand, 01.viii.1938, several tangled colonies, no corbulae observed, SBMNH 347342.

*Velero III* station 1145-40, USA, California, Santa Barbara County, Santa Barbara Island, east side, 33°28'20"N, 119°00'20"W, 41-47 fm (75-86 m), rock + kelp + fine sand, 30.vi.1940, five colonies, in bad condition, up to 80 mm long, attached to basal stolon, no corbulae, SBMNH 347343.

*Velero III* station 1190-40, USA, California, Santa Barbara County, Anacapa Passage, 33°58'45"N, 119°32'15"W, 15-50 fm (27-37 m), sand + gravel, 30.x.1940, several tangled colonies, no corbulae observed, SBMNH 347344.

*Velero III* station 1197-40, USA, California, Santa Barbara County, south of Santa Cruz Island, east of Gull Island, 33°57'15"N, 119°47'15"W, 6-10 fm (11-18 m), sand + red-green algae + *Dendroaster* + crabs, 31.x.1940, numerous colonies and fragments, many with corbulae, SBMNH 347347.

*Velero III* station 1205-40, USA, California, Ventura County, south side of San Nicolas



Fig. 4. *Aglaophenia epizoica* Fraser, 1948, lectotype from *Velero III* station 1296-41, USA, California, Santa Barbara County, Santa Cruz Island, 1 mile east of Smuggler's Cove, 34°01'10"N, 119°31'20"W, 19-20 fm (35-37 m), rock + kelp, 12.iv.1941.

Island, 33°12'45"N, 119°29'15"W, 20-23 fm (37-42 m), green sand, 24.xi.1940, several damaged colonies and fragments, with corbulae, SBMNH 347345.

*Velero III* station 1219-40, USA, California, Ventura County, San Nicolas Island, Dutch Harbor, 33°13'05"N, 119°29'30"W, 15-22 fm (27-40 m), fine sand, 12.xii.1940, several colonies, some considerably branched, and fragments, corbulae present, SBMNH 347346.

*Velero III* station 1232-41, USA, California, Los Angeles County, 5 miles—152° from San Pedro Breakwater, 33°38'15"N, 118°12'15"W, 19 fm (35 m), coarse sand + shell + clay, 15.ii.1941, numerous colonies of varied height, many corbulae, SBMNH 347348 (two bottles).

*Velero III* station 1240-41, USA, California, San Diego County, 9 miles off San Diego, 32°34'50"N, 117°22'05"W, 78-81 fm (143-148 m), green sand + pebbles, 23.ii.1941, single 60 mm high plume, with three corbulae, SBMNH 347350.

*Velero III* station 1242-41, USA, California, San Diego County, San Diego Bay anchorage, 32°38'50"N, 117°12'15"W, 6-7 fm (11-13 m), no details of substrate, 23.ii.1941, 30 mm long plume, without corbulae (may very well represent another species), SBMNH 347404.

*Velero III* station 1246-41, Mexico, Baja California Norte, off Cedros Island, Ranger Bank, 28°33'44"N, 015°30'00"W, 78-83 fm (143-152 m), coral + loose rock + pebbles + shell, 25.ii.1941, several colony fragments, ca. 6 mm long, no corbulae, SBMNH 347405.

*Velero III* station 1250-41, Mexico, Baja California Norte, 1 mile south of San Benito Islands, 28°17'15"N, 115°35'40"W, 44-49 fm (80-90 m), coralline + sand + shell, 26.ii.1941, two plumes, 70 mm long from communal stolon, with corbulae, also some fragments, SBMNH 347406.

*Velero III* station 1251-41, Mexico, Baja California Norte, 5½ miles south of San Benito Islands, 28°13'00"N, 115°33'30"W, 66-81 fm (120-148 m), fine green and grey sand, 26.ii.1941, single plume, 40 mm high, detached, no corbulae, SBMNH 347407.

*Velero III* station 1270-41, USA, California, Santa Barbara County, ½ mile south of west end of Anacapa Island, 34°00'05"N, 119°26'40"W, 25-26 fm (46-48 m), coralline + rock, 16.iii.1941, four colonies, longest 120 mm, and some fragments, corbulae present, SBMNH 347349.

*Velero III* station 1280-41, USA, California, Santa Barbara County, Santa Rosa Island, 2½ miles east of South Point, 33°53'30"N, 120°03'30"W, 15-21 fm (27-38 m), shell + red algae, 10.iv.1941, numerous colonies and fragments, many corbulae, SBMNH 347410.

*Velero III* station 1282-41, USA, California, Santa Barbara County, Santa Rosa Island, 2½ miles east of South Point, 33°53'45"N, 120°03'40"W, 17-18 fm (31-33 m), gravel + red algae, 10.iv.1941, numerous colonies, partly branched, partly attached to stolon tubes, many corbulae, SBMNH 347411 (two bottles).

*Velero III* station 1283-41, USA, California, Santa Barbara County, Santa Rosa Island, 2¼ miles east of South Point, 33°53'20"N, 120°03'50"W, 23-28 fm (42-51 m), gravel + sand, 10.iv.1941, many colonies, to 120 mm high, and fragments, many corbulae, SBMNH 347412.

*Velero III* station 1284-41, USA, California, Santa Barbara County, Santa Rosa Island, 1 mile south of East Point, 33°55'30"N, 119°58'30"W, 15-16 fm (27-29 m), loose rock + sand + nullipores, 10.iv.1941, many colonies and fragments, many corbulae, SBMNH 347413.



*Velero III* station 1284-41, as above, 150-180 mm long plumes, hydrocladia pinnately arranged, up to 20 mm long, basal part of axis without hydrocladia, occasionally with epizoids, four slides, RMNH 2623.

*Velero III* station 1285-41, USA, California, Santa Barbara County, Santa Cruz Island, 3 miles southwest of Fraser Point, 34°02'00"N, 119°59'00"W, 15-19 fm (27-35 m), fine sand + nullipores + *Ophiothrix*, 11.iv.1941, many colonies and fragments, up to 100 mm high, many corbulae, SBMNH 347414.

*Velero III* station 1286-41, USA, California, Santa Barbara County, Santa Cruz Island, 3 miles south of Fraser Point, 34°00'40"N, 119°57'00"W, 20-24 fm (37-44 m), sand + shell + nullipores, 11.iv.1941, six colonies, 15-40 mm high, some with corbulae, SBMNH 347408.

*Velero III* station 1289-41, USA, Santa Barbara County, Santa Rosa Island, 2.6 miles east of East Point, 33°56'05"N, 119°54'50"W, 47-49 fm (86-90 m), green mud, 11.iv.1941, two colonies, ca. 35 mm high, one with corbula, SBMNH 347409.

*Velero III* station 1291-41, USA, California, Santa Barbara County, Santa Rosa Island, 6¼ miles southeast of South Point, 33°51'00"N, 120°00'20"W, 46 fm (84 m), rocky + alcyonarians, 11.iv.1941, single 80 mm long colony, with a few corbulae, SBMNH 347415.

*Velero III* station 1296-41, as above for lectotype, numerous colonies, up to 80 mm high, partly attached to stolonal tubes, partly branched, many corbulae, SBMNH 347417.

*Velero III* station 1296-41, as above for lectotype, one lot, in ethanol, USNM 49294.

*Velero III* station 1297-41, USA, California, Santa Barbara County, Santa Cruz Island, ½ mile east of San Pedro Point, 34°02'00"N, 119°30'35"W, 26-40 fm (48-73 m), rocky, 12.iv.1941, many colonies, some broken, partly branched, partly attached to stolonal tubes, some corbulae present, SBMNH 347418.

*Velero III* station 1298-41, USA, California, Santa Barbara County, Santa Cruz Island, 1 mile north of San Pedro Point, 34°03'20"N, 119°30'40"W, 45-46 fm (82-84 m), sand + broken shell, 12.iv.1941, several tangled colonies, with corbulae, SBMNH 347419.

*Velero III* station 1301-41, USA, California, Santa Barbara County, Santa Cruz Island, 0.3 miles northwest of Pelican Bay, 34°02'10"N, 119°41'50"W, 35-39 fm (64-71 m), mud + brittle stars, 12.iv.1941, single mutilated colony, 50 mm high, and some detached hydrocladia, SBMNH 347420.

*Velero III* station 1303-41, USA, California, Santa Barbara County, Santa Cruz Island, 34°03'50"N, 119°45'25"W, 36-47 fm (66-86 m), dead shell, 12.iv.1941, fragment composed of three 15 mm long stems attached to stolonal tube, no corbulae, SBMNH 347421.

*Velero III* station 1398-41, USA, California, Santa Barbara County, Santa Barbara Island, 4 miles east of landing, 33°28'40"N, 119°40'00"W, 40 fm (73 m), Blake trawl, sand + urchins, 28.viii.1941, numerous colonies, with corbulae, SBMNH 347422.

*Velero III* station 1409-41, USA, California, Santa Barbara County, Santa Barbara Island, 1 mile off east side, 33°28'40"N, 119°00'30"W, 20-40 fm (46-73 m), sand + sea urchins, Blake trawl, 15.ix.1941, single 40 mm long plume and some hydrocladia, corbulae present, SBMNH 347423.

*Velero III* station 1411-41, USA, California, Santa Barbara County, San Miguel Island, 1 mile south of Point Bennett, 34°00'50"N, 120°27'20"W, 45-48 fm (82-88 m), sand + shell, Blake trawl, 16.ix.1941, several tangled and damaged colonies, with a few corbulae, SBMNH 347425.



*Velero III* station 1418-41, USA, California, Santa Barbara County, Santa Cruz Island, 3½ miles northeast of San Pedro Point, 34°03'20"N, 119°28'15"W, 46-47 fm (84-86 m), sand + sea urchins, dredge, 17.ix.1941, numerous colonies, with corbulae, SBMNH 347426.

*Velero III* station 1419-41, USA, California, Santa Barbara County, Anacapa Island, 1 mile north of west end, 34°02'00"N, 119°26'40"W, 45-47 fm (82-86 m), sand + sea urchins, Blake trawl, 17.ix.1941, a number of colonies, hydrocladia of considerable length (30 mm), with corbulae, SBMNH 347427.

Remarks.— This is a distinctive species, with a characteristic colony form and a large corbula. The figure that Fraser (1948, pl. 30 fig. 25a) provided of the colony is inaccurate; the plumes are much longer and the hydrocladia are more widely separated than illustrated. The species can be redescribed from the abundant material. Judging from the large number of collections, this must be a common species across its known range.

Reported range.— Pacific off Baja California and southern California (type locality: Santa Cruz Island) (Fraser, 1948).

*Aglaophenia fluxa* Fraser, 1948  
(fig. 5)

*Aglaophenia fluxa* Fraser, 1948: 256, pl. 31 fig. 26; Schmitt, 1948: xiii; Ljubenkov, 1980: 50; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, 7½ miles south of Point Loma, 30-33 fm (*Velero III* station 1241-41); off Redondo Beach, no depth data; 2 miles off Belmont Pier, 7-10 fm; 3 miles off Seal Beach, 11 fm; off Huntington Beach, 4-20 fm; 6 miles southeast of San Pedro breakwater, 20-21 fm; off San Nicolas Island, 28-31 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1241-41, USA, California, San Diego County, 7½ miles south of Point Loma, 32°33'10"N, 117°15'16"W, 30-33 fm (55-60 m), coarse sand, 23. ii.1941, an entirely monosiphonic, slender, branched colony, length 220 mm, of which 50-mm long top part is detached, two corbulae, SBMNH 347198 (AHF Holotype No. 104) (fig. 5).

Paralectotypes.— *Velero III* station 1123-40, USA, California, Ventura County, off San Nicolas Island, 33°15'50"N, 119°24'40"W, 28-31 fm (51-57 m), sponge + rock, 12.iv.1940, small, 7 mm high colony and a detached hydrocladium (may belong to another species), SBMNH 347428.

*Velero III* station 1127-40, USA, California, Los Angeles County, off Huntington Beach, 33°38'30"N, 118°00'20"W, 4-20 fm (7-37 m), no substrate data, beam

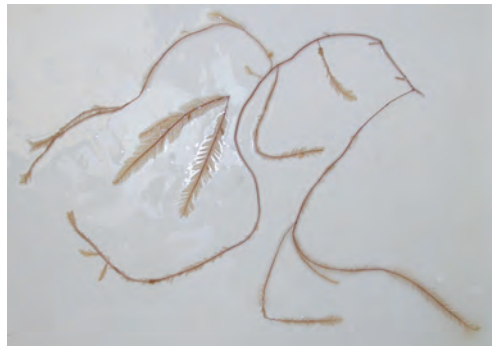


Fig. 5. *Aglaophenia fluxa* Fraser, 1948, lectotype from *Velero III* station 1241-41, USA, California, San Diego County, 7½ miles south of Point Loma, 32°33'10"N, 117°15'16"W, 30-33 fm (55-60 m), coarse sand, 23. ii.1941.

trawl, 20.iv.1940, 80 mm high colony with 5 side-branches, no corbulae, SBMNH 347429.

*Velero III* station 1158-40, USA, California, Orange County, 3 miles off Seal Beach, 33°41'55"N, 118°08'35"W, 11 fm (20 m), sand + debris + fish + shell, beam trawl, 2 hauls, 07.vii.1940, numerous tangled colonies, up to a height of 150 mm, corbulae present, SBMNH 347430.

*Velero III* station 1161-40, USA, California, Santa Barbara County, 2 miles off Belmont Pier, 33°43'00"N, 118°10'10"W, 7-10 fm (13-18 m), sand, 23.vii.1940, numerous colonies of varied height, up to 200 mm, some corbulae present, SBMNH 347431.

*Velero III* station 1161-40, as above, loosely branched stems, monosiphonic over entire length, individual plumes ca. 60 mm long, hydrocladia lightly spaced, ca. 5 mm long, no corbulae, two slides, RMNH 2649.

*Velero III* station 1231-41, USA, California, Los Angeles County, 6 miles southeast of San Pedro breakwater, 33°38'10"N, 118°09'50"W, 20-21 fm (37-38 m), sandy, 15.ii.1941, a number of colonies, up to 150 mm high, and fragments, no corbulae observed, SBMNH 347432.

*Velero III* station 1241-41, as above for lectotype, vial containing 3 tubes with parts of colonies; no corbulae observed, SBMNH 347433.

*Velero III* station 1241-41, as above for lectotype, one lot, in ethanol, USNM 49293.

Remarks.— Fraser's figure (1948, pl. 31 fig. 26a) is of a species similar to the structure of the lectotype, but not necessarily the same specimen. This species resembles *Aglaophenia elongata* Marktanner-Turneretscher, 1890, in structure of the colony. The material available is sufficient for a proper redescription of the species.

Reported range.— Pacific off the coast of southern California (type locality: south of Point Loma) (Fraser, 1948).

*Aglaophenia integriseptata* Fraser, 1948  
(fig. 6)

*Aglaophenia integriseptata* Fraser, 1948: 257, pl. 31 fig. 27; Schmitt, 1948: xiii; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— Mexico, off San Benito Islands, 51-52 fm (*Velero III* station 1008-39); 5½ miles south of San Benito Island, 71-72 fm and 66-81 fm. USA, California, Anacapa Island, 1 mile north of west end, 45-46 fm; 10¼ miles west of Point Dume, 47-48 fm; 1 mile east of Santa Barbara Island, 20-40 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1008-39, Mexico, Baja California Norte, off San Benito Islands, 28°16'17"N, 115°32'54"W, 51-52 fm (93-95 m), fine green sand + pebbles, 19. ix.1939, a 50 mm long colony, in two parts of 25 mm each, with one corbula, SBMNH 347199 (AHF Holotype No. 105) (fig. 6A, B).

Paralectotypes.— *Velero III* station 1008-39, as above for lectotype, vial contains two tubes, of which one has a 30 mm long sterile colony and a few hydrocladia, the second a 50 mm long colony that may well represent another species (fig. 6C), SBMNH 347434.

*Velero III* station 1008-39, as above for lectotype, one lot, in ethanol, USNM 49296.

*Velero III* station 1251-41, Mexico, Baja California Norte, 5½ miles south of San Benito Islands, 28°13'00"N, 115°33'30"W, 66-81 fm (120-148 m), fine green and grey sand, 26.ii.1941, vial contains two tubes, one having a 30 mm long colony with a corbula (top

part removed for slide RMNH 2629), hydrocladia pinnately arranged, widely spaced, ca. 7 mm long; the second having a 20 mm long colony fragment, SBMNH 347435.

*Velero III* station 1276-41, USA, California, Los Angeles County, 10¾ miles west of Point Dume, 34°00'20"N, 119°01'20"W, 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, single 50 mm long colony, without corbulae, SBMNH 347436.

*Velero III* station 1409-41, USA, California, Santa Barbara County, Santa Barbara Island, 1 mile off east side, 33°28'45"N, 119°00'30"W, 20-40 fm (37-73 m), sand + sea urchins, Blake trawl, 15.ix.1941, single 35 mm long colony, without corbulae, SBMNH 347437.

*Velero III* station 1419-41, USA, California, Santa Barbara County, Anacapa Island, 1 mile north of west end, 34°02'00"N, 119°26'40"W, 45-47 fm (82-86 m), sand + sea urchins, Blake trawl, 17.ix.1941, fragments of one or two colonies and loose hydrocladia, SBMNH 347438.

Remarks.— This species is very near *Aglaophenia epizoica* Fraser, 1948, from which it seems to differ by the complete, oblique septum in the base of the hydrothecal cavity and the smaller corbula. Though the material present is not rich it is probably sufficient for redescription.

Reported range.— Pacific Ocean off Baja California (type locality: off San Benito Islands) and southern California (Fraser, 1948).

*Aglaophenia lateseptata* Fraser, 1948  
(fig. 7)

*Aglaophenia late-septata* Fraser, 1948: 258, pl. 32 fig. 28; Schmitt, 1948: xiii; Ljubenkov, 1980: 50.

*Aglaophenia lateseptata*: Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, off San Nicolas Island, 40-48 fm (*Velero III* station 1121-40); Santa Rosa Island, 3½ miles east of South Point, 35-38 fm; Santa Cruz Island, ½ mile south of Gull Island, 34-41 fm; Laguna Beach, ½ mile east of Abalone Point, 44-46 fm; off San Nicolas Island, 28-31 fm; Cortes Bank, 11 miles northwest of buoy, 45-46 fm; Cortes Bank, 9½ miles northwest of buoy, 50 fm; Cortes Bank, 4½ miles west-northwest of buoy, 90-110 fm; Tanner bank, 25-28 fm and 37-40 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1121-40, USA, California, Ventura County, off San Nicolas Island, 33°20'20"N, 119°29'50"W, 40-48 fm (73-88 m), broken shell + boulder, 11.iv.1940, a 34 mm long, unbranched plume, with 4 corbulae, SBMNH 347200 (fig. 7).

Paralectotypes.— *Velero III* station 1120-40, USA, California, Ventura County, off San

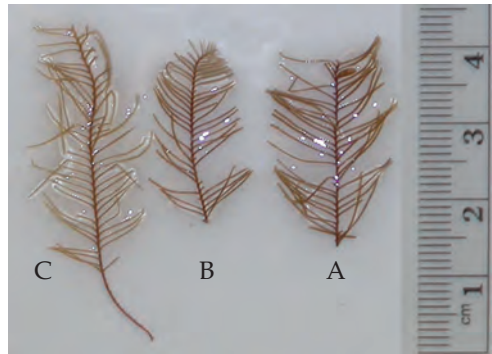


Fig. 6. A, B, *Aglaophenia integriseptata* Fraser, 1948, lectotype from *Velero III* station 1008-39, Mexico, Baja California Norte, off San Benito Islands, 28°16'17"N, 115°32'54"W, 51-52 fm (93-95 m), fine green sand + pebbles, 19.ix.1939. C, ?*Aglaophenia integriseptata* Fraser, 1948, from same station.

Nicolas Island, 33°17'50"N, 119°29'30"W, 29-33 fm (53-60 m), sand + broken shells, 11.iv.1940, mutilated small colony, with corbulae, SBMNH 347439.

*Velero III* station 1121-40, as above for lectotype, two colonies, 35 and 75 mm high, with corbulae, SBMNH 347440.

*Velero III* station 1123-40, USA, California, Ventura County, off San Nicolas Island, 33°15'50"N, 119°24'40"W, 28-31 fm (57-57 m), sponge + rock, 12.iv.1940, two tubes with detached colonies, with corbulae, SBMNH 347441.

*Velero III* station 1293-41, USA, California, Santa Barbara County, Santa Rosa Island, 3½ miles east of South Point, 33°53'20"N, 119°58'00"W, 35-38 fm (64-69 m), sand + rock, 11.iv.1941, four colonies, 10-35 mm high, partly attached to stolon, SBMNH 347442.

*Velero III* station 1294-41, USA, California, Santa Barbara County, Santa Cruz Island, ½ mile south of Gull Island, 33°56'30"N, 119°49'40"W, 34-41 fm (62-75 m), sand + shell, 11.iv.1941, two mutilated colonies, 25 and 10 mm high, without corbulae, SBMNH 347443.

*Velero III* station 1339-41, USA, California, San Diego County, Tanner Bank, 32°41'30"N, 119°06'35"W, 25-28 fm (46-51 m), rock + coralline, 10.vi.1941, two colonies, 40 and 10 mm, and some detached hydrocladia; corbulae present, SBMNH 347444.

*Velero III* station 1340-41, USA, California, San Diego County, Tanner Bank, 32°41'00"N, 119°06'30"W, 37-40 fm (68-73 m), grey sand + rock, 10.vi.1941, numerous unbranched colonies, up to 60 mm high, partly attached to basal stolonial tubes, many corbulae, SBMNH 347445.

*Velero III* station 1341-41, USA, California, San Diego County, Cortes Bank, 4½ miles north-northwest of buoy, 32°30'45"N, 119°09'30"W, 60-61 fm (110-112 m), black sand + rock, 10.vi.1941, three colonies, 30-50 mm high, corbulae present, SBMNH 347446.

*Velero III* station 1342-41, USA, California, San Diego County, Cortes Bank, 9½ miles northwest of buoy, 32°33'15"N, 119°15'15"W, 50 fm (91 m), sand + rock, 10.vi.1941, eight colonies, up to 60 mm high, some fragmented, corbulae present, SBMNH 347447.

*Velero III* station 1347-41, USA, California, San Diego County, Cortes Bank, 11 miles northwest of buoy, 32°32'30"N, 119°18'10"W, 45-46 fm (82-84 m), coralline, 11.vi.1941, many unbranched colonies, up to 60 mm high, partly attached to basal tubes, with many corbulae, SBMNH 347448.

*Velero III* station 1347-41, as above, isolated stems, 40-60 mm high, hydrocladia widely spaced, 6-8 mm long, many corbulae present, two slides, RMNH 2632.

*Velero III*, station 1348-41, USA, California, San Diego County, Tanner Bank,

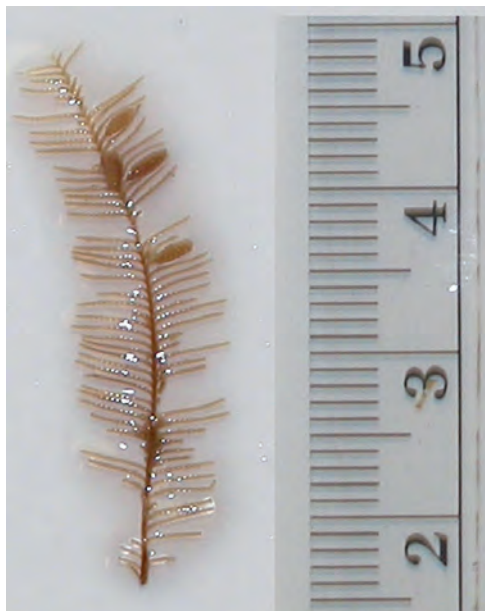


Fig. 7. *Aglaophenia lateseptata* Fraser, 1948, lectotype from *Velero III* station 1121-40, USA, California, Ventura County, off San Nicolas Island, 33°20'20"N, 119°29'50"W, 40-48 fm (73-88 m), broken shell + boulder, 11.iv.1940.



32°43'00"N, 119°11'40"W, 45-46 fm (82-84 m), rocky, 11.vi.1941, three colonies attached to communal basal stolon, 25-40 mm high, with corbulae, SBMNH 347449.

USA, California, off San Nicolas Island, 11.iv.1940, one lot, in ethanol, USNM 49264 (*Velero III* station uncertain).

Remarks.— The lectotype is probably not the specimen figured by Fraser (1948, pl. 32 fig. 28a), which portrays a 28 mm high plume without corbulae. It is a misleading figure as the hydrocladia are more widely spaced and have, with exception of the most distal, the same length (3-4 mm) all along the stem. The present lectotype has been selected from the material of the first station listed by Fraser, being a complete colony without stolon and in possession of four corbulae.

This species is characterized by the shape of the hydrotheca, of which the rim is almost perpendicular to the length axis of the internode and crenulated rather than dentate. The basal part of the hydrothecal cavity has a remarkably strong, straight septum. There is ample material from which the species can be re-described.

Reported range.— Pacific off southern California (type locality: off San Nicolas Island) (Fraser, 1948).

*Aglaophenia longicarpa* Fraser, 1938b  
(fig. 8)

*Aglaophenia longicarpa* Fraser, 1938b: 111, 112, pl. 16 fig. 2; 1938c: 135; 1939: 160 et seq.; 1946: 89, 434; 1948: 259; Schmitt, 1948: xiii; Arai, 1977: 28.

not *Aglaophenia longicarpa* Calder, 1996: 260, fig. 4 [= *Aglaophenia diegensis* Torrey, 1904].

Syntype material.— Mexico, Espiritu Santo Island, San Lorenzo Channel, 24 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 607-36, Mexico, Baja California Sur, Gulf of California, San Lorenzo Channel, 24°21'35"N, 110°20'10"W, 24 fm (44 m), coralline, 21.iii.1936, a single 90 mm high, detached colony, with a number of corbulae, SBMNH 347201 (AHF Holotype No. 107) (fig. 8).

Paralectotypes.— *Velero III* station 607-36, as above for lectotype, many plumes, largely detached, some with short basal stolon, unbranched stems, up



Fig. 8. *Aglaophenia longicarpa* Fraser, 1938b, lectotype from *Velero III* station 607-36, Mexico, Baja California Sur, Gulf of California, San Lorenzo Channel, 24°21'35"N, 110°20'10"W, 24 fm (44 m), coralline, 21.iii.1936.

to 100 mm long, hydrocladia closely set, 8-10 mm long, pinnately arranged, many corbulae, to 6 mm long, SBMNH 347450.

*Velero III* station 607-36, as above for lectotype, one lot, in ethanol, USNM 49265.

*Velero III* station 607-36, as above for lectotype, two slides, RMNH 2647.

Baja California Sur, Espiritu Santo Island, BCPM 976-786-1 (Arai, 1977).

Remarks.— Additional non-type material of this species exists in collections at the National Museum of Natural History, Smithsonian Institution (USNM 51945) from San Francisco Island, Gulf of California, and at the Royal British Columbia Museum (BCPM 976-787-1), from Puerto Escondido, March 25-26, 1940 (Arai, 1977). The latter was apparently not from a *Velero III* station.

This species is primarily characterized by the long and slender corbulae (5-6 mm in the paralectotype). The perisarc of the stem is dark brown, almost black; the hydrocladia are white and rather widely spaced, the corbulae are brown. The shape of the colony was not illustrated by Fraser (1938b).

Reported range.— Pacific off Mexico, including Gulf of California (type locality: San Lorenzo Channel) (Fraser, 1938b, 1946, 1948).

*Aglaophenia pinguis* Fraser, 1938b  
(fig. 9)

*Aglaophenia pinguis* Fraser, 1938b: 111, 113, pl. 16 fig. 3; 1939: 161 et seq.; 1946: 89, 431; 1948: 259; Schmitt, 1948: xiii; Brusca, 1973: 49; Arai, 1977: 28; Ljubenkova, 1980: 50; Austin, 1985: 58; Cairns et al., 1991: 29; 2002: 21.

Syntype material.— Mexico, San Francisco Island, shore (Fraser, 1938b).

Lectotype.— *Velero III* station 652-37, Mexico, Baja California Sur, Gulf of California, San Francisco Island, 24°49'50"N, 110°34'W, shore, shingle, 09.iii.1937, a single colony, 120 mm high, detached from stolon, with numerous corbulae along upper two-thirds of stem, SBMNH 347203 (AHF Holotype No. 108) (fig. 9).

Paralectotypes.— *Velero III* station 652-37, as above for lectotype, several colonies and fragments, many corbulae present, SBMNH 347204.

*Velero III* station 652-37, as above for lectotype, one lot, in alcohol, USNM 49267.

Baja California Sur, Gulf of California, San Francisco Island, BCPM 976-795-1 (Arai, 1977).

Remarks.— Three slides of this species exist in collections at the RMNH: *Velero III* station 1233-41, Huntington Beach, California, 16.ii.1941, 5-10 fm (9-18 m) (two slides, RMNH 2642), and *Velero III* station 1261-41, four miles north of Dewey Channel, Mexico, 27.ii.1941, 24-25 fm (one slide, RMNH 2643). These are from irregularly and loosely branched colonies, ca. 100 mm high, with many corbulae. They do not belong to the lectotype or paralectotype series.

No figure of the colony was presented by Fraser (1938b); the colony is described as being simple, unbranched and up to 18 cm high. Some of the colonies in the present material are branched.

This species is principally characterized by the long and slender colony with short hydrocladia, brown stem perisarc, and white to transparent hydrocladia. Hydrothecae are rather wide, with a fairly long free part of the median nematothecae. Hydrocladial



internodes have two distinct septa. The corbulae are pot-shaped, rather short, and occur in abundance. The species needs a better description of the hydrothecae and corbulae for which the present material is sufficient.

Reported range.— Pacific off Mexico, including the Gulf of California (type locality: San Francisco Island), and southern California (Fraser, 1938b, 1946, 1948).

*Aglaophenia praecisa* Fraser, 1938a

*Aglaophenia praecisa* Fraser, 1938a: 9, 57, pl. 13 fig. 64; Fraser, 1939: 161 et seq.; 1944b: 48; 1946: 89, 432; 1948: 188; Schmitt, 1948: xiii.

Syntype material.— Mexico, Santa Maria Bay, 10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 279-34, Mexico, Baja California Sur, Santa Maria Bay, off Hughes Point, 24°44'45"N, 112°15'20"W, 10 fm (18 m), rough rock, 07.iii.1934, two small, 8 mm high corroids attached to a long stolon, on piece of alga, no corbulae, SBMNH 347205 (AHF Holotype No. 109).

Paralectotype.— *Velero III* station 279-34, as above for lectotype, one tiny colony, 5 mm high, attached to a fragment of alga, also fragment of root with three stems without hydrocladia, no corbulae, SBMNH 347206.

*Velero III* station 279-34, as above for lectotype, one lot, in alcohol, USNM 49269.

Remarks.— This is an extremely ill-defined species, the more so since no corbulae are known. It may very well represent a young stage of one of the better known species of *Aglaophenia* from the collection area.

Reported range.— Pacific off Mexico (type locality: Santa Maria Bay), including the Gulf of California, and off southern California (Fraser, 1938a, 1946, 1948). Later records are based on additional *Velero III* material that, given the small size of the lectotype, may not have been homogeneous.



Fig. 9. *Aglaophenia pinguis* Fraser, 1938b, lectotype from *Velero III* station 652-37, Mexico, Baja California Sur, Gulf of California, San Francisco Island, 24°49'50"N, 110°34'W, shore, shingle, 09.iii.1937.

*Aglaophenia prominens* Fraser, 1938c

*Aglaophenia prominens* Fraser, 1938c: 135, 142, pl. 21 fig. 12; 1939: 161 et seq.; 1946: 89, 432; 1948: 260; Schmitt, 1948: xiii; Arai, 1977: 28; Ljubenkova, 1980: 50; Cairns et al., 1991: 29; 2002: 22; Calder et al., 2003: 1187, fig. 9.

Syntype material.— Peru, Lobos de Afuera Islands, 25-30 fm. Mexico, 4¾ miles east of Coronado Island, 14 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 843-38, Peru, off Lobos de Afuera Islands, 06°53'50"S, 80°43'30"W, 25-30 fm (45-55 m), sand, 14.ii.1938, one colony, 21 mm high, with short hydrocladia (1.5-2.0 mm long), with 2 corbulae, SBMNH 345449 (AHF Holotype No. 110).

Paralectotypes: *Velero III* station 843-38, as above for lectotype, three colonies, between 15 and 35 mm, with several corbulae, SBMNH 345450.

*Velero III* station 843-38, as above for lectotype, one lot, in ethanol, USNM 49270.

*Velero III* station 871-38, Mexico, 4¾ miles east of South Coronado Island, 32°24'N, 117°09'15"W, 14 fm (26 m), sand + kelp, 11.iii.1938, abundant material, SBMNH 347452.

Peru, Lobos de Afuera Islands, BCPM 976-799-1 (Arai, 1977).

Remarks.— This species seems to be well characterized by the strongly sclerotized adcauline wall of the hydrotheca. Non-type material from *Velero III* station 817-38 (north of Isla Española, Galápagos Islands) was illustrated by Calder et al. (2003, fig. 9). Fraser's (1938c) figures of the type (1938, pl. 21 fig. 12a and 12b) should be complemented with new ones and the small corbulae more completely described.

The species was very summarily described by Fraser (1938c); no figure of the colony was presented and the figures of hydrothecae and corbula are indistinct. The colony described by Fraser may very well be the lectotype designated here as it has the same length (ca. 20 mm).

Three slides (RMNH 2627) of material from *Velero III* station 1410-41, 3 miles east of South Point, Santa Rosa Island, 15 July 1941, 17-20 fm (31-37 m), do not belong to the lectotype or paralectotype series.

Reported range.— Southern California to Peru (type locality: Lobos de Afuera Islands); Galápagos Islands (Fraser, 1938c, 1946, 1948; Calder et al., 2003).

*Aglaophenia propinqua* Fraser, 1938b

*Aglaophenia propinqua* Fraser, 1938b: 111, 114, pl. 16 fig. 4; 1939: 161 et seq.; 1946: 89, 433; 1948: 260; Schmitt, 1948: xiii; Brusca, 1973: 49; Arai, 1977: 28.

Syntype material.— Mexico, Port Escondido, 20 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 596-36, Mexico, Oaxaca, Puerto Escondido, 25°48'10"N, 111°17'55"W, 20 fm (36 m), sand, 16.iii.1936, one colony, 100 mm long, detached from stolon, hydrocladia long and thin, length ca. 10-18 mm and widely spaced, no corbulae, SBMNH No. 347207 (AHF Holotype No. 111).

Paralectotype.— *Velero III* station 596-36, as above for lectotype, several 80 mm long stem fragments and remains of colonies, no corbulae, SBMNH 347208 (voucher specimen and specimen labeled 'syntype' have been combined).

*Velero III* station 596-36, as above for lectotype, one lot, in ethanol, USNM 49266. Mexico, Puerto Escondido, BCPM 976-800-1 (Arai, 1977).

Remarks.— This is a species of *Cladocarpus* or *Streptocaulus*. On the front of the hydrotheca are two blunt cusps separated by an embayment continuing along the front of the hydrotheca. Unfortunately there is no gonosome. Two slides (RMNH 2651) from *Velero III* station 1104-40, Aqua Verde Bay, Gulf of California, do not belong to the lectotype or paralectotype series.

Reported range.— Pacific coast of Mexico (type locality: Puerto Escondido) (Fraser, 1938b, 1946, 1948).

*Aglaophenia symmetrica* Fraser, 1938b

*Aglaophenia symmetrica* Fraser, 1938b: 111, 114, pl. 17 fig. 5; 1939: 161 et seq.; 1946: 89, 433; 1948: 188; Schmitt, 1948: xiii; Arai, 1977: 28.

Syntype material.— Mexico, San Pedro Nolasco Island, 75 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 734-37, Mexico, Sonora, Gulf of California, off San Pedro Nolasco Island, 27°59'30"N, 111°24'25"W, 75 fm (137 m), sand, 29.iii.1937, three cormoids attached to a communal stolon, one of cormoids broken, remaining two 150 mm long, with many corbulae, SBMNH 347209 (registered as syntype) (AHF Holotype No. 112).

*Velero III* station 734-37, as above, two schizolectotype slides (RMNH 2631).

Paralectotypes.— *Velero III* station 734-37, as above for lectotype, five colonies and a fragment, height ca. 80 mm, many corbulae, SBMNH 347210.

*Velero III* station 734-37, as above for lectotype, SBMNH 347454 (voucher).

*Velero III* station 734-37, as above for lectotype, one lot, in ethanol, USNM 49268.

Mexico, Gulf of California, off San Pedro Nolasco Island, BCPM 976-809-1 (Arai, 1977).

Remarks.— The shape of the colony was not described by Fraser (1938b) but he indicated that the species grows in clusters and reaches a length of 18 cm. The species is characterized by the length of the hydrotheca and its regularly cusped hydrothecal rim. The material present is sufficient for a proper redescription of the species, particularly its corbula.

Reported range.— Gulf of California (type locality: off San Pedro Nolasco Island) (Fraser, 1938b, 1946, 1948).

*Aglaophenia triplex* Fraser, 1948

*Aglaophenia triplex* Fraser, 1948: 261, pl. 32 fig. 29; Schmitt, 1948: xiii.

Syntype material.— Mexico, Gulf of California, Georges Island, 11½-13 fm (*Velero III* station 1075-40) (Fraser, 1948).

Lectotype.— *Velero III* station 1075-40, Mexico, Sonora, Gulf of California, inside Georges Island, 31°00'40"N, 113°16'15"W, 12-13 fm (22-24 m), sand + shell, 03.ii.1940, a single colony, 80 mm high, with pinnately arranged, closely set, 8-10 mm long hydrocladia, no corbulae, SBMNH 347211 (AHF Holotype No. 113).

Paralectotypes.— *Velero III* station 1075-40, as above for lectotype, four colonies, between 30 and 50 mm, no corbulae, SBMNH 347455.

*Velero III* station 1075-40, as above for lectotype, slide, RMNH 2628.

Remarks.— The specific name was coined by Fraser (1948) because of the supposed peculiar dentition of the hydrothecal rim: three small median cusps were described followed by three much larger lateral cusps on each side. Inspection of the hydrothecae in the lectotype shows distinctly that there is one median cusp and three pairs of rounded lateral cusps gradually diminishing in size from front to back. The hydrocladia originate from apophyses that have distinct frontal arrangement, gracefully curving laterally. The condition of the hydrotheca will probably make the species recognizable amongst the multitude of congeners.

Reported range.— Gulf of California (type locality: off Georges Island) (Fraser, 1948).

*Aglaophenia venusta* Fraser, 1948

*Aglaophenia venusta* Fraser, 1948: 262, pl. 32 fig. 30; Schmitt, 1948: xiii.

Syntype material.— Mexico, Tres Marias Islands, Magdalena Island, 13 fm (*Velero III* station 970-39) (Fraser, 1948).

Lectotype.— *Velero III* station 970-39, Mexico, Nayarit, Tres Marias Islands, Magdalena Island, 21°25'40"N, 106°21'10"W, 13 fm (24 m), coralline + algae, 09.v.1939, four cormoids united by stolonial tubes, the longest 50 mm high, one of the smaller cormoids with two corbulae, SBMNH 347212 (AHF Holotype No. 114).

Paralectotypes.— *Velero III* station 970-39, as above for lectotype, numerous colonies, to 60 mm high, partly attached to fairly thick basal stolonial tubes, also many fragments, some colonies rather heavily overgrown by epizoic organisms, many with corbulae, SBMNH 347456 (registered as voucher).

*Velero III* station 970-39, as above for lectotype, one lot, in ethanol, USNM 49263.

*Velero III* station 970-39, as above for lectotype, one slide, RMNH 2622.

Remarks.— Little information can be derived from Fraser's (1948) rather general description of the colony, hydrothecae, and corbulae. The mode of growth is described as being "loosely clustered," the stolon as being "slightly reticulate." The hydrocladia are more widely spaced than appears from Fraser's (1948, pl. 32 fig. 30a) drawing of the colony. The species was compared by Fraser with *Aglaophenia longicarpa*, with which it seems to have little in common. The material present is ample and certainly sufficient for a proper redescription.

Reported range.— Pacific coast of Mexico (type locality: Tres Marias Islands) (Fraser, 1948).

Genus *Antennella* Allman, 1877  
*Antennella compacta* Fraser, 1938a

*Antennella compacta* Fraser, 1938a: 10, 57, pl. 13 fig. 65; 1939: 161 et seq.; 1944b: 40; 1946: 95, 372; 1948: 188; Schmitt, 1948: xiii; Arai, 1977: 28; Schuchert, 1997: 38.

Syntype material.— Mexico, Cerros (Cedros) Island, South Bay, 10-15 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 287-34, Mexico, Baja California Norte, Cedros Island, South Bay, 28°04'45"N, 115°21'05"W, 10-15 fm (18-27 m), rock along margin of kelp bed, 10.iii.1934, one colony, with a few 5-7 mm high hydrocladia (stems), attached by thin stolon to algae, no gonothecae observed, SBMNH 347193.

Paralectotypes.— *Velero III* station 287-34, as above for lectotype, SBMNH 347192 (labeled as syntype, AHF Holotype No. 115).

*Velero III* station 287-34, as above for lectotype, one lot, in ethanol, USNM 49301.

Mexico, Baja California Norte, Cerros Island (Cedros Island), BCPM 976-815-1, microscope slide (Arai, 1977).

Remarks.— The material indicated as "AHF Holotype No. 115" (SBMNH 347192) appears as though it was once dried out and is in poor condition. The material with the label "AHF Paratype No. 231" (SBMNH 347193) is in much better condition, consisting of a colony having about 10 stems attached to algae, and it is designated as the lectotype. No gonothecae have been observed. One slide (RMNH 2618), from *Velero III* station 528-36, off San Francisco Bay, Baja California, does not belong to the lectotype or paralectotype series.

The description of the species by Fraser (1938a) is certainly insufficient to differentiate it from its many congeners (see also Schuchert, 1997: 38). Fraser's description of the gonothecae is brief; two nematothecae are described as being present on the gonothecal pedicel.

Reported range.— Off west coast of Baja California (type locality: Cedros Island) (Fraser, 1938a, 1946, 1948).

#### Genus *Antennopsis* Allman, 1877

Remarks.— All species of *Antennopsis* Allman, 1877 are currently brought to the genus *Nemertesia* Lamarck, 1816.

#### *Antennopsis sinuosa* Fraser, 1947

*Antennopsis sinuosa* Fraser, 1947: 12-13, pl. 3 fig. 6; Schmitt, 1948: xv; Vervoort, 1968: 109.

*Nemertesia sinuosa*: Ramil and Vervoort, 2006: 127, 150-151.

Syntype material.— Aruba, 8 miles southwest of San Nicolaas Bay, 23-24 fm (Fraser, 1947).

Lectotype.— *Velero III* station A18-39, Antilles, Aruba, 8 miles southwest of San Nicolaas Bay, 23-24 fm (42-44 m), single colony, ca. 80 mm high, and a number of detached branches, no gonothecae, SBMNH 347081 (AHF Holotype No. 164).

Paralectotypes.— *Velero III* station A18-39, as above for lectotype, two unnumbered bottles, each containing one tube, the first with a few hydrocladial branches, the second with a small stem, 25 mm high with branches bearing hydrocladia, SBMNH 369467.

Remarks.— This is a distinct species of *Nemertesia*, as shown by the structure of the apophyses and hydrocladia, and stands as *N. sinuosa* (Fraser, 1947). The relationship to the remaining species of the former genus *Antennopsis* (*A. annulata*, *A. fascicularis*, *A. disticha*, and *A. pacifica*) is far from clear.

This material has the following characters: stem about 80 mm high, strongly polysiphonic, twisted, twists in a helicoid spiral, at each twist a polysiphonic and distally

monosiphonic branch is given off, those of the proximal parts of the colony rebranching to form secondary or tertiary ramifications. Finer ramifications divided into internodes by straight septa, each internode with distal apophysis, the various apophyses of a branchlet alternating and in one plane. Each apophysis with a mamelon and a distal and proximal axillary nematotheca; a nematotheca also present on the wall of the internode opposite the apophysis. Hydrocladia inserted on apophyses, short, ca. 3 mm long, heteromerously segmented; first internode thecate, with cup-shaped hydrotheca slightly below middle, a proximal infracalycine mesial nematotheca and a pair of long, supracalycine, flanking nematothecae. Following internode ahydrothecate, with a mesial nematotheca placed in middle. Internodes with some internal septa. Irregularities in the structure of the hydrocladia occur: there may be two ahydrothecate internodes between hydrothecate ones, or there may be a longer ahydrothecate internode with two nematothecae. Irregularly placed hydrocladia may occur, inserting on the sides of the apophysis or at additional apophyses on the internodes. Gonosome unknown.

Reported range.— Caribbean Sea (type locality: Aruba, San Nicolaas Bay) (Vervoort, 1968).

Genus *Antennularia* Lamarck, 1816  
*Antennularia alternata* Fraser, 1938a

*Antennularia alternata* Fraser, 1938a: 10, 58, pl. 13 fig. 66; 1939: 161 et seq.; 1946: 94, 380; 1948: 188; Schmitt, 1948: xiii; Calder et al., 2003: 1207.

*Nemertesia alternata*: Calder et al., 2003: 1207; Ramil and Vervoort, 2006: 119, 130-131.

Syntype material.— Ecuador, Galápagos Islands, north of Wenman Island, 100-150 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 143-34, Ecuador, Galápagos Islands, Wenman Island, 01°23'10"N, 091°48'45"W, 100-150 fm (183-274 m), coral + nullipores + worm tubes, 11.i.1934, a single stem, ca. 70 mm high, attached to a shell fragment, with numerous gonothecae, SBMNH 347086 (AHF Holotype No. 116).

Paralectotype.— None designated.

Remarks.— The lectotype specimen generally fits Fraser's (1938) description, although his figure (pl. 13 fig. 66) is rather sketchy. The colony has a large number of gonothecae, many of which are empty.

Reported range.— Galápagos Islands (type locality: Wenman Island) (Fraser, 1938a, 1946, 1948).

*Antennularia compacta* Fraser, 1938b

*Antennularia compacta* Fraser, 1938b: 111, 115, pl. 17 fig. 6; 1939: 161 et seq.; 1946: 94, 381; 1948: 188; Schmitt: xiii; Arai, 1977: 28.

*Nemertesia compacta*: Ramil and Vervoort, 2006: 120, 132-133.

Syntype material.— Mexico, off Francisquito Bay, 10-20 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 528-36, Mexico, Baja California Norte, off San Francisquito Bay, 28°26'15"N, 112°54'W, 45 fm (85 m), sand + *Stylocidaris*, 01.iii.1936, a single



hydrocladate stem fragment, 8 mm long, without gonothecae, SBMNH 347087 (AHF Holotype No. 117).

Paralectotypes.— *Velero III* station 528-36, as above for lectotype, seven basal stem fragments, ca. 8 mm high, rooted in a sponge, and two more basal stem fragments, ca. 5 mm high, also rooted in a sponge, plus a 12 mm long hydrocladate stem fragment, also bearing some hydrothecae of *Modeeria rotunda* (Quoy and Gaimard, 1827), no gonothecae, SBMNH 347088.

*Velero III* station 528-36, as above for lectotype, 2 basal stem fragments, ca. 8 mm high, rooting in a sponge, and two hydrocladate stem fragments, 20 and 40 mm long, no gonothecae, all in good condition, SBMNH 347457.

*Velero III* station 528-36, as above for lectotype, one lot, in ethanol, USNM 49308.

*Velero III* station 528-36, as above for lectotype, one slide, RMNH 2618.

Mexico, Francisquito Bay, BCPM 976-831-1, microscope slide (Arai, 1977).

Remarks.— The syntype sample labeled as “AHF Holotype No. 117” (SBMNH 347087) contained two colony fragments, an 8 mm long stem fragment and two basal stem fragments with few hydrocladia, ca. 5 mm high, rooted in sponge. The former bore better hydrocladia, with hydrothecae, and was taken as the lectotype. The two stem fragments from the sample were combined with others in a vial from the same station (SBMNH 347088) as paralectotype material.

This species is mainly characterized by the rather close approximation of the hydrocladia, a variable character in the genus *Nemertesia*, where it is now placed, as *N. compacta* (Fraser, 1938b). It may very well represent young material of one of the better known species of *Nemertesia*. All this material is juvenile and probably insufficient for a proper description of the species.

Fraser (1938b: 111) listed the depth of collection of the material from *Velero III* station 528-36 as being 10-20 fm. The depth given in the official station list (45 fm) has been recorded here.

Reported range.— Gulf of California (type locality: off San Francisquito Bay) (Fraser, 1938b, 1946, 1948).

#### *Antennularia constricta* Fraser, 1948

*Antennularia constricta* Fraser, 1948: 263, pl. 33 fig. 31; Schmitt, 1948: xiii.

*Plumularia constricta*: Cairns et al., 1991: 28; 2002: 21.

*Nemertesia constricta*: Ramil and Vervoort, 2006: 121, 132-133.

Syntype material.— USA, California, 11 miles south of Seal Beach, 82-95 fm (*Velero III* station 1162-40); Carmel Bay, 10-40 fm. Mexico, Cedros Island, Ranger Bank, 78-83 fm; off Cape San Lucas, San Jaime Bank, 120 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1162-40, USA, California, Los Angeles County, 11 miles south of Seal Beach, 33°33'05"N, 118°09'45"W, 82-95 fm (150-174 m), sponge + sand, 23.vii.1940, 35 mm long stem fragment (in three parts), without gonothecae, SBMNH 347089 (AHF Holotype No. 118).

*Velero III* station 1162-40, as above, one schizolectotype slide, RMNH 2620.

Paralectotypes.— *Velero III* station 619-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 120 fm (219 m), granite rock + coralline +

sponge, 03.iii.1937, four fragments, between 8 and 15 mm long, without gonothecae (may not all belong to one species), no gonothecae, SBMNH 347459.

*Velero III* station 1162-40, as above for lectotype, two vials (material may not all belong to one species), one with five fragments, 8-15 mm long, bearing the note: "Part of material sent to USNM, 4/26/48, H.H.," second tube with a 35 mm high stem, no gonothecae, SBMNH 347458 (labelled as voucher).

*Velero III* station 1162-40, as above for lectotype, one lot, in ethanol, USNM 49307.

Remarks.— The lectotype much resembles the figure of this species in Fraser (1948, pl. 33 fig. 31a), although it is smaller and with fewer hydrocladia. The basal part of the stem was undescribed by Fraser and may have been absent in the only colony covered in the description (although the species was recorded from four stations). The hydrocladia in this species are placed in two series and no gonothecae were present; this suggests that the species is based on juvenile colonies.

Reported range.— Pacific off Baja California, and southern California (type locality: Los Angeles County, Seal Beach) (Fraser, 1948).

*Antennularia gracilis* Fraser, 1948

*Antennularia gracilis* Fraser, 1948: 264, pl. 33 fig. 32; Schmitt, 1948: xiii.

*Plumularia gracilis*: Cairns et al., 1991: 28; 2002: 21.

*Nemertesia gracilis*: Ramil and Vervoort, 2006: 122, 138-139.

Syntype material.— Mexico, 1½ miles north of Cedros Island, 45-55 fm (*Velero III* station 1263-41). USA, California, Anacapa Island, ½ mile south of west end, 26 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1263-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°22'18"N, 115°11'00"W, 45-55 fm (82-101 m), fine sand + broken shell, small dredge, 28.ii.1941, one complete colony, 35 mm high, without gonothecae, SBMNH 347090 (AHF Holotype No. 119) (labeled as syntype).

Paralectotypes.— *Velero III* station 1263-41, as above for lectotype, one colony in two parts, ca. 8 mm length, no gonothecae, SBMNH 347460 (labeled as voucher).

*Velero III* station 1270-41, USA, California, Santa Barbara County, ½ mile south of west end of Anacapa Island, coralline + rock, 34°00'05"N, 119°26'40"W, 25-26 fm (46-48 m), 16.iii.1941, single 8 mm long stem fragment with hydrocladia, no gonothecae, SBMNH 347461 (labeled as voucher).

*Velero III* station 1270-41, as above, one slide, RMNH 2626.

Remarks.— Material of "*Antennularia gracilis* Nutting" from Okino Island in the Korea Strait, collected 2 August 1906 by the R/V Albatross, exists in collections at the National Museum of Natural History, Smithsonian Institution (USNM 28950). There is no record of Nutting ever having published such a species name. Instead, it was most likely described in his unpublished manuscript on hydroids from the Northwest Pacific Expedition of the "Albatross" in 1906 (Calder, 2004). Thus, the binomen *Antennularia gracilis* Fraser 1948 is not threatened by this name.

The upper part of the lectotype colony is regenerated from an older stem, and the basal part has stolonal fibers. The material of this species is fragmentary and sterile; it may well represent young colonies of one of the better known species. The sample from

*Velero III* station 1270-41 consists, besides the stem fragment, of a piece of calcareous rock with some filamentous algae attached and some rubbish.

Reported range.— Pacific off northern Baja California (type locality: off Cedros Island), southern California (Fraser, 1948).

*Antennularia inconstans* Fraser, 1948

*Antennularia inconstans* Fraser, 1948: 265, pl. 33 fig. 33; Schmitt, 1948: xiii.

*Nemertesia inconstans*: Ramil and Vervoort, 2006: 123, 140-141.

Syntype material.— Mexico, Gulf of California, off San Pedro Nolasco Island, 93-111 fm (*Velero III* station 1084-40); ½ mile north of Cedros Island, 45-55 fm and 55-60 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1084-40, Mexico, Gulf of California, San Pedro Nolasco Island, 27°58'35"N, 111°22'40"W, 93-111 fm (170-203 m), rock, 06.ii.1940, single colony in two parts, basal part 35 mm, top part with some gonothecae 15 mm, SBMNH 347091 (AHF Holotype No. 120).

Paralectotypes.— *Velero III* station 1084-40, as above for lectotype, two bunches of three colonies each, rooting in sponge and consisting of basal stem parts 10-50 mm long with few hydrocladia and without gonothecae, also two stem fragments, 20 and 40 mm long (combined from two samples registered as syntype and voucher specimens), SBMNH 347464.

*Velero III* station 1084-40, as above for lectotype, one lot, in ethanol, USNM 49306.

*Velero III* station 1263-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°22'18"N, 115°11'00"W, 45-55 fm (82-101 m), fine sand + broken shell, 28.ii.1941, six well-preserved colonies, some fragmentary, between 30 and 55 mm length, without gonothecae, SBMNH 347463 (labeled as voucher specimens).

*Velero III* station 1264-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°23'20"N, 115°11'52"W, 55-60 fm (101-110 m), shale + pebbles, 28.ii.1941, two stems, 40 and 70 mm long, few hydrocladia left, no gonothecae, SBMNH 347462 (labeled as voucher specimens).

*Velero III* station 1264-41, as above, one slide, RMNH 2616.

Remarks.— The two parts composing the lectotype were found in one vial and probably belonged to one stem of which the upper part has gonothecae. This tallies with Fraser's (1948) description of 70 mm high colonies.

*Nemertesia inconstans* is a distinct species, probably best characterized by the two opposed rows of subalternate hydrocladia that originate on fairly long apophyses, the long and slender internodes, and the varied position of hydrothecae on internodes, usually in distal third. Three nematothecae occur on the proximal part of the internode. Hydrocladia are not as widely spaced as would appear from the figure in Fraser (1948, pl. 33 fig. 33a). Only few gonothecae are left in the lectotype; these are all empty.

Reported range.— Gulf of California (type locality: off San Pedro Nolasco Island), Pacific off Baja California (Fraser, 1948).

*Antennularia inverta* Fraser, 1948

*Antennularia inverta* Fraser, 1948: 265, pl. 34 fig. 34; Schmitt, 1948: xiii.

*Plumularia inverta*: Cairns et al., 1991: 28; 2002: 21.

*Nemertesia inverta*: Ramil and Vervoort, 2006: 123, 140-141.

Syntype material.— USA, California, 10¾ miles west of Point Dume, 47-48 fm (*Velero III* station 1276-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1276-41, USA, California, Los Angeles County, 10¾ miles west of Point Dume, 34°00'20"N, 119°01'20"W, 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, 45 mm high colony, basally rooting in debris, without gonothecae, SBMNH 347092 (labeled as syntype) (AHF Holotype No. 121).

Paralectotype.— *Velero III* station 1276-41, as above for lectotype, with two notes referring to the absence of any specimen, SBMNH 347465 (labeled as voucher).

Remarks.— The lectotype is most likely the specimen described by Fraser (1948: 265-266), as he refers to "the colony." In this species the stem is non-canalculated, and the hydrocladia are in two opposed rows, the proximal ones being opposite, gradually changing distally through subopposite to alternate. In structure of the hydrocladia it greatly resembles *A. inconstans*.

Reported range.— Pacific off southern California (type locality: off Point Dume) (Fraser, 1948).

*Antennularia irregularis* Fraser, 1938a

*Antennularia irregularis* Fraser, 1938a: 10, 59, pl. 13 fig. 67; 1938c: 135; 1939: 161 et seq.; 1946: 94, 380; 1948: 266; Schmitt, 1948: xiii; Arai, 1977: 29.

*Nemertesia irregularis*: Ljubenkov, 1980: 51; Cairns et al., 1991: 27; 2002: 20, 55.

*Nemertesia fraseri* Ramil and Vervoort, 1992: 172; 2006: 122, 138-139.

Syntype material.— Ecuador, South of La Plata Island, 45-55 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 212-34, Ecuador, Manabi, off La Plata Island, 01°15'S, 081°04'15"W, 45-55 fm (83-101 m), rock + mud, 10.ii.1934, one colony fragment, ca. 23 mm high, without gonothecae, SBMNH 347093 (labeled as syntype) (AHF Holotype No. 122).

Paralectotypes.— *Velero III* station 212-34, as above for lectotype, four basal stem fragments in poor condition (plus a campanulariid), without gonothecae, SBMNH 369468.

Ecuador, La Plata Island, BCPM 976-832-1 (Arai, 1977).

Remarks.— The vial labeled as "AHF Holotype No. 122" (SBMNH 347093) originally contained six fragments. The best of these specimens was chosen as the lectotype. The remaining five fragments were removed to another small bottle (SBMNH 369468) as paralectotypes. One of these is a campanulariid and is not part of the paralectotype series.

Fraser (1938a) gave as one of the characteristics of this species the varied composition of the hydrocladia in thecate and athecate internodes, as well as the distribution of nematothecae on the internodes. Both characters are subject to much variability amongst the various species of *Nemertesia*.

*Antennularia irregularis* Fraser, 1938a is a junior primary homonym of *Antennularia irregularis* Quelch, 1885, and has been replaced by the binomen *Nemertesia fraseri* Ramil and Vervoort, 1992.

Three colonies in a sample (SBMNH 347094, labeled as syntype) from *Velero III* station 530-36 (San Francisquito Bay, Mexico), and material from the same location in the Royal British Columbia Museum (BCPM 976-833-1) and the NMNH (USNM 49305), are in fact not syntypes because they were not part of the material upon which Fraser (1938a) originally established the species. They are ineligible as either paralectotypes or as a lectotype.

Reported range.— Pacific Ocean off Ecuador (type locality: off La Plata Island), Colombia, and southern California; Gulf of California (Fraser, 1938a, 1946, 1948).

*Antennularia mutabilis* Fraser, 1948  
(fig. 10)

*Antennularia mutabilis* Fraser, 1948: 266, pl. 34 fig. 35; Schmitt, 1948: xiii.

*Nemertesia mutabilis*: Ramil and Vervoort, 2006: 124, 142-143.

Syntype material.— Mexico, 8 miles southwest of Cedros Island, 63-65 fm (*Velero III* station 1254-41), and nearby at 45-46 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1254-41, Mexico, Baja California Norte, 8 miles southwest of Cedros Island, 28°00'17"N, 115°28'43"W, 63-65 fm (115-119 m), green, fine sand + coral, 26.ii.1941, 75 mm long colony in two parts, basally rooting in sponge, without gonothecae, SMNHN No. 347095 (registered as syntype) (AHF Holotype No. 123) (fig. 10).

*Velero III* station 1254-41, as above, one schizolectotype slide, RMNH 2621.

Paralectotype.— *Velero III* station 1254-41, as above for lectotype, 45 mm long colony in two parts, basally with rooting fibers, no gonothecae, SBMNH 347466 (registered as voucher).

Remarks.— The lectotype is composed of a basal stem portion, ca. 20 mm long and rooting in a sponge, and a distal part, 55 mm long, with well preserved hydrocladia but without gonothecae. Both were found in the same vial and seem to belong together,

Fig. 10. *Antennularia mutabilis* Fraser, 1948, lectotype from *Velero III* station 1254-41, Mexico, Baja California Norte, 8 miles southwest of Cedros Island, 28°00'17"N, 115°28'43"W, 63-65 fm (115-119 m), green, fine sand + coral, 26.ii.1941.



agreeing with Fraser's (1948) description of a 70 mm high colony. It is difficult to ascertain distinctive characters from Fraser's non-committal description. The stem is non-canalculated and non-fasciculated, with only occasionally a node. The hydrocladia are opposite or sub-opposite in the lower stem regions, becoming triseriate and decussate in the distal region. Length of the internodes is irregular, with one or two proximal nematothecae. No gonothecae are present. This may be a developmental stage of one of the better known species, with the colonies being unquestionably young. For now we follow the binomen *Nemertesia mutabilis* (Fraser, 1948) for it.

Reported range.— Pacific off the coast of Baja California (type locality: off Cedros Island) (Fraser, 1948).

*Antennularia parva* Fraser, 1948

*Antennularia parva* Fraser, 1948: 267, pl. 35 fig. 36; Schmitt, 1948: xiii.

*Nemertesia parva*: Ramil and Vervoort, 2006: 125, 144-145.

Syntype material.— Mexico, Baja California, Dewey Channel, opposite San Eugenio Point, 21-26 fm (*Velero III* station 1260-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1260-41, Mexico, Baja California Sur, Dewey Channel, opposite San Eugenio Point, 27°49'50"N, 115°06'05"W, 21-26 fm (21-26 m), coralline + rock, 27.ii.1941, 8 mm high colony, with rooting fibers basally, top part missing, no gonothecae, SBMNH 347096 (labeled as syntype) (AHF Holotype No. 124).

*Velero III* station 1260-41, as above, one schizolectotype slide, RMNH 2617.

Paralectotypes.— *Velero III* station 1260-41, as above for lectotype, two tubes, one containing a 9 mm long colony attached to calcareous rock- or shell fragment, no gonothecae; the second with a 8 mm long fragment that may belong to another species, SBMNH 347467 (labeled as voucher).

*Velero III* station 1260-41, as above for lectotype, one lot, in ethanol, USNM 49304.

Remarks.— *Nemertesia parva* is evidently based on young material, measuring 8-9 mm high in the material inspected, and 9 or 10 mm according to Fraser's (1948) description. Arrangement of the hydrocladia is not quite biseriate, but tends towards a quadri-radiate arrangement as some of the pairs of hydrocladia have been subjected to a slight torsion compared with their neighbours. Arrangement of the internodes of the hydrocladia is heteromerous, with athecate and thecate internodes alternating, though with irregularities. Striking is the close packing of the hydrocladia; their length in the lectotype is 3-4 mm. No gonothecae are present. One of the paralectotypes has all the characters of the lectotype, although the arrangement of the hydrocladia is much more regular; they diminish in length distally. In this specimen the top part of the stem is also missing. All colonies differ markedly from Fraser's figure (1948, pl. 35 fig. 36a), which shows a colony in which the hydrocladia diminish in length distally. All the material inspected is damaged, with the top part of the various colonies missing and hydrocladia having the same length all along the stem.

Reported range.— Pacific Ocean off Baja California (type locality: Dewey Channel) (Fraser, 1948).



*Antennularia polynema* Fraser, 1948  
(fig. 11)

*Antennularia polynema* Fraser, 1948: 268, pl. 35 fig. 37; Schmitt, 1948: xiii.

*Nemertesia polynema*: Ljubenkov, 1980: 51; Cairns et al., 1991: 27; 2002: 20; Ramil and Vervoort, 2006: 126, 146-147.

Syntype material.— Mexico, Gulf of California, off San Francisco Island, 43-44 fm (*Velero III* station 1106-40); off Cape San Lucas, San Jaime Bank, 75 fm. USA, California, Santa Cruz Island, ½ mile east of San Pedro Point, 26-40 fm; Santa Catalina Island, 1 mile southwest of Ben Weston Point, 44-49 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1106-40, Mexico, Baja California Sur, Gulf of California, off San Francisco Island, 24°47'40"N, 110°38'03"W, 43-44 fm (79-80 m), gray sand, 13.ii.1940, 95 mm high colony in two parts; basal part of stem with rooting fibers missing, gonothecae abundant, SBMNH 347097 (labeled as syntype) (AHF Holotype No. 125) (fig. 11).

Paralectotypes.— *Velero III* station 618-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 75 fm (142 m), rock + coralline + sponge, 03.iii.1937, many broken stems and tufts of rooting fibers, no gonothecae, SBMNH 347468 (labeled as voucher).

*Velero III* station 618-37, as above, four slides, RMNH 2614.

*Velero III* station 1106-40, as above for lectotype, 70 mm long stem, no gonothecae, SBMNH 347469 (labeled as voucher).

*Velero III* station 1106-40, as above for lectotype, one lot, in ethanol, USNM 49303.

*Velero III* station 1297-41, USA, California, Santa Barbara County, Santa Cruz Island, ½ mile east of San Pedro Point, 34°02'00"N, 119°30'35"W, 26-40 fm (48-73 m), rocky, 12.iv.1941, two stem fragments, each ca. 30 mm long, without gonothecae, SBMNH 347470 (labeled as voucher).

*Velero III* station 1316-41, USA, California, Los Angeles County, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 33°20'55"N, 118°30'25"W, 45-49 fm (82-90 m), mud + sand + gravel, 17.v.1941, 70 mm long stem fragment with badly preserved hydrocladia, without gonothecae, SBMNH 347471 (registered as voucher).

*Velero III* station 1316-41, as above, one slide, RMNH 2619.

Remarks.— This seems to be a well-marked species, the principal characteristics being the rather irregular distribution of the hydrocladia that have a tendency towards quadriseriate distribution (but with many irregularities). In contradistinction to Fraser's figure (1948, pl. 35 fig. 37) the hydrocladia are directed upwards, giving the stem a rat-tail-like rather than a featherlike appearance. The gonothecae are pear-shaped but later on develop a lateral opening; many still have their contents. In all specimens the perisarc of the stems is heavily sclerotized and orange-brown; the hydrocladia are transparent. The color is missing in the sample from *Velero III* station 618-37.

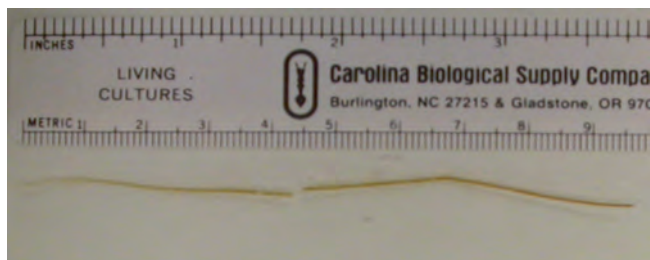
Reported range.— Gulf of California (type locality: off San Francisco Island), Pacific off Baja California and southern California (Fraser, 1948).

*Antennularia reversa* Fraser, 1938b

*Antennularia reversa* Fraser, 1938b: 111, 115, pl. 17 fig. 7; 1939: 161 et seq.; 1946: 94, 381; 1948: 269; Schmitt, 1948: xiii; Arai, 1977: 29.

*Nemertesia reversa*: Ramil and Vervoort, 2006: 126, 148-149.

Fig. 11. *Antennularia polynema* Fraser, 1948, lectotype from *Velero III* station 1106-40, Mexico, Baja California Sur, Gulf of California, off San Francisco Island, 24°47'40"N, 110°38'03"W, 43-44 fm (79-80 m), gray sand, 13.ii.1940.



Syntype material.— Mexico, Angel de la Guardia Island, Puerto Refugio, 50-75 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 712-37, Mexico, Baja California Norte, Gulf of California, Angel de la Guardia Island, Puerto Refugio, 29°34'35"N, 113°29'30"W, 50-75 fm (91-137 m), sand, 21.iii.1937, 50 mm high stem, well-preserved, spread of hydrocladia ca. 18 mm, colony rooting in sediment, no gonothecae, SBMNH 347098 (labeled as syntype) (AHF Holotype No. 126).

Paralectotypes.— *Velero III* station 712-37, as above for lectotype, 20 mm high basal stem fragment rooting in debris, no gonothecae, SBMNH 347099 (labeled as syntype).

*Velero III* station 712-37, as above for lectotype, one lot, in ethanol, USNM 49302.

Mexico, Angel de la Guardia Island, BCPM 976-836-1 and BCPM 976-836-2 (Arai, 1977).

Remarks.— *Nemertesia reversa* is one of the few new species of the genus described from Hancock Expedition collections in which the type is almost perfect; unfortunately this specimen is sterile. It can be characterized as follows: stem strong, perisarc strongly sclerotized, orange-red, interior canaliculated but not fascicled, without septa. Appearance of colony feather-shaped, though at close inspection hydrocladia quadriseriate, but on each side planes of dispersion approximated, meeting at an acute angle. Packing of hydrocladia close, mostly subopposite. Hydrocladial apophysis strong, with distinct mamelon and some nematothecae. Hydrocladia monomerous, each internode with hydrotheca in middle or slightly more proximally placed. One inferior and one superior median nematotheca besides the pair flanking the hydrotheca. Septa poorly developed, some internodes with distal septum. Hydrotheca cup-shaped, rim tilted downwards. Gonotheca unknown.

The feather-shaped structure of the colony is not very apparent in Fraser's figure (1938a, pl. 17 fig. 7), though very striking in the lectotype.

Reported range.— Gulf of California (type locality: off Angel de la Guardia Island) (Fraser, 1938b, 1946, 1948).

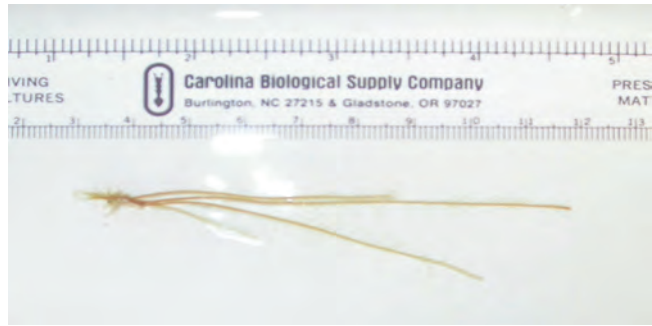
*Antennularia septata* Fraser, 1938b  
(fig. 12)

*Antennularia septata* Fraser, 1938b: 111, 116, pl. 18 fig. 8; 1939: 161 et seq.; 1946: 94, 379; 1948: 269; Schmitt, 1948: xiii; Arai, 1977: 29.

*Nemertesia septata*: Ramil and Vervoort, 2006: 127, 148-149.

Syntype material.— Mexico, north of San Esteban Island, 20-70 fm; Angel de la Guardia Island, Puerto Refugio, 50-75 fm (Fraser, 1938b).

Fig. 12. *Antennularia septata* Fraser, 1938, lectotype from *Velero III* station 562-36, Mexico, Baja California Norte, Gulf of California, east of San Esteban Island, 28°41'25"N, 112°32'15"W, 20-70 fm (37-128 m), sand + rock, 10.iii.1936.



Lectotype.— *Velero III* station 562-36, Mexico, Baja California Norte, Gulf of California, east of San Esteban Island, 28°41'25"N, 112°32'15"W, 20-70 fm (37-128 m), sand + rock, 10.iii.1936, four stems attached to communal basal part rooted in sponge, 80, 60, 45 and 20 mm high (in all top part missing), no gonothecae, SBMNH 347473 (labeled as voucher) (AHF Holotype No. 127) (fig. 12).

*Velero III* station 562-36, two schizolectotype slides, RMNH 2615.

Paralectotypes.— *Velero III* station 562-36, as above for lectotype, ca. 10 colonies, up to 90 mm high, rooted in sediment, and a number of fragments, SBMNH 369469.

*Velero III* station 562-36, as above for lectotype, seven colonies, ca. 70 mm high, rooting in sediment, and a detached stem, SBMNH 347188.

*Velero III* station 562-36, as above for lectotype, one lot, in ethanol, USNM 49261.

*Velero III* station 712-37, Mexico, Baja California Norte, Gulf of California, Angel de la Guardia Island, Puerto Refugio, 29°34'35"N, 113°29'30"W, 50-75 fm (91-137 m), sand, 21.iii.1937, many colonies and fragments, up to 100 high, partly attached to a thick, short basal tube partly covered by sediment, no gonothecae, SBMNH 347472.

Mexico, San Esteban Island (27(!)-70 fm) (49-128 m), BCPM 976-837-1 and BCPM 976-837-2 (Arai, 1977).

Remarks.— The “voucher” specimens from *Velero III* station 562-36, and mentioned as such in the catalogue, are syntypes. The lectotype has been taken from a bottle containing a number of colonies, being the best preserved colony of the lot. It was returned alone to the specimen bottle (SBMNH 347473). The remaining colonies in the sample (SBMNH 369469) are paralectotypes.

Specimens from *Velero III* station 1284-41, though listed and labeled as “syntypes,” represent voucher specimens and have not been considered here. This material received a separate Allan Hancock Foundation entry number (128) because gonothecae were first described from this material (by Fraser, 1948).

The species may be characterized as follows: stems arising from a short, strongly sclerotized tube anchored in sponge, unbranched, not fascicled or canaliculated, strongly sclerotized, without septa. Hydrocladia closely packed, almost monoseriate, but on close inspection being placed in quadriseriate arrangement with the two planes closely approximated, heteromerously segmented, but with many irregularities. Internodes slightly curved, development of septa considerable. Athetic internodes with a single nematotheca, thecate internode with almost distal, cup-shaped hydrotheca, a pair of lateral nematothecae and one median infracalycine nematotheca.

Gonothecae, present only in the voucher specimens, seem to present sexual differentiation, the female gonothecae being obovate, more or less flattened at the top, basally tapering into a short pedicel. The male gonothecae are elongate-oval, resembling the shape found in many species of *Plumularia*. It seems possible that the male and female colonies are different species.

This species comes very near to the well distributed *Nemertesia antennina* (Linnaeus, 1758), the occurrence of which in the Pacific has been stated but is still in need of confirmation.

Reported range.— Gulf of California (type locality: off San Esteban Island), Pacific off southern California (Fraser, 1938b, 1946, 1948).

*Antennularia tetraseriata* Fraser, 1938a

*Antennularia tetraseriata* Fraser, 1938a: 59, pl. 13 fig. 68; 1939: 161 et seq.; 1946: 94, 381; 1948: 269; Schmitt, 1948: xiii, xiv.

*Nemertesia tetraseriata*: Cairns et al., 1991: 27; 2002: 20; Ramil and Vervoort, 2006: 128, 150-151.

Syntype material.— Mexico, Revillagigedo Islands, south of Clarion Island, 55 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 138-34, Mexico, Colima, Clarion Island, Sulphur Bay, 18°19'45"N, 114°44'35"W, 30-50 fm (55-91 m), nullipores, tangles, 05.i.1934, 20 mm long stem fragment, without gonothecae, SBMNH 347189 (labeled as syntype) (AHF Holotype No. 129).

Paralectotypes.— None designated.

Remarks.— The lectotype, a sterile 20 mm long stem fragment, seems to have been the only material available for Fraser's description: "Stem stout (fragment 2 cm. long)", etc. Much more abundant material, from *Velero III* station 729-37 (from San Esteban Island, Gulf of California, SBMNH 347190, SBMNH 347191), is registered as "Syntype" but in fact is not syntype material. These specimens have numerous gonothecae, described in a later paper (Fraser, 1938b). They have the shape usually observed in *Nemertesia*, being obovate with slightly vaulted top and narrowing proximally into a short pedicel. There is no certainty that this material belongs to the same species as the lectotype and a detailed examination is needed to resolve the matter. Material identified as this species from San Esteban Island at the NMNH (USNM 49259) and at the Royal British Columbia Museum (BCPM 976-838-1, BCPM 976-838-2) (Arai, 1977), as well as two slides (RMNH 2635) from *Velero III* station 1270-41, 0.5 mile south of west end of Anacapa Island, California, also do not belong to the lectotype or paralectotype series.

A brief description of the lectotype is as follows: stem strong, canaliculated but not fascicled, development of perisarc moderate to strong. Hydrocladia distinctly quadriseptate, pairs decussate, each hydrocladium originating from distinct apophysis with mamelon, a pair of nematothecae flanking the mamelon and one near axil of apophysis. Nematothecae on stem arranged in vertical rows. Hydrocladia monomerously segmented, first internode shorter than those following; hydrotheca slightly above middle of internode, with a pair of flanking nematothecae and one on distal part of internode. Remaining hydrocladial internodes slender, usually a septum on both ends. Hydrotheca slightly above middle of internode, proximal part of internode with two median nematothecae. Gonothecae lacking.

Reported range.— Revillagigedo Islands (type locality: off Clarion Island), Colombia, Gulf of California, Pacific off Baja California, southern California (Fraser 1938a, 1938b, 1946, 1948).

Genus *Cladocarpus* Allman, 1874  
*Cladocarpus gracilis* Fraser, 1948

*Cladocarpus* (?) *gracilis* Fraser, 1948: 269, pl. 36 fig. 39; Schmitt, 1948: xiv.

*Cladocarpus gracilis*: Vervoort, 1966: 149; Ljubenkov, 1980: 50; Cairns et al., 1991: 29; 2002: 22; Hochberg and Ljubenkov, 1998: 30-31, fig. 1.13.

Syntype material.— USA, California, Santa Catalina Island, 2.8 miles west-northwest of Long Point, 64-88 fm (*Velero III* station 1307-41) (Fraser, 1948).

Type.— *Velero III* station 1307-41, USA, California, Los Angeles County, Santa Catalina Island, 2.8 miles west-northwest of Long Point, 33°26'00"N, 118°24'40"W, 64-88 fm (117-161 m), 03.v.1941, a single juvenile colony, 10 mm high, ahydrocladate and sterile (AHF Holotype No. 131). Specimen could not be located.

Remarks.— The type specimen could not be found amongst Fraser material at the Santa Barbara Museum of Natural History, National Museum of Natural History–Smithsonian Institution, or the Royal British Columbia Museum. The description of the hydrotheca by Fraser (1948) is perfunctory: the hydrothecal rim has one distinct median cusp, the remainder of the border being crenulated. The specimen was last seen and figured by Dr Ljubenkov around 1977 in the preparation of a key to the eastern Pacific species of the genus *Cladocarpus*, and published as a mimeographed leaflet for the SCCWRP Taxonomic Intercalibration Program, 21 April 1977. His figure illustrates the basal part of a monosiphonic stem, seen frontally. There are three proximal segments separated by oblique nodes (hinge-joints?), of which the most proximal has a longitudinal row of five nematothecae, the second one and the third three frontal nematothecae (all in one plane). The first (and only) apophysis-bearing stem internode has three hydrothecae the median cusp of which on the hydrothecal rim is very evident. There were no hydrocladia. The species cannot be recognized from this fragment as the information on the hydrothecae and the internodal nematothecae is too meagre. In this pamphlet the species was recorded from a number of East Pacific stations. This species may remain an enigma.

Reported range.— Pacific off southern California (type locality: off Santa Catalina Island) (Fraser, 1948; Ljubenkov mimeo, 1977, see above).

*Cladocarpus moderatus* Fraser, 1948

*Cladocarpus moderatus* Fraser, 1948: 270, pl. 36 fig. 40; Schmitt, 1948: xiv; Vervoort, 1966: 149; Ljubenkov, 1980: 50; Cairns et al., 1991: 29; 2002: 22; Calder et al., 2003: 1208.

Syntype material.— Ecuador, Galápagos Islands, Barrington Island, 48-73 fm (*Velero III* station 810-38); USA, California, Santa Catalina Island, Avalon Bay, 98-116 fm (Fraser, 1948).

Lectotype.— *Velero III* station 810-38, Ecuador, Galápagos Islands, off Barrington Island, 00°47'S, 090°02'W, 48-73 fm (88-134 m), rock + sand, 26.i.1938, 35 mm high spec-



imen and some fragments (top part and hydrocladia), without gonosome, SBMNH 347082 (AHF Holotype No. 132).

Paralectotypes.— *Velero III* station 1150-40, USA, California, Los Angeles County, Santa Catalina Island, Avalon Bay, 33°20'30"N, 118°17'10"W, 98-116 fm (179-212 m), sand + sponge + cobble, 04.vii.1940, single specimen, stem 55 mm high of which only distal 15 mm hydrocladate, no gonosome, SBMNH 347474.

*Velero III* station 1150-40, as above, four slides, RMNH 2637.

Remarks.— The lectotype has remnants of stolon fibers basally, while the upper 15 mm has a total of eight hydrocladia; the best developed of these has only three internodes. Hydrothecae greatly resemble those of *Cladocarpus distomus* Clarke, 1907 (also observed by Fraser). No gonosome is present. The lectotype is apparently not the figured specimen (Fraser, 1948, pl. 36 fig. 40), which has many more hydrocladia and a secondary tube along part of the stem. This is the only specimen from the first station mentioned in Fraser's descriptions so it has consequently been chosen as the lectotype. The paralectotype resembles the lectotype in structure of the hydrothecae.

It seems questionable whether this species is valid given the fact that hydrothecae greatly resemble those of *C. distomus*, and phylactocarps are lacking. The species is mentioned and figured in Dr Ljubenkov's "key" (discussed under *Cladocarpus gracilis*), but the figured specimen is probably not the lectotype or only part of it, as the lectotype has a couple of hydrocladia with hydrothecae. Dr Ljubenkov's figure is from a basal stem fragment (primary tube and one accessory tube) without any hydrothecae. It also seems doubtful that the paralectotype represents the same species given the considerable range of distribution; Ljubenkov referred the specimens from Avalon Bay to *Cladocarpus vancouverensis* Fraser, 1914.

Reported range.— Galápagos Islands (type locality: off Barrington Island); off Santa Barbara Island, California (Fraser, 1948).

#### *Cladocarpus pinguis* Fraser, 1948

*Cladocarpus pinguis* Fraser, 1948: 271, pl. 36 fig. 41a, pl. 37 fig. 41b-d; Schmitt, 1948: xiv; Vervoort, 1966: 149; Ljubenkov, 1980: 50; Cairns et al., 1991: 29; 2002: 22.

Syntype material.— USA, California, northeast of Anacapa Island, 45 fm (*Velero III* station 874-38); Santa Rosa Island, 3 miles east of South Point, 23-26 fm; Santa Cruz Island, 3 miles south of Fraser Point, 20-24 fm; Santa Cruz Island, 1 mile east of Smugglers Cove, 19-20 fm; 1 mile west-northwest of Anacapa Island, 41-43 fm; northeast of Anacapa Island, 45 fm; 10¾ miles west of Point Dume, 47-48 fm; Santa Catalina Island, east of Long Point, 45-50 fm; 1¾ miles east of White Cove, 90-108 fm. Mexico, Baja California, 1 mile south of San Benito Island, 44-49 fm; 5½ miles south of San Benito Island, 69-81 fm (Fraser, 1948).

Lectotype.— *Velero III* station 874-38, USA, California, Santa Barbara County, northeast of Anacapa Island, 34°01'30"N, 119°21"W, 45 fm (82 m), shell, 01.viii.1938, ca. 150 mm long specimen in two parts, SBMNH 347083 (AHF Holotype No. 133).

Paralectotypes.— *Velero III* station 874-38, as above for lectotype, one lot, in ethanol, USNM 49258.

*Velero III* station 1251-41, Mexico, Baja California Norte, 5½ miles south of San Benito Islands, 28°13'00"N, 115°33'30"W, 66-81 fm (120-148 m), fine green and grey sand,

26.ii.1941, single fertile specimen, 95 mm high, SBMNH 347477 (labeled as voucher).

*Velero III* station 1269-41, USA, California, Santa Barbara County, 1 mile west-northwest of Anacapa Island, 34°01'25"N, 119°27'20"W, 41-43 fm (75-79 m), rock + sponge, 16.iii.1941, many fertile specimens of varied length, up to 150 mm high, many branched, SBMNH No. 347475 (labeled as voucher).

*Velero III* station 1269-41, as above, two slides from a dichotomously branched top part of a colony ca. 80 mm high, slides from one of the branches, gonothecae present, RMNH 2625.

*Velero III* station 1276-41, USA, California, Los Angeles County, 10¾ miles west of Point Dume, 34°00'20"N, 119°01'20"W; 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, branched sterile specimen, in two parts, SBMNH 347478 (labeled as voucher).

*Velero III* station 1281-41, USA, California, Santa Barbara County, Santa Rosa Island, 3 miles east of South Point, 33°53'30"N, 120°02'55"W, 23-26 fm (42-48 m), sand + nullipores, 10.iv.1941, single sterile specimen in three parts, basal part branched, attached to shell fragment, SBMNH 347476 (labeled as voucher).

*Velero III* station 1286-41, USA, California, Santa Barbara County, Santa Cruz Island, 3 miles south of Fraser Point, 34°00'40"N, 119°57'00"W, 20-24 fm (37-44 m), sand + shell + nullipores, 11.iv.1941, five sterile specimens and some fragments, at least two of colonies branched, SBMNH 347479.

*Velero III* station 1296-41, USA, California, Santa Barbara County, Santa Cruz Island, 1 mile east of Smugglers Cove, 34°01'10"N, 119°31'20"W, 19-20 fm (35-37 m), rock + kelp, 12.iv.1941, branched top part of single fertile specimen, SBMNH 347480 (labeled as voucher).

*Velero III* station 1359-41, USA, California, Los Angeles County, Santa Catalina Island, 1¾ miles east of White Cove, 33°23'40"N, 118°20'00"W, 100-108 fm (183-198 m), grey sand + broken shell, 13.vi.1941, single specimen in two parts, distal part branched, and a very young colony ca. 15 mm high, SBMNH 347481.

*Velero III* station 1383-41, USA, California, Los Angeles County, Santa Catalina Island, east of Long Point, 33°23'40"N, 118°20'04"W, 45-50 fm (82-91 m), sponges + lamp shells, 10.viii.1941, single fertile specimen, 75 mm high, SBMNH 347482 (labeled as voucher).

Remarks.— The lectotype colony is in two parts, the straight basal part having some stolonial fibers, while the upper part has distinct torsion. This upper part, ca. 60 mm high, has two opposed rows of alternating hydrocladia (the lectotype is different from the specimen of Fraser, 1948, which measured only 20 mm). In the description of the gonosome, Fraser (1948) stated: "The gonangia appear in a single or double series for as much as 3 cm along the stem in the distal portion," etc. indicating that he was studying a different specimen from that referred to earlier in his description.

The gonosome of this species requires additional study and information. It was compared by Fraser (1948) with that of *Cladocarpus vancouverensis* Fraser, 1914. According to Fraser's drawing (pl. 37 fig. 41d) and our own observations it does not agree with the type of phylactocarp found in *Cladocarpus* or *Streptocaulus*. Provisional inspection without dissection or preparation of slides suggests that this is a species of *Aglaophenopsis* Fewkes, 1881.

The basal part of the stem of the lectotype was figured by Ljubenkov (see Remarks, *Cladocarpus gracilis*); no drawing of the hydrothecae or the gonosome was presented.

According to provisions of the ICZN, all the material of the stations listed by Fraser in his description (SBMNH 347475 through SBMNH 347482) other than the lectotype are paralectotypes.

A box of 19 slides (Canada balsam, stained stem fragments) of this species is present in collections at the Santa Barbara Museum of Natural History; only the species name (*Cladocarpus pinguis*) is given on each label; no further data are listed on them.

Reported range.— Pacific off Baja California, southern California (type locality: off Anacapa Island) (Fraser, 1948).

*Cladocarpus tortus* Fraser, 1938a

*Cladocarpus tortus* Fraser, 1938a: 10, 60, pl. 14 fig. 69; 19-39: 161 et seq.; 1946: 93, 408; 1948: 188; Schmitt, 1948: xiv; Vervoort, 1966: 149; Arai, 1977: 29.

Syntype material.— Ecuador, South of La Plata Island, 45-55 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 212-34, Ecuador, Manabi, off La Plata Island, 01°15'S, 81°04'15"W, 45-55 fm (82-101 m), rock + mud, 10.ii.1934, 30 mm high specimen, basally attached to substrate fragment (shell fragment?), no gonosome, SBMNH 347084 (AHF Holotype No. 134).

Paralectotypes.— *Velero III* station 212-34, as above for lectotype, three specimens of which only one complete and 30 mm long, remaining two specimens are stem fragments only, no gonosomes, SBMNH 347085.

*Velero III* station 212-34, as above for lectotype, one lot, in ethanol, USNM 49255.

Ecuador, La Plata Island, 45 fm, 10.ii.1934, BCPM 976-845-1 and BCPM 976-845-2 (Arai, 1977).

Remarks.— Syntype material of *Cladocarpus tortus* Fraser, 1938a originally comprised two lots from the same station; the best preserved specimen has been selected to constitute the lectotype; the remaining fragmentary material has been indicated as paralectotypes. The lectotype has a 12 mm long hydrocladial part, with 9-10 pairs of hydrocladia. The absence of a gonosome makes it difficult to characterize this species unless the hydrothecae provide sufficient details. The specific name (*tortus*) used by Fraser (1938a) refers to the presence of some oblique septa in the basal part of the stem forming "hinge joints" that permit greater flexibility of the colony. These are distinctly visible in the lectotype. This phenomenon is not uncommon in larger aglaopheniids. It is figured by Ljubenkov (see Remarks, *Cladocarpus gracilis*).

Reported range.— Pacific off Ecuador (type locality: off La Plata Island) (Fraser, 1938a, 1946, 1948).

Genus *Plumularia* Lamarck, 1816

*Plumularia acutifrons* Fraser, 1938a

*Plumularia acutifrons* Fraser, 1938a: 61, pl. 14 fig. 70; 1939: 161 et seq.; 1946: 92, 359; 1948: 274; Schmitt, 1948: xiv; Arai, 1977: 29.

Syntype material.— Mexico, Off Thurloe Point, 8-10 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 283-34, Mexico, Baja California Sur, off Thurloe Head, 27°36'50"N, 114°50'50"W, 8-10 fm (8-10 m), rock with gorgonians, 09.iii.1934, one colony with several cormoids, to 1.8 cm high, on algae, with a few developing gonothecae, SBMNH 347213 (labeled as syntype) (AHF Holotype No. 135).

Paralectotypes.— *Velero III* station 283-34, as above for lectotype, three colonies, to 1.2 cm high, and a few fragments, on algae and unattached, some with developing gonothecae basally, SBMNH 347214 (labeled as syntype) (AHF Paratype No. 238).

*Velero III* station 283-34, as above for lectotype, one lot, in ethanol, USNM 49256.

Mexico, Baja California Sur, Thurloe Point, BCPM 976-878-1 (Arai, 1977).

Remarks.— AHF Holotype No. 135 (SBMNH 347213) contained several colonies and colony fragments. The largest and best one of these was returned to the vial as the lectotype of *Plumularia acutifrons*. The remaining specimens were combined with hydroids from the same station as paralectotypes (SBMNH 347214).

Two lots of this species exist at the NMNH. One of these, listed above, is paralectotype material (USNM 49256). The other, from Parker Bay, Costa Rica, 9 February 1935 (USNM 70181) is from Alan Hancock Pacific Expeditions but was not part of the original syntype series.

The description given of this species by Fraser (1938a: 61-62) is incomplete and does not include a characterization of the hydrotheca. The specimens available to Fraser were small (up to 20 mm) and possibly quite young. Alternatively, this may simply be a diminutive species. It may be recognizable by the fronto-laterally directed apophyses supporting the hydrocladia. No gonothecae were observed in the material by Fraser (1938a). However, inconspicuous developing gonothecae were seen during this study on both lectotype and paralectotype specimens.

Reported range.— Pacific off Baja California (type locality: off Thurloe Head) (Fraser, 1938a, 1946, 1948).

*Plumularia adjecta* Fraser, 1948  
(fig. 13)

*Plumularia adjecta* Fraser, 1948: 274, pl. 37 fig. 42; Schmitt, 1948: xiv.

Syntype material.— Mexico, Baja California, 4 miles north of Dewey Channel, 24-25 fm (*Velero III* station 1261-41); 3 miles northwest of Natividad Island, 30-31 fm; Gulf of California, Puerto Escondido, 18-21 fm; east of San Marcos Island, 18 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1261-41, Mexico, Baja California Sur, 4 miles north of Dewey Channel, 27°54'15"N, 115°06'40"W, 24-25 fm (44-46 m), grey-green sand, 27.ii.1941, one fragment of a colony, 26 mm high, unattached, without gonothecae, SBMNH 347215 (labeled as syntype) (AHF Holotype No. 136).

Paralectotypes.— *Velero III* station 579-36, Mexico, Baja California Sur, Gulf of California, east of San Marcos Island, 27°14'50"N, 112°04'20"W, 18 fm (33 m), mud, 14.iii.1936, many detached stems, up to 80 mm high, no fertile specimens observed, SBMNH 347483 (labeled as voucher).

*Velero III* station 1096-40, Mexico, Oaxaca, Gulf of California, Puerto Escondido, 25°48'10"N, 111°17'55"W, 18-21 fm (33-38 m), sand + cake urchins, 11.ii.1940, large number of specimens in good condition, up to 250 mm high, many colonies fertile (sample also contains aglaopheniids), SBMNH 347484 (labeled as voucher) (fig. 13).

*Velero III* station 1257-41, Mexico, Baja California Sur, 3 miles northwest of Natividad Island, 27°55'53"N, 115°15'58"W, 30-31 fm (55-57 m), coarse sand + sponge-covered rocks, 27.ii.1941, a number of young colonies and fragments, 20-30 mm high (uncertain

Fig. 13. *Plumularia adjecta* Fraser, 1948, paralectotype from *Velero III* station 1096-40, Mexico, Oaxaca, Gulf of California, Puerto Escondido, 25°48'10"N, 111°17'55"W, 18-21 fm (33-38 m), sand + cake urchins, 11.ii.1940.



whether conspecific with lectotype), SBMNH 347485 (labeled as voucher).

*Velero III* station 1261-41, as above for lectotype, stem fragments, 50-60 mm long in two separate tubes, one fragment with gonothecae, SBMNH 347486 (labeled as voucher).

*Velero III* station 1261-41, as above for lectotype, one lot, in ethanol, USNM 49257.

Remarks.— The sample labeled "AHF Holotype No. 136" (SBMNH 347215) contained several fragments of hydroids having two morphotypes. One of these corresponded with the characters noted above in having branched hydrocladia, although bearing little similarity with the original figure of the species (Fraser, 1948: pl. 37 fig. 42a), and was returned to the sample as the lectotype. The remaining colonies, with unbranched hydrocladia, were combined with specimens from the same station in another sample (SBMNH 347486) as paralectotypes. While the lectotype is unfortunately sterile, some of the paralectotypes bear gonothecae. However, further study is needed to determine whether the combined lectotype and paralectotype material represents a single species.

A paralectotype sample from *Velero III* station 1261-41 (SBMNH 347486) consisted of two lots in two separate tubes, one of which contained a small label reading: "part of material sent to USNM, 4/26/48, H.H." That evidently refers to the material recorded at the NMNH as USNM 49257.

According to Fraser (1948), this species is characterized mainly by the presence of special branched hydrocladia in the upper part of the stem. These hydrocladia consist of ahydrothecate internodes with a distal apophysis supporting a short secondary hydrocladium composed of a short athecate internode and a longer thecate internode.

Reported range.— Gulf of California, Pacific off Baja California (type locality: north of Dewey Channel) (Fraser, 1948).

#### *Plumularia biarmata* Fraser, 1938a

*Plumularia biarmata* Fraser, 1938a: 10, 63, pl. 14 fig. 72; Fraser, 1939: 161 et seq.; 1946: 92, 362; 1948: 276; Schmitt, 1948: xiv; Arai, 1977: 29.

Syntype material.— Panama, Bahia Honda, 15-25 fm; Secas Islands, 15 fm. Mexico, east of islands off Navidad Head, 25-35 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 251-34, Panama, Veraguas, Secas Islands, 07°57'50"N, 82°01'15"W, 15 fm (27 m), rock + nullipores, 22.ii.1934, one colony, 13 mm high, without gonothecae, SBMNH 347487 (labeled as voucher).

Paralectotypes.— *Velero III* station 249-34, Panama, Veraguas, Bahia Honda,



07°43'16"N, 81°32'55"W, 15-20 fm (27-46 m), rock, 22.ii.1934, part of colony of a species of *Plumularia*, with a single infracalycine nematotheca, on algae, SBMNH 347218 (labeled as syntype).

*Velero III* station 249-34, as above, one colony of an aglaopheniid, SBMNH 347217 (labeled as syntype) (AHF Holotype No. 138).

*Velero III* station 249-34, as above, one lot, in ethanol, USNM 49260.

Panama, Bahia Honda, BCPM 976-887-1 (Arai, 1977).

Remarks.— Fraser (1938a) considered the presence of two mesial (infracalycine) nematothecae on the hydrothecate internodes to be of importance in characterizing this species. No gonothecae were found on his material. The only colony observed in which some of the hydrocladial internodes have two infracalycine nematothecae is that from *Velero III* station 251-34 (SBMNH 347487), so this colony has been selected as the lectotype. Only a few hydrocladia are present on that colony; these have a short athecate proximal internode and 2-3 hydrocladial internodes. The first hydrothecate internode has a single infracalycine nematotheca, some of the remaining have two, the proximal being smaller. The internodes are long, slender, and slightly curved; the hydrotheca is fairly deep, the distal part is free from the internode. In addition there is the top part of a colony from *Velero III* station 249-34 (SBMNH 347218). This fragment is only 5 mm high but well preserved, the stem is divided into internodes each with a distal apophysis; the apophyses alternately point left and right and support hydrocladia with 4-5 slightly curved internodes. All internodes have a distally placed, fairly deep hydrotheca the distal part of which is free from the internode. There is a pair of supracalycine (flanking) nematothecae in all internodes but only a single median (infracalycine) nematotheca, this in contradistinction to Fraser's description.

Given the fact that not all Panamanian material has two infracalycine nematothecae, some of the Mexican voucher material of this species was also inspected [*Velero III* station 275-34, west of islets off Navidad Head, Tenacatita Bay, Mexico, 19°12'50"N 104°49'48"W, 25-35 fm (46-64 m)]. The colonies in this material are much larger, reaching 35 mm height, with thick, yellowish stems. The hydrocladia are short, composed of only a few internodes and have the same structure as that described from *Velero III* station 249-34. Two infracalycine nematothecae may not always have been present; also they are easily removed when handling preserved material.

Reported range.— Pacific off Panama (type locality: Secas Islands) and Mexico (Fraser, 1938a, 1946, 1948).

#### *Plumularia defecta* Fraser, 1938a

*Plumularia defecta* Fraser, 1938a: 10, 63, pl. 15 fig. 73; 1939: 161 et seq.; 1946: 92, 358; 1948: 276; Schmitt, 1948: xiv; Arai, 1977: 29; Ljubenkov, 1980: 51.

Syntype material.— Ecuador, off La Plata Island, 45-55 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 212-34, Ecuador, Manabi, off La Plata Island, 01°15'S, 81°04'15"W, 45-55 fm (82-101 m), rock + mud, 10.ii.1934, one single, 7 mm high stem, on fragment of alga (?), SBMNH 347219 (AHF Holotype No. 139) (registered as syntype).

Paralectotypes.— *Velero III* station 212-34, as above for lectotype, SBMNH 347220 (registered as syntype).

Ecuador, La Plata Island, BCPM 976-896-1 (Arai, 1977).

Remarks.— The lectotype is a single sterile colony on a tube-shaped piece of material that could be an alga. The material is very fragile, and the thin hydrocladial internodes are striking. The hydroid occurs within a colony of *Clytia* sp. densely covering the substrate. The paralectotype consists of a fragment of apparently identical algal material with *Clytia* sp., amongst which are some damaged colonies of *P. defecta*.

According to Fraser (1938a: 64), the primary characteristic of this species is “the lack of nematophores on the nonhydrothecate internodes.” Other attributes include: colony monosiphonic; stem divided into regular internodes each with distal apophysis; apophyses of stem alternately directed left and right; hydrocladia heteromerously segmented; first (proximal) internode short, without nematothecae.

Reported range.— Pacific off Ecuador (type locality: off La Plata Island) and Mexico, southern California (Fraser, 1938a, 1946, 1948).

*Plumularia exilis* Fraser, 1948

*Plumularia exilis* Fraser, 1948: 277, pl. 38 fig. 43; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21; Hochberg and Ljubenkov, 1998: 34-35, fig. 1.16.

Syntype material.— Mexico, off Cape San Lucas, San Jaime Bank, 75 fm (*Velero III* station 618-37); Baja California, 4 miles north of Todos Santos Island, 41 fm; 1½ miles north of Cedros Island, 55-60 fm; 8 miles west of Cedros Island, 60-65 fm; 8½ miles south of San Benito Island, 71-72 fm; off Cape San Lucas, San Jaime Bank, 120 fm; Gulf of California, off Los Frailes, 5-15 fm. USA: California, 6½ miles north of Anacapa Island, 125-135 fm; east of Anacapa Island, 50 fm; northeast of Anacapa Island, 45 fm; 10¾ miles west of Point Dume, 47-48 fm; Santa Catalina Island, east of Long Point, 45-50 fm; Santa Catalina Island, 2.8 miles west-northwest of Long Point, 64-88 fm; Santa Catalina Island, ½ mile west of Long Point, 21-40 fm; 1 mile east of White Cove, 21 fm; 5 miles southeast of Catalina Island, 140-150 fm; 5 miles southeast of Church Rock, 117-118 fm; 2½ miles southeast of Church Rock, 60-80 fm; San Clemente Island, south of Pyramid Cove, 55-69 fm; San Clemente Island, Pyramid Cove, 55-69 fm (Fraser, 1948).

Lectotype.— *Velero III* station 618-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 75 fm (137 m), rock + coralline + sponge, 03.iii.1937, a single colony fragment comprising a hydrocaulus with several slender and elongate hydrocladia, 23 mm high, unattached, several gonothecae present, extraordinarily elongate and slender with a tube-like neck distally, SBMNH 144508 (labeled as voucher) (AHF Holotype No. 140).

Paralectotypes.— *Velero III* station 618-37, as above for lectotype, samples in two tubes, separately labeled, fragments of colonies, only a few gonothecae, SBMNH 347488 (registered as voucher).

*Velero III* station 619-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 120 fm (219 m), granite rock + coralline + sponge, 03.iii.1937, fragments of several colonies, no gonothecae, SBMNH 347489 (registered as voucher).

*Velero III* station 751-37, Mexico, Baja California Sur, off Los Frailes, 23°22'45"N, 109°24'15"W, 5-15 fm (9-27 m), sand + algae, 04.iv.1937, fragments of several colonies, no gonothecae, SBMNH 347490 (registered as voucher).

*Velero III* station 873-38, USA, California, Santa Barbara county, east of Anacapa Island, 34°01'N, 119°19'W, 50 fm (91 m), broken shell, 01.viii.1938, two colonies, ca. 20 mm high, few hydrocladia left (also two stems of *Sertularella* sp.), no gonothecae, SBMNH 347491 (registered as voucher).

*Velero III* station 874-38, USA, California, Santa Barbara county, northeast of Anacapa Island, 34°01'30"N, 119°21'W, 45 fm (82 m), shell, 01.viii.1938, 8-10 mm high stems on tubular algae, no gonothecae, SBMNH 347492 (registered as voucher).

*Velero III* station 1012-39, USA, California, Los Angeles County, San Clemente Island, south of Pyramid Cove, 32°45'55"N, 118°26'10"W, 55-69 fm (101-126 m), sand + shell, 08.xi.1939, two lots in two tubes: one tube with three colonies, 15-20 mm high, the other with one branched colony, 40 mm high, no gonothecae, SBMNH 347493 (registered as voucher).

*Velero III* station 1027-39, USA, California, Los Angeles County, 5 miles southeast of Santa Catalina Island, 33°15'15"N, 118°14'00"W, 140-150 fm (256-274 m), green mud, 10.xii.1939, two fair colonies, 30 and 40 mm high, no gonothecae, SBMNH 347494 (registered as voucher).

*Velero III* station 1245-41, Mexico, Baja California Norte, 4 miles north of Todos Santos Island, 31°53'20"N, 116°48'15"W, 41 fm (75 m), shell + mud + grey sand, 24.ii.1941, a few complete colonies and several fragments, partly attached to stones, no gonothecae, SBMNH 347495 (registered as voucher).

*Velero III* station 1252-41, Mexico, Baja California Norte, 8½ miles south of San Benito Islands, 28°10'25"N, 115°34'15"W, 71-72 fm (130-132 m), coral sand + fine pebbles, 26.ii.1941, no colony found in this sample (it may contain detached hydrocladia), SBMNH 347496 (registered as voucher).

*Velero III* station 1253-41, Mexico, Baja California Norte, 8 miles west of Cedros Island, 28°05'50"N, 115°31'00"W, 64-65 fm (117-119 m), gravel + loose rock, 26.ii.1941, seven colonies, up to 20 mm high, on algae (?), no gonothecae, SBMNH 347497 (registered as voucher).

*Velero III* station 1263-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°22'18"N, 115°11'00"W, 45-55 fm (82-101 m), fine sand + broken shell, small dredge, 28.ii.1941, no specimens of this species observed in sample, which consists of sponge fragments, partly attached to pieces of rocks, SBMNH 347498 (registered as voucher).

*Velero III* station 1264-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°23'20"N, 115°11'52"W, 55-60 fm (101-110 m), shale + pebbles, small dredge, 28.ii.1941, several colonies and fragments, no gonothecae, SBMNH 347499 (registered as voucher).

*Velero III* station 1272-41, USA, California, Santa Barbara County, 6½ miles north of Anacapa Island lighthouse, 34°07'20"N, 119°23'15"W, 124-125 fm (227-229 m), grey sand, 23.iii.1941, three colonies, almost without hydrocladia, and several fragments, no gonothecae, SBMNH 347500 (registered as voucher).

*Velero III* station 1276-41, USA, California, Los Angeles County, 10¾ miles west of Point Dume, 34°00'10"N, 119°01'30"W, 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, tangled mass of ca. 10 stems, mostly devoid of hydrocladia, no gonothecae, SBMNH 347520 (registered as voucher).

*Velero III* station 1307-41, USA, California, Los Angeles County, Santa Catalina Island, 2.8 miles west-northwest of Long Point, 33°26'00"N, 118°24'40"W, 64-88 fm (117-161 m), gray sand, 03.v.1941, two colonies, 35 and 30 mm high, no gonothecae, SBMNH 347521 (registered as voucher).

*Velero III* station 1309-41, USA, California, Los Angeles County, Santa Catalina Island, 3.5 miles west-northwest of Long Point, 33°26'00"N, 118°25'35"W, 40 fm (73 m), lamp shells, 03.v.1941, well-preserved colony in two parts, 45 mm high, no gonothecae, SBMNH 347522 (registered as voucher).

*Velero III* station 1350-41, USA, California, Los Angeles County, Santa Catalina Island, 5 miles southeast of Church Rock, 33°16'00"N, 118°13'30"W, 117-118 fm (214-216 m), sand + loose washed rock, 12.vi.1941, one well preserved colony, 45 mm high, and a top part ca. 15 mm long, no gonothecae, SBMNH 347523 (registered as voucher).

*Velero III* station 1354-41, USA, California, Los Angeles County, Santa Catalina Island, 2½ miles southeast of Church Rock, 33°16'40"N, 118°17'10"W, 60-80 fm (110-146 m), sand + dead shell, 12.vi.1941, fragmented colony, no gonothecae, SBMNH 347524 (registered as voucher).

*Velero III* station 1358-41, USA, California, Los Angeles County, Santa Catalina Island, 1 mile east of White Cove, 33°23'30"N, 118°20'50"W, 36-38 fm (66-69 m), lamp shells + mud, 13.vi.1941, about 10 unbranched colonies, up to 40 mm high, no gonothecae, SBMNH 347525 (registered as voucher).

*Velero III* station 1383-41, USA, California, Los Angeles County, Santa Catalina Island, east of Long Point, 33°23'40"N, 118°20'04"W, 45-50 fm (82-91 m), sponges + lamp shells, 10.viii.1941, four colonies, between 15 and 25 mm high, no gonothecae, SBMNH 347526 (registered as voucher).

*Velero III* station 1426-41, USA, California, Los Angeles County, Santa Catalina Island, ½ mile west of Long Point, ¼ mile offshore, 33°24'00"N, 118°21'30"W, 21-40 fm (38-73 m), sand + brachiopods, small boat, trawl, 29.ix.1941, two stems, ca. 20 mm high, no gonothecae, SBMNH 347527 (registered as voucher).

Mexico, off Cape San Lucas, San Jaime Bank, 03.iii.1937, one lot, in ethanol, USNM 49262 (*Velero III* station uncertain).

Remarks.— The lectotype chosen here, in fair condition, is from a sample labeled "AHF Holotype No. 140" (SBMNH 144508). It was isolated from several other detached fragments present in the same bottle, which were probably not all from a single colony. Specimens other than the lectotype colony were combined with material from the same station (*Velero III* station 618-37) as paralectotypes (SBMNH 347488). A better preserved but sterile colony was observed in the sample from *Velero III* station 1350-41 (SBMNH 347523).

The main characters of the species are as follows: colony unbranched, stem monosiphonic, thin, divided into long internodes each with fairly long, distal apophysis. Hydrocladia alternately directed left and right, heteromerously segmented; first internode quite short, athecate, next internode thecate, following athecate; these internodes alternating along length of hydrocladium, long. Ahydrothecate internodes with 2 or 3 nematothecae; thecate internode with small, cup-shaped hydrotheca at approximately two-thirds its length, two or three infracalycine (mesial) nematothecae. Gonothecae elongated ovoid, with a slender and tubular neck distally, attached to apophyses and hydrocladial internodes.

Reported range.— Gulf of California, Pacific off Baja California (type locality: off Cape San Lucas), southern California (Fraser, 1948).

*Plumularia insolens* Fraser, 1948

*Plumularia insolens* Fraser, 1948: 278, pl. 38 fig. 44; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— Mexico, eight miles west of Cedros Island, 64-65 fm (*Velero III* station 1253-41). USA, California, ½ mile west-northwest of Anacapa Island, 41-43 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1269-41, USA, California, Santa Barbara County, 1 mile west-northwest of Anacapa Island, 34°01'25"N, 119°27'20"W, 41-43 fm (75-79 m), rock + sponge + grey-green sand, 16.iii.1941, single colony, 60 mm high, hydrocladia present in distal parts of stem, some gonothecae present, mostly empty, SBMNH 347528 (registered as voucher).

Paralectotypes.— *Velero III* station 1253-41, Mexico, Baja California Norte, 8 miles west of Cedros Island, 28°05'50"N, 115°31'00"W, 64-65 fm (117-119 m), gravel + loose rock, 26.ii.1941, material in three fragments: a basal part attached to stone, a detached basal part, and a top part, probably remnants of two colonies, length of fragments ca. 10 mm, no gonothecae, SBMNH 347222 (registered as syntype) (AHF Holotype No. 142).

*Velero III* station 1269-41, as above for lectotype, four colonies, up to 60 mm high, hydrocladia present only in distal parts of stem, some gonothecae present, SBMNH 347528 (registered as voucher).

Remarks.— A specimen from *Velero III* station 1269-41 (SBMNH 347528) has been designated lectotype. The sample originally indicated as AHF Holotype No. 142 (SBMNH 347222) is much damaged, has no gonothecae, and may be made up of more than one species.

Fraser's (1948) description of *Plumularia insolens* may be supplemented as follows: stem divided into internodes except for basal part, where nodes are no longer visible; perisarc of stem fairly strongly sclerotized, yellowish-brown. Apophyses on stem internodes at distal end, fairly long. Hydrocladia heteromerously segmented; first internode short, without nematotheca, rest of internodes regularly alternating as thecate and non-thecate. On hydrothecate internodes one infracalcine nematotheca; supracalcine pair placed on small protuberances next to hydrothecal rim, fairly long. Gonothecae elongated oval, with circular aperture distally.

Reported range.— Off the coast of Baja California, and southern California (type locality: off Anacapa Island) (Fraser, 1948).

*Plumularia integra* Fraser, 1948

*Plumularia integra* Fraser, 1948: 279, pl. 39 fig. 45; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, 1 mile north of west end of Anacapa Island, 45-47 fm (*Velero III* station 1419-41) (Fraser, 1948).

Lectotype.— *Velero III* station 1419-41, USA, California, Santa Barbara County, Anacapa Island, 1 mile north of west end, 34°02'00"N, 119°26'40"W, 45-47 fm (82-86 m),



sand + sea urchins, Blake trawl, 17.ix.1941, one colony in two fragments, without gonothecae, SBMNH 347223 (registered as Syntype) (AHF Holotype No. 143).

Paralectotype.— None designated.

Remarks.— Fraser (1948) may have based this species on a single colony, stating “The colony is quite long, 7 cm...” However, we prefer to consider the specimen above (SBMNH 347223), apparently the hydroid he studied, as a lectotype and not a holotype by monotypy. It consists of two stem fragments, 40 and 30 mm long, of what we believe to be one colony; it has damaged hydrocladia and no gonothecae. The absence of most hydrocladia makes it impossible to judge if this is the figured specimen (Fraser, 1948, pl. 38 fig. 45a) but most likely it is. Fraser attached particular value to the fact that the stem is practically without nodes. The material is scarcely sufficient for a proper redescription of the species and the absence of gonothecae makes its status more uncertain.

The principal features of this species, taken from Fraser’s (1948) description, are: stem monosiphonic, slender, up to 70 mm high, not divided into internodes, with alternate, long apophyses arranged in two series. Hydrocladia heteromerously segmented; first internode short, with single nematotheca and internal septum, followed by regular alternation of thecate and atehcate internodes. Thecate internodes with cup-shaped hydrotheca, infracalcine nematotheca and flanking pair of supracalcine nematothecae; a well marked perisarc septum or ridge at the base of the hydrotheca. Gonothecae unknown.

Reported range.— Pacific off southern California (type locality: off Anacapa Island) (Fraser, 1948).

### *Plumularia irregularis* Fraser, 1948

*Plumularia irregularis* Fraser, 1948: 280, pl. 39 fig. 46; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21.

*Nemertesia* sp. Ramil and Vervoort, 2006: 154-155.

Syntype material.— USA, California, off San Nicolas Island, 28-31 fm (*Velero III* station 1123-40) (Fraser, 1948).

Lectotype.— *Velero III* station 1123-40, USA, California, Ventura County, off San Nicolas Island, 33°15’50”N, 119°24’40”W, 28-31 fm (51-57 m), sponge + rock, 12.iv.1940, two basal stem fragments, 8 and 15 mm high, without gonothecae, SBMNH 347224 (AHF Holotype No. 144) (registered as syntype).

Paralectotype.— None designated.

Remarks.— Most likely the two stem fragments designated as the lectotype were the only colony of this species available to Fraser (1948). However, we were reluctant to consider it a holotype by monotypy. The hydroid was compared by him with the widespread *Plumularia setacea* (Linnaeus, 1758). Inspection of the fragments shows that the specimen is a juvenile of a species referable to *Nemertesia*. Ramil and Vervoort (2006) considered *Plumularia irregularis* Fraser, 1948 to be unrecognizable. To avoid homonymy with *Nemertesia irregularis* (Quelch, 1885) and *Nemertesia irregularis* (Fraser, 1938a) [= *Nemertesia fraseri* Ramil and Vervoort, 1992], however, we adopt the name *Nemertesia hancocki*, **nom. nov.**, for this species.

Fraser (1948) placed particular importance upon the irregular arrangement of the hydrocladia along the stem, and irregularities in the alternation of hydrothecate and ahydrothecate hydrocladial internodes. The material is hardly adequate for redescription. The main features of the species, taken from Fraser's description, are: stem erect and slender; nodes irregularly disposed; number and arrangement of apophyses irregular, though all in two opposed series. Number of apophyses per internode varied, as is their arrangement from alternate to opposite. Hydrocladia heteromerous; first internode short, athecate, fused with apophysis, followed by thecate internode with infracalycine nematotheca, a cup-shaped hydrotheca, and a pair of flanking supracalycine nematothecae, in more or less regular alternation with ahydrothecate internode with single nematotheca. Occasionally two ahydrothecate segments between two hydrothecate ones. Gonothecae unknown.

Reported range.— Pacific off southern California (type locality: off San Nicolas Island) (Fraser, 1948).

*Plumularia meganema* Fraser, 1948

*Plumularia meganema* Fraser, 1948: 282, pl. 39 fig. 47; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— Mexico, Gulf of California, east of San Francisco Island, 47 fm (*Velero III* station 650-37); Baja California, Rosario Bay, 15 fm; Gulf of California, east of San Marcos Island, 18 fm; Angel de la Guardia Island, Puerto Refugio, 50-75 fm; Tres Marias Islands, off Magdalena Island, 13 fm. USA, California, northeast of Anacapa Island, 45 fm; 3½ miles south of Hueneme, 29-30 fm (Fraser, 1948).

Lectotype.— *Velero III* station 650-37, Mexico, Baja California Sur, Gulf of California, east of San Francisco Island, 24°47'35"N, 110°32'20"W, 47 fm (86 m), coarse sand, 09.iii.1937, one more or less hydrocladial stem, 35 mm long (and some stem fragments that may have come from the same specimen), SBMNH 347226 (AHF Holotype No. 146) (registered as syntype).

Paralectotypes.— *Velero III* station 611-37, Mexico, Baja California Norte, off Rosario Bay, 29°53'45"N, 115°49'30"W, 25 fm (46 m), rock, 28.ii.1937, two stems, 20 and 15 mm high, SBMNH 347530 (registered as voucher).

*Velero III* station 650-37, as above for lectotype, two tubes containing stem fragments with few hydrocladia and nematothecae, SBMNH 347531 (registered as voucher).

*Velero III* station 650-37, as above for lectotype, one lot, in ethanol, USNM 49276.

*Velero III* station 712-37, Mexico, Baja California Norte, Gulf of California, Angel de la Guardia Island, Puerto Refugio, 29°34'35"N, 113°29'30"W, 50-75 fm (91-137 m), sand, 21.iii.1937, worm tube with several small, very young colonies attached (not necessarily conspecific material), SBMNH 347532 (registered as voucher).

*Velero III* station 874-38, USA, California, Santa Barbara County, northeast of Anacapa Island, 34°01'30"N, 119°21'W, 45 fm (82 m), shell, 01.viii.1938, sponge fragments with a few basal stems not longer than 8 mm and without hydrocladia, plus 25 mm long detached stem, evidently belonging to a different species, with particularly long internodes (has the appearance of *P. exilis* Fraser, 1948 but needs verification), SBMNH 347533 (registered as voucher).

*Velero III* station 876-38, USA, California, Santa Barbara County, northeast of Anacapa Island, 34°03'N, 119°21'W, 45 fm (82 m), rock + sea urchins, 01.viii.1938, single stem fragment, ca. 20 mm high, no hydrocladia left, SBMNH 347534 (registered as voucher).

*Velero III* station 970-39, Mexico, Nayarit, Tres Marias Islands, Magdalena Island, 21°25'40"N, 106°21'10"W, 13 fm (24 m), coralline + algae, 09.v.1939, stem fragment 30 mm long, some hydrocladia present, some still having many nematothecae, these not particularly long, no noticeable division of stem into internodes, only occasionally a node, apophyses and consequently the hydrocladia not strictly alternating, and in two opposed series (may very well be a developing *Nemertesia*), SBMNH 347535 (registered as voucher).

Remarks.— The lectotype is composed of a single stem, 35 mm high, from material rooting in a sponge (others from same station detached; no hydrocladia left). Fraser (1948) attached value to the length of the lateral nematothecae on the hydrocladia. No gonothecae are known. This is much like the morphologically varied *Plumularia setacea* (Linnaeus, 1758).

Diagnostic features, considered by Fraser (1948) as distinguishing this species from its congeners, are: stems rising from a rooting stolon, occasionally hidden in sponge, slender and monosiphonic, regularly divided into internodes, each with distinct distal apophysis, the various apophyses alternating, placed in two opposed series. Hydrocladia ca. 6 mm long, heteromerously segmented, first segment short without hydro- or nematotheca, followed by a regular succession of hydrothecate and ahydrothecate internodes. Hydrothecate internode with infracalycine (mesial) nematotheca, a cup-shaped hydrotheca slightly above the middle and two flanking supracalycine nematothecae. All internodes with incomplete internal perisarc septa. Nematothecae on stem and internodes long (longer than depth of hydrotheca). Gonothecae unknown.

Reported range.— Pacific off Baja California, Gulf of California (type locality: off San Francisco Island), southern California (Fraser, 1948).

*Plumularia micronema* Fraser, 1938c

*Plumularia micronema* Fraser, 1938c: 136, 142, pl. 21 fig. 13; 1939: 161 et seq.; 1946: 92, 361; 1948: 283; Schmitt, 1948: xiv; Arai, 1977: 29; Ljubenkov, 1980: 51; Cortés, 1997: 325; Calder et al., 2003: 1207.

Syntype material.— Panama, Secas Islands, 14 fm. Costa Rica, Parker Bay, 40 fm; Playa Blancas, 15 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 450-35, Panama, Veraguas, Secas Islands, 07°57'N, 82°01'35"W, 14 fm (26 m), shell + nullipores, 05.ii.1935, a 12 mm long part of stem with a 18 mm long side branch, gonothecae present, SBMNH 347227 (AHF Holotype No. 147) (registered as syntype).

Paralectotypes.— *Velero III* station 450-35, as above for lectotype, bottle containing two tubes: one tube containing a few diminutive, young colonies attached to algal matter, the other has a 22 mm high stem with a spread of hydrocladia, no gonothecae, SBMNH 347536 (registered as voucher).

*Velero III* station 461-35, Costa Rica, Guanacaste, Playa Blanca, 10°56'45"N, 85°53'50"W, 15 fm (27 m), mud + sand + algae, 08.ii.1935, a few stems and stem fragments, partly attached to sponge, no hydrocladia visible on stems, SBMNH 347228 (registered as syntype).

*Velero III* station 472-35, Costa Rica, Guanacaste, Port Parker, 10°57'50"N, 85°48'45"W, 30 fm (55 m), shell, 09.ii.1935, fragments only, no well preserved hydrocladia, SBMNH 347537 (registered as voucher).

Costa Rica, Playa Blancas, BCPM 976-924-1 (Arai, 1977).

Remarks.— This is a well characterized species, particularly in the structure of the hydrocladia and the place of the lateral nematothecae. Gonothecae are as described by Fraser (1938c) but are probably quite young. This species can be redescribed well from the available material.

Diagnostic features, taken from Fraser's (1938c) description, are: stem 35 mm high, unbranched or loosely branched, divided into internodes each with one distal apophysis supporting a monomerously segmented hydrocladium; apophyses and hydrocladia alternating, in two opposed series. One nematotheca on each stem internode, placed in axil of apophysis. First internode of hydrocladium short; following thecate internodes slender; cup-shaped hydrotheca placed distally, occasionally overtopping internode. One infracalycine (mesial) nematotheca; supracalycine (flanking) nematothecae notably small, not overtopping hydrothecal rim. Gonothecae quite small, oval, inserting on hydrocladial apophyses.

Reported range.— Pacific coast of Costa Rica and Panama (type locality: off Secas Islands), Galápagos (Fraser, 1938c, 1946, 1948).

#### *Plumularia mobilis* Fraser, 1948

*Plumularia mobilis* Fraser, 1948: 283, pl. 40 fig. 48; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Lees, 1986: 117; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— USA, California, 9 miles off San Diego, 78-81 fm (*Velero III* station 1240-41); 10¾ miles west of Point Dume, 47-48 fm; Santa Catalina Island, 1 mile southwest of Ben Weston Point, 45-49 fm. Mexico, 1½ miles north of Cedros Island, 45-55 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1240-41, USA, California, San Diego County, 9 miles off San Diego, 32°34'50"N, 117°22'05"W, 78-81 fm (143-148 m), green sand + pebbles, 23.ii.1941, a 25 mm high stem without basal stolon and with a 16 mm long side-branch, only few hydrocladia left, no gonothecae, SBMNH 347229 (AHF Holotype No. 148) (registered as syntype).

Paralectotypes.— *Velero III* station 1264-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°23'20"N, 115°11'52"W, 55-60 fm (101-110 m), shale + pebbles, small dredge, 28.ii.1941, three colonies, 10-15 mm high, no branching, SBMNH 347538 (registered as voucher).

*Velero III* station 1276-41, USA, California, Los Angeles County, 10¾ miles west of Point Dume, 34°00'10"N, 119°01'20"W, 47-48 fm (86-88 m), loose rock + sponge, 23.iii.1941, several fragments and a 28 mm high stem with well preserved hydrocladia on long apophyses (this specimen, as that from next station, have a distinct nemertesian structure), SBMNH 347539 (registered as voucher).

*Velero III* station 1316-41, USA, California, Los Angeles County, Santa Catalina Island, 33°20'55"N, 118°30'25"W, 45-49 fm (82-90 m), mud + sand + gravel, 17.v.1941, a 25 mm long stem fragment, quite different from Fraser's description of the species; probably a

young colony of a species of *Nemertesia* (in jar with label reading “check with type”), SBMNH 347540 (registered as voucher).

Remarks.— The lectotype is probably not the specimen mentioned in Fraser’s (1948: 283) description (18 mm high, growing from a linear stolon). Some of the paralectotypes do not look promising as representatives of the species and have only some hydrocladia left. It is highly doubtful, moreover, that all this material is conspecific. Fraser coined the specific name ‘*mobilis*’ because of the irregular arrangement of ahydrothecate and hydrothecate internodes in the hydrocladia; this is not an uncommon feature in *Plumularia*.

The characteristics of *P. mobilis*, as taken from Fraser’s (1948) description are: stem erect, branched, both branch and stem divided into regular internodes, each with fairly long, distal apophysis supporting the hydrocladium. Two nematothecae on stem internodes on wall opposite apophysis; one nematotheca in axil of apophysis. Hydrocladia heteromerously segmented; first segment short, without a hydrotheca or nematotheca, followed by hydrothecate and ahydrothecate internodes in irregular succession. Each hydrothecate internode with cup-shaped hydrotheca in middle or on distal half, one infracalycine (mesial) nematotheca, and a pair of supracalycine (flanking) nematothecae. Internodes usually with internal perisarc septum at both ends. Gonothecae unknown.

The characters listed above are insufficient to differentiate the species from its congeners; the lectotype has very few hydrocladia and may be unsuitable for a proper re-description of the species. The paralectotype series appears to be composite.

Reported range.— Off Baja California, southern California (type locality: off San Diego) (Fraser, 1948).

#### *Plumularia multiramosa* Fraser, 1948

*Plumularia multiramosa* Fraser, 1948: 283, pl. 40 fig. 49; Schmitt, 1948: xiv; Cairns et al., 1991: 28; 2002: 21. *Nemertesia multiramosa*: Ramil and Vervoort, 2006: 124, 142-143.

Syntype material.— USA, Oregon, north of Winchester Bay, 26-58 fm (*Velero III* station 1472-42) (Fraser, 1948).

Lectotype.— *Velero III* station 1472-42, USA, Oregon, Douglas County, north of Winchester Bay, 43°41’26”N, 124°14’40”W, 26-58 fm (48-106 m), sand + fine mud, triangular dredge, 02.vii.1942, a ca. 90 mm long stem with many side branches, of which some detached, no gonothecae, SBMNH 347230 (AHF Holotype No. 149) (registered as syntype).

Paralectotype.— *Velero III* station 1472-42, as above for lectotype, SBMNH 347541 (registered as voucher).

Remarks.— The structure of the lectotype colony strongly suggests a species of *Nemertesia*, as the hydrocladia are multiserially arranged and placed on strong apophyses. The paralectotype material available is more abundant but also sterile. There is sufficient material for a redescription. The characteristic mode of branching in the present specimen does not resemble Fraser’s (1948, pl. 40 fig. 49) figure of the appearance of the colony. The dark yellowish-brown stems contrast sharply with the silvery white color of the hydrocladia.



The characteristics of this species, as taken from Fraser's (1948) description, are: colony flexuous, composed of a ca. 90 mm high, monosiphonic stem without nodes provided on all sides with strong apophyses supporting hydrocladia or, in the higher parts, several cm long side-branches of similar structure as the stem. Perisarc of stem, side-branches, and apophyses strong, heavily sclerotized and yellowish brown in color. Hydrocladia and upper parts of stem and branches divided into internodes by straight nodes, on internodes one nematotheca in axil of apophysis and one on opposite wall. Hydrocladia heteromerously segmented; first internode of hydrocladium short, without nematotheca, internal septum present. Ahydrothecate internodes with one nematotheca and two internal septa; hydrothecate internodes with cup-shaped hydrotheca on distal half, one infracalycine (mesial), two supracalycine (flanking) nematothecae, and four internal septa. Ahydrothecate and hydrothecate internodes alternate; first ahydrothecate and hydrothecate internode of a hydrocladium fused. Gonothecae unknown. These characters strongly suggest a species of *Nemertesia*, as is born out by the inspection of the material. Ramil and Vervoort (2006) also formally referred the species to that genus. Though sterile the material at hand suffices for a proper redescription.

Reported range.— Northeastern Pacific (type locality: northeast of Winchester Bay, Oregon) (Fraser, 1948).

*Plumularia mutabilis* Fraser, 1948

*Plumularia mutabilis* Fraser, 1948: 285, pl. 41 fig. 50; Schmitt, 1948: xiv.

Syntype material.— Mexico, Gulf of California, Agua Verde Bay, 10 fm (*Velero III* station 1101-40) (Fraser, 1948).

Lectotype.— *Velero III* station 1101-40, Mexico, Baja California Sur, Gulf of California, Agua Verde Bay, 25°31'00"N, 111°01'45"W, 10 fm (18 m), mud + coral, 12.ii.1940, three basally fused stems, the longest 100 mm, no gonothecae, SBMNH 347231 (AHF Holotype No. 150) (registered as syntype).

Paralectotypes.— *Velero III* station 1101-40, as above for lectotype, a large number of strongly tangled colonies, all sterile, SBMNH 347542 (registered as voucher).

*Velero III* station 1101-40, as above for lectotype, one lot, in ethanol, USNM 49275.

Remarks.— Notwithstanding the biserial arrangement of the hydrocladia, this is a distinct species of *Nemertesia*, and type material here is sufficient for a redescription of it. In being referable to the genus *Nemertesia* Lamouroux, 1812, the name of the species becomes a homonym of *Antennularia mutabilis* Fraser, 1948, which has already been assigned to *Nemertesia* as *N. mutabilis* (Fraser, 1948) by Ramil and Vervoort (2006). To eliminate homonymy of the two names we propose the binomen *Nemertesia anomala*, **nom. nov.**, for *Plumularia mutabilis* Fraser, 1948. The specific name, derived from the Greek word *anomalos*, refers to the unusual colony form of this species in the genus *Nemertesia*, as noted above.

The following characters can be taken from Fraser's (1948: 285) description: colonies large, growing in clusters, stem strong, erect and long, up to 20 cm high, no division into internodes visible. Apophyses arranged in two opposite series along length of axis, alternating in lower reaches, opposite in higher parts; one nematotheca in axil of apophysis, one on wall of stem opposite apophysis. Hydrocladia monomerously

segmented; first internode of hydrocladium short, without nematotheca; following internodes all hydrothecate; hydrotheca placed in upper third. First hydrothecate internode (second of hydrocladium) with one infracalycine (mesial) nematotheca and a pair of supracalycine (flanking) nematothecae; following internodes with two infracalycine nematothecae. Gonothecae unknown.

Reported range.— Gulf of California (type locality: Agua Verde Bay) (Fraser, 1948).

*Plumularia parva* Fraser, 1948

*Plumularia parva* Fraser, 1948: 285, pl. 41 fig. 51; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21; Calder et al., 2003: 1207.

Syntype material.— Ecuador, Galápagos Islands, off Daphne Minor Island, 70-80 fm (*Velero III* station 792-38). USA, California, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 45-49 fm (Fraser, 1948).

Lectotype.— *Velero III* station 792-38, Ecuador, Galápagos Islands, off Daphne Minor Island, 00°24'30"N, 90°22'40"W, 70-80 fm (128-146 m), mud, 20.i.1938, an 8 mm high stem inserting on stolon, no hydrocladia left, no gonothecae, SBMNH 347232 (AHF Holotype No. 151) (registered as syntype).

Paralectotypes.— *Velero III* station 792-38, as above for lectotype, tube contains debris only, no hydroid colony observed, SBMNH 347543 (registered as voucher).

*Velero III* station 1316-41, USA, California, Los Angeles County, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 33°20'55"N, 118°30'25"W, 45-49 fm (82-90 m), mud + sand + gravel, 17.v.1941, single 18 mm high, well preserved colony with flexuous stem and slender hydrocladia (probably representing a young colony of a different species from lectotype), SBMNH 347544 (registered as voucher).

Remarks.— The following diagnosis is taken from Fraser's (1948) original description of *Plumularia parva*: a small and slender species, up to 88 mm high, stem divided into internodes, slightly flexuous. Each stem internode with fairly long, distal apophysis, apophyses alternately directed left and right, one nematotheca in axil, one on proximal part of opposite wall of internode. Hydrocladia heteromerously segmented, without short proximal internode; first internode hydrothecate, one infracalycine (mesial) nematotheca, a small, cup-shaped hydrotheca on distal third and a pair of supracalycine (flanking) nematothecae. Ahydrothecate internodes about as long as hydrothecate ones, with a single nematotheca. Gonothecae unknown.

This diagnosis could not be verified against the syntype material as the colony indicated as the "holotype" (and here designated lectotype) is nothing but a bare stem without hydrocladia, with only the apophyses of the stem internodes remaining. There is a second tube from the type locality indicated as voucher, but it contains debris only. We decided not to indicate the colony from *Velero III* station 1316-41 as the lectotype for two reasons. First of all there is an enormous geographical gap between the type locality (Galápagos Islands) intended by Fraser (1948) and that of station 1316-41 (Santa Catalina Island, Los Angeles County, California), which makes it unlikely that the material is conspecific. Secondly, the colony from station 1316-41 does not correspond to Fraser's description of *Plumularia parva*: the hydrocladia have one or two short athecate internodes, and the thecate internodes of the hydrocladia are long and slender. It only

agrees with Fraser's account of *P. parva* in the flexuous condition of the stem; though a division into internodes is only evident in the top part. *Plumularia parva* Fraser, 1948 cannot be redescribed from existing material; most likely it is a young stage of one of the many species of *Plumularia* or *Nemertesia* occurring in the region. If the species can be recognized through future research, a neotype will likely be desirable.

Reported range.— Galápagos Islands (type locality: off Daphne Minor Island); Pacific off southern California (Fraser, 1948).

*Plumularia propinqua* Fraser, 1938a

*Plumularia propinqua* Fraser, 1938a: 10, 66, pl. 15 fig. 76; 1938c: 136; 1939: 161 et seq.; 1946: 92, 362; 1948: 286; Schmitt, 1948: xiv; Arai, 1977: 29.

Syntype material.— Ecuador, Santa Elena Bay, 10-12 fm. Colombia, Gorgona Island, 20 fm. Panama, Jicarón Island, 25-30 fm; Secas Islands, 25 fm. Mexico, Tangola Tangola, 15-20 fm; off White Friars Islands, 25 fm; east of islands off Navidad Head, 25-35 fm; Isabel Island, 10-25 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 209-34, Ecuador, Guayas Province, off Santa Elena Bay, 02°08'20"S, 81°00'15"W, 8-10 fm (15-18 m), rock + large shells + gorgonids, 09.ii.1934, one 35 mm high stem, attached to shell fragment, no gonothecae observed, SBMNH 347233 (AHF Holotype No. 152) (registered as syntype).

Paralectotypes.— *Velero III* station 209-34, as above for lectotype, about 10 stems, up to 40 mm high, and several fragments, some with developing gonothecae, SBMNH 347234 (registered as syntype).

*Velero III* station 209-34, as above for lectotype, a few fragments only, SBMNH 347545 (registered as voucher).

*Velero III* station 209-34, as above for lectotype, one lot, in ethanol, USNM 49271.

*Velero III* station 221-34, Colombia, off Isla Gorgona, 03°01'25"N, 078°10'W, 20 fm (37 m), rock + shell, 12.ii.1934, one 30 mm high stem, attached to another hydroid (?), SBMNH 347546 (registered as voucher).

*Velero III* station 240-34, Panama, Veraguas, off Jicarita Island, 07°12'30"N, 81°47'05"W, 24 fm (44 m), shell, 20.ii.1934, no specimen seen in tube, SBMNH 347547 (registered as voucher).

*Velero III* station 250-34, Panama, Veraguas, Secas Islands, 07°57'55"N, 82°00'30"W, 25 fm (46 m), mud + shell, 22.ii.1934, two stems, ca. 30 mm high, SBMNH 347548 (registered as voucher).

*Velero III* station 259-34, Mexico, Oaxaca, Tangola Tangola Bay and Santa Cruz Bay, 15°45'N, 96°06'12"W, 15-20 fm (27-37 m), sand + gravel + mud, 28.ii.1934, five stems and some fragments, up to 35 mm high, SBMNH 347549 (registered as voucher).

*Velero III* station 264-34, Mexico, Guerrero, south of White Friars, 17°30'50"N, 101°29'55"W, 25 fm (46 m), rock + gorgonids, 02.iii.1934, about 10 colonies and some fragments, partly attached to foreign material, SBMNH 347550 (registered as voucher).

*Velero III* station 268-34, Mexico, Guerrero, north of White Friars, 17°31'30"N, 101°29'27"W, 25 fm (46 m), coarse sand, 03.iii.1934, five colony fragments, up to 15 mm long, SBMNH 347552 (registered as voucher).

*Velero III* station 269-34, Mexico, Guerrero, east of White Friars, 17°31'20"N, 101°29'W,

5-10 fm (9-18 m), rock + coral + nullipores, 03.iii.1934, three stems, one 40 mm long and branched, SBMNH 347551 (registered as voucher).

*Velero III* station 275-34, Mexico, Jalisco, Tenacatita Bay, west of islets off Navidad Head, 19°12'50"N, 104°49'48"W, 25-35 fm (46-64 m), rock, 04.iii.1934, two tubes with numerous colonies and fragments, up to 40 mm high, SBMNH 347553 (registered as voucher).

*Velero III* station 277-34, Mexico, Nayarit, off Isabel Island (all around the island), 21°51'35"N, 105°54'30"W, 10-25 fm (18-46 m), sand + nullipores, 05.iii.1934, tangled mass of colonies and fragments, SBMNH 347554 (registered as voucher).

Ecuador, Santa Elena Bay, BCPM 976-930-1 and BCPM 976-930-2 (Arai, 1977).

Remarks.— Material from *Velero III* station 870-38, Isabel Island (Mexico), 21°54'10"N, 105°58'15"W, 10-15 fm (18-27 m), 08 March 1938 (SBMNH 347555), registered as a voucher, is not part of the syntype series and was not included among the paralectotypes.

In the older colonies examined here, the perisarc of the stems and branches is brown; the hydrocladia are silvery white. *Plumularia propinqua* Fraser, 1938a is related to *Plumularia micronema* Fraser, 1938c and *P. sinuosa* Fraser, 1948a, and the three may prove to be conspecific. The complex appears to be related to *Plumularia floridana* Nutting, 1900, representing various stages in the development of the eggs (cf. Calder, 1983, 1997).

*Plumularia propinqua* may be characterized briefly as follows: stem monosiphonic, slightly flexuous, up to 50 mm high, divided into internodes by straight nodes, each internode with distinct apophysis, apophyses biseriate, hydrocladia alternately directed left and right and in one plane. Stem internodes with one nematotheca in axil of apophysis and one on opposite wall. Hydrocladia monomerously segmented; first segment athecate, proximal node straight, distal node oblique, occasionally fused to apophysis; remaining internodes separated by straight nodes, each with one fairly deep hydrotheca, an infracalycine (mesial) nematotheca and a pair of supracalycine (flanking) nematothecae. Nematothecae small in comparison to length of hydrotheca. Gonothecae globular, springing from apophyses of stem internodes.

Reported range.— Pacific off Ecuador (type locality: off Santa Elena Bay), Colombia, Panama, and Mexico (including the Gulf of California) (Fraser, 1938a, 1946, 1948).

#### *Plumularia reversa* Fraser, 1948

*Plumularia reversa* Fraser, 1948: 286, pl. 42 fig. 52; Schmitt, 1948: xiv; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21.

*Nemertesia mexicana* Ramil and Vervoort, 2006: 124, 142-143.

Syntype material.— Mexico, 8 miles west of Cedros Island, 64-65 fm (*Velero III* station 1253-41); 1½ miles north of Cedros Island, 20-25 fm; Gulf of California, south of San Esteban Island, 35 fm. USA, California, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 45-49 fm (Fraser, 1948).

Lectotype.— *Velero III* station 1253-41, Mexico, Baja California Norte, 8 miles west of Cedros Island, 28°05'50"N, 115°31'00"W, 64-65 fm (117-119 m), gravel + loose rock, 26.ii.1941, a 80 mm long stem with many hydrocladia present, without gonothecae, SBMNH 347235 (AHF Holotype No. 153) (registered as syntype).

Paralectotypes.— *Velero III* station 1262-41, Mexico, Baja California Norte, 1½ miles off north end of Cedros Island, 28°21'10"N, 115°11'47"W, 20-25 fm (37-46 m), fine broken shell, 28.ii.1941, two tubes, one with a single 30 mm high colony, the second with two fragments (may not be conspecific with lectotype; close inspection required), SBMNH 347556 (registered as voucher).

*Velero III* station 1316-41, USA, California, Los Angeles County, Santa Catalina Island, 1 mile southwest of Ben Weston Point, 33°20'55"N, 118°30'25"W, 45-49 fm (82-90 m), mud + sand + gravel, 17.v.1941, 8 mm long fragment, unrecognizable, SBMNH 347557 (registered as voucher).

Remarks.— The hydrocladia of the lectotype colony designated here are multiseri-ally arranged rather than being strictly opposite. This character, together with the long apophyses that have a distinct, large mamelon, brings this species into the genus *Nemertesia*, probably representing a young colony of one of the better known species.

The nomenclature of this species has been complicated by an error in a review of the genus *Nemertesia* by Ramil and Vervoort (2006). When assigned to *Nemertesia*, *Plumularia reversa* Fraser, 1948 becomes a junior secondary homonym of *Nemertesia reversa* (Fraser, 1938b) [= *Antennularia reversa* Fraser, 1938b]. Ramil and Vervoort (2006) proposed a new name, *Nemertesia mexicana*, for "*Plumularia reversa* Fraser, 1938b: 115-116, pl. 17 fig. 7; 1948: 269" (sic). However, that reference in their list of synonyms under *N. mexicana* applies to *Antennularia reversa* Fraser, 1938b, a species referred by them to *Nemertesia* and listed in their paper as *Nemertesia reversa* (Fraser, 1938) (Ramil and Vervoort, 2006: 126). The binomen *Plumularia reversa* does not occur in Fraser's (1938b) paper, appearing instead in Fraser's (1948) report. Ramil and Vervoort (2006: 124) intended the replacement name *Nemertesia mexicana* for *Plumularia reversa* Fraser, 1948, and we adopt that name for the species here.

The following details of *Nemertesia reversa* (Fraser, 1948) (= *N. mexicana* Ramil and Vervoort, 2006) can be taken from Fraser's (1948) account of the species: stem erect, 75 mm high, not divided into internodes, with long apophyses in two opposite rows, alternately arranged "with an approach to regularity." Each apophysis with a 'mamelon' and two nematothecae: one in axil, one above mamelon; also a nematotheca on wall opposite apophysis. Hydrocladia monomerously segmented; internodes long, with cup-shaped hydrotheca on proximal third, one infracalycine (mesial) nematotheca, a pair of supracalycine (flanking) nematothecae and one mesial nematotheca on distal part of internode. Gonothecae unknown.

Reported range.— Gulf of California, Pacific off west coast of Baja California (type locality: off Cedros Island) and southern California (Fraser, 1948).

#### *Plumularia septata* Fraser, 1938c

*Plumularia septata* Fraser, 1938c: 136, 143, pl. 21 fig. 14; 1939: 161 et seq.; 1946: 92, 359; 1948: 287; Schmitt, 1948: xiv; Arai, 1977: 29; Cairns et al., 1991: 28; 2002: 21.

Syntype material.— Peru, Chincha Island, 8 fm; Independencia Bay, 5 fm; Callao, off penal colony, 5 fm (Fraser, 1938c).

Lectotype.— *Velero III* station 386-35, Peru, off Middle Chincha Island, 13°39'15"S, 76°24'40"W, 8 fm (15 m), sand, 15.i.1935, 25 mm high top part of a colony, with many gonothecae, SBMNH 347236 (AHF Holotype No. 154) (registered as syntype).



Paralectotypes.— *Velero III* station 371-35, Peru, Lima, Independencia Bay, east of Viejas Island, 14°15'05"S, 76°12'35"W, 5 fm (9 m), sand + rock, 12.i.1935, bottle contains a large stone and a detached colony, 30 mm long (now in separate tube), colony with long hydrocladia (5-6 internodes), without gonothecae, SBMNH 347564 (registered as voucher).

*Velero III* station 372-35, Peru, Lima, Independencia Bay, east of Viejas Island, 14°15'05"S, 76°12'35"W, 5 fm (9 m), sand + rock, 12.i.1935, large sample with numerous well-preserved colonies, at least 10 cm high (in these older colonies, perisarc of stem yellowish-brown, branches and hydrocladia silvery-white), with many mature female gonothecae, SBMNH 347559 (registered as voucher).

*Velero III* station 382-35, Peru, Lima, Independencia Bay, 14°13'55"S, 76°08'45"W, 5 fm (9 m), rock + sand, 14.i.1935, numerous flexuous colonies, up to 10 cm long, hydrocladia longer (composed of more internodes) than observed so far, with up to six internodes, attached to algae and shell fragments, gonothecae numerous, predominantly male, these more slender than those of female sex and with homogeneous contents, SBMNH 347561 (registered as voucher).

*Velero III* station 384-35, Peru, Lima, Independencia Bay, 14°13'S, 76°09'20"W, 5 fm (9 m), rock + spider crabs, 14.i.1935, numerous colonies, up to 80 mm high, with short hydrocladia (2 or 3 internodes), attached to algae, gonothecae present, SBMNH 347565 (registered as voucher).

*Velero III* station 386-35, as above for lectotype, similar colony fragment as lectotype, SBMNH 347237 (AHF Paratype No. 243) (registered as syntype).

*Velero III* station 386-35, as above for lectotype, several colonies, to 60 mm high, with short hydrocladia (composed of 1-3 internodes), attached to algae, no gonothecae, SBMNH 347563 (registered as voucher).

*Velero III* station 386-35, as above for lectotype, one lot, in ethanol, USNM 49272.

Peru, Chincha Islands, BCPM 976-932-1 and BCPM 976-932-2 (Arai, 1977).

Remarks.— Three lots of this species from Peru, listed as vouchers [*Velero III* station 365-35, near Callao, 10 fm (18 m), SBMNH 347560; *Velero III* station 377-35, Lima, Independencia Bay, 12 fm (22 m), SBMNH 347558; *Velero III* station 385-35, Lima, Independencia Bay, 9-10 fm (16-18 m), SBMNH 347562], do not correspond with data for syntype material and have not been included among the paralectotypes.

*Plumularia septata* Fraser, 1938c is a distinctive species, characterized by the shape of the colony [not unlike *Hydrallmania falcata* (Linnaeus, 1758)], the short hydrocladia (1-3 internodes), the strongly septate condition of the internodes (of stem, branches and hydrocladia), and the small, bottle-shaped gonothecae.

A brief description of the species is as follows: colony bottle-brush shaped, up to 120 mm high, with branches on all sides of stem, length of branches ca. 10 mm. Stem and branches divided into strongly septate internodes, each with a strong, long, distal apophysis supporting hydrocladia in two rows set at an angle of ca. 90°. Hydrocladia heteromerously segmented, only 3 to 4 (hydrothecate) internodes long, all internodes strongly septate. First internode ahydrothecate, second hydrothecate, following internodes alternating. Ahydrothecate internode with single nematotheca; hydrothecate internode with cup-shaped hydrotheca in middle, an infracalycine (mesial) nematotheca and a pair of lateral (flanking) nematothecae. Gonothecae elongate-ovoid, narrowing distally into a short neck.

Reported range.— Pacific off Peru (type locality: off Middle Chincha Island) (Fraser, 1938c, 1946, 1948).

*Plumularia sinuosa* Fraser, 1938a

*Plumularia sinuosa* Fraser, 1938a: 10, 67, pl. 15 fig. 77; 1938c: 136; 1939: 161 et seq.; 1946: 92, 358; 1948: 287, pl. 42 fig. 53; Schmitt, 1948: xiv, xv; Brusca, 1973: 48; Ljubenkov, 1980: 51; Cairns et al., 1991: 28; 2002: 21; De León González et al., 1994: 878; Calder et al., 2003: 1208.

Syntype material.— Mexico, Revillagigedo Islands, Socorro Island, Braithwaite Bay, 30 fm. Ecuador, Galápagos Islands, Indefatigable Island, Academy Bay, 17-22 fm (Fraser, 1938a).

Lectotype.— *Velero III* station 132-34, Mexico, Colima, Socorro Island, Braithwaite Bay, 18°41'15"N, 110°56'15"W, 40 fm (73 m), rock + sand + nullipores, 04.i.1934, ca. 8 mm high stem, with a few well preserved hydrocladia, without gonothecae, SBMNH 347566 (AHF Holotype No. 155) (registered as voucher).

Paralectotype.— *Velero III* station 169-34, Ecuador, Galápagos Islands, Indefatigable Island, Academy Bay, 00°46'18"S, 90°19'27"W, 15-25 fm (27-46 m), sand + rock + algae, 20.i.1934, no specimen found in this sample, SBMNH 347238 (registered as syntype).

Remarks.— There is little in the lectotype to characterize this species besides the zig-zag appearance of the stem, the heteromerous segmentation of the hydrocladia, and the rather deep and dorsally free hydrothecae. The colony is small, lacks gonothecae, and may be young. Specimens from *Velero III* station 222-34, Gorgona Island, Colombia (SBMNH 347239), are registered as both syntypes and as AHF Paratype No. 244, but the location was not mentioned as a locale in Fraser's (1938a) original description of the species. On that basis we excluded them from the paralectotype list above. Also excluded is material from the same location in the NMNH (USNM 49274) and the Royal British Columbia Museum (BCPM 976-940-1) (Arai, 1977). In addition, Fraser (1948) in a later paper referred fertile hydroids from the San Lorenzo Channel, Gulf of California (*Velero III* station 607-36), to this species (SBMNH 347240). This material is registered as a syntype, and as AHF Hypotype No. 156, but is also not syntype material and has been excluded from the listed paralectotype specimens. These hydroids are much more robust than the lectotype (30 mm versus 8 mm high), and they have a straight stem and distinct apophyses. The gonosome is of the same type as described for *P. micronema* and *P. propinqua*, being eggs in a gelatinous capsule attached in the axil of the apophysis. It seems highly unlikely that this material is the same species as the lectotype of *P. sinuosa* Fraser, 1938a. The reason Fraser (1948) may have considered the material conspecific is the similarity in hydrothecal shape that in all the material is fairly deep with a considerable portion of the adcauline wall free. The geographical range from which the 'species' is recorded by Fraser (1948) is considerable, extending from the Galápagos to the Pacific off southern California.

In spite of being listed on the Smithsonian type list, no label referring to a division of syntype material has been found.

Diagnostic features of *Plumularia sinuosa*, according to Fraser (1938a), are: colony small, 10-12 mm high; stem monosiphonic, strongly flexuous, broken up into internodes with a short apophysis, apophyses alternately directed left and right, supporting

gracefully curved heteromerously segmented hydrocladia. First hydrocladial internode short, proximal node straight, distal node oblique; following thecate internode with proximal node oblique and distal node straight; following ahydrothecate internode like the first but longer; hydrothecate and ahydrothecate internodes alternating along length of hydrocladium. Stem internodes with one nematotheca in axil of apophysis and one on opposite wall. First hydrocladial internode atehcate; following hydrothecate internode with rather deep hydrotheca placed in middle of internode, adcauline wall free from internode. There is one infracalycine nematotheca and a pair of flanking (supracalycine) nematothecae. Ahydrothecate internode with a single mesial nematotheca in its middle portion. Gonotheca unknown.

Reported range.— Galápagos Archipelago, Panama, Pacific coast of Mexico (type locality: Socorro Island, Braithwaite Bay), Gulf of California, southern California (Fraser, 1938a, 1946, 1948; Ljubenkov, 1980).

*Plumularia tenuissima* Fraser, 1938b

*Plumularia tenuissima* Fraser, 1938b: 111, 117, pl. 18 fig. 10; 1938c: 136; 1939: 161 et seq.; 1944b: 39; 1946: 92, 357; 1948: 189; Arai, 1977: 29 [invalid junior primary homonym of *Plumularia tenuissima* Totton, 1930].

*Plumularia galapagensis* Calder et al., 2003: 1208 [replacement name for *Plumularia tenuissima* Fraser, 1938b].

Syntype material.— Mexico, Off Cape San Lucas, San Jaime Banks, 6-8 fm, 75 fm, 120 fm; Carmen Island, Salinas Bay, 20 fm (Fraser, 1938b).

Lectotype.— *Velero III* station 618-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 75 fm (137 m), rock + coralline + sponge, 03.iii.1937, one colony fragment (nearly broken in two), 29 mm high, with gonothecae, SBMNH 347241 (AHF Holotype No. 157) (registered as syntype).

Paralectotypes.— *Velero III* station 618-37, as above for lectotype, tangled colonies and fragments, largely devoid of nematothecae, with a few gonothecae, SBMNH 347242 (AHF Paratype No. 245) (registered as syntype).

*Velero III* station 618-37, as above for lectotype, two tubes in bottle, containing a stem, several stem fragments, and some hydrocladia, all in poor state of preservation, SBMNH 347567 (registered as voucher).

*Velero III* station 619-37, Mexico, Baja California Sur, off Cape San Lucas, San Jaime Bank, 22°50'30"N, 110°15'W, 120 fm (219 m), granite rock + coralline + sponge, 03.iii.1937, several 50 mm high stems, and a tangled mass of stem fragments and hydrocladia, no gonothecae, SBMNH 347568 (registered as voucher).

*Velero III* station 673-37, Mexico, Baja California Sur, Gulf of California, Carmen Island, Salinas Bay, 25°57'55"N, 111°07'45"W, 20 fm (37 m), shell, 14.iii.1937, stem fragments with badly preserved hydrocladia, up to 30 mm long, no gonothecae (many bryozoans in this sample), SBMNH 347569 (registered as voucher).

Mexico, off Cape San Lucas, San Jaime Bank, 3.iii.1937, one lot, in ethanol, USNM 49273 (*Velero III* station uncertain).

Mexico, off Cape San Lucas, BCPM 976-942-1 and 976-942-2 (Arai, 1977).

Remarks.— Syntype material of this species, from *Velero III* station 618-37 and labeled AHF Holotype No. 157, comprised several fragments which may or may not have

come from a single colony. We chose the best single specimen of these, and one with a few gonothecae, as the lectotype. The remaining material was combined with other hydroids from the same station in another sample (SBMNH 347242) as paralectotypes.

This species is characterized by the long internodes of stem and hydrocladia. Those of the stem have four frontally disposed nematothecae and a pair on each side of the apophysis. The hydrocladia may proximally have a number of ahydrothecate internodes with nematothecae (except for the first internode). Hydrothecate and ahydrothecate internodes alternate, and frequent fusions occur. Two nematothecae normally occur on the ahydrothecate internodes, and one or two infracalcine nematothecae are present on the hydrothecate internodes. The supracalcine nematothecae are long and project far above the hydrothecal rim. In the material inspected gonothecae insert on the basal hydrocladial internodes, including the basal hydrothecate internodes. Gonothecae are greatly elongated ovoid, almost tubular (compare with those of *Plumularia exilis* Fraser, 1948). Their sex could not be ascertained.

Descriptive notes, taken from Fraser (1938b) and from present material, are as follows: colonies developing from stolon, 60 mm high. Stem unbranched or very slightly and irregularly branched. Stem broken up into long, slender internodes with distal apophysis, four nematothecae on front and a pair in axil of apophysis; apophyses in one plane but not necessarily strictly alternate. Hydrocladia up to 6 mm long, heteromerously segmented. First hydrocladial internode short, without nematotheca, followed by one or more ahydrothecate internodes with one or two nematothecae. After this a regular succession of hydrothecate and ahydrothecate internodes. Hydrothecate internodes with cup-shaped hydrotheca inserting in middle or slightly above, one or two infracalcine (mesial) nematothecae and a pair of long supracalcine (flanking) nematothecae. Gonothecae elongate-ovoid, almost tubular, inserting on stem internodes, axil of apophysis or hydrocladial internodes.

Reported range.— Pacific off Baja California (type locality: off Cape San Lucas, Mexico), Gulf of California, Galápagos Islands (Fraser, 1938b, 1946, 1948).

*Plumularia venusta* Fraser, 1948

*Plumularia venusta* Fraser, 1948: 288, pl. 42 fig. 54; Schmitt, 1948: xv.

*Nemertesia venusta*: Ramil and Vervoort, 2006: 128, 152-153.

Syntype material.— Mexico, Gulf of California, east of San Marcos Island, 18 fm (*Velero III* station 579-36) (Fraser, 1948).

Lectotype.— *Velero III* station 579-36, Mexico, Baja California Sur, Gulf of California, east of San Marcos Island, 27°14'50"N, 112°04'20"W, 18 fm (33 m), mud, 14.iii.1936, a 23 mm long colony, without gonothecae, SBMNH 347243 (AHF Holotype No. 158) (registered as syntype).

Paralectotype.— None designated.

Remarks.— The lectotype colony is probably the specimen that served for Fraser's (1948) description, with which it fully corresponds. We are uncertain if this is the only extant type specimen, however, and designate it as the lectotype. This is probably a young specimen of a species of *Nemertesia*, as already indicated by Ramil and Vervoort (2006).

The main features, taken from Fraser's (1948) account and from the lectotype, are as follows: colony 24 mm high, slender, graceful. Stem divided into long internodes separated by straight septa; division of the stem into internodes indistinct in higher parts where nodes become almost invisible. Stem internodes with distinct distal apophysis supporting up to 5 mm long hydrocladia, alternately arranged in one plane and widely spaced, arrangement of the apophyses (and consequently that of the hydrocladia) becoming irregular in the distal parts of the stem, apophyses conspicuous, bearing one nematotheca in axil of apophysis as well as a distinct mamelon; one or two nematothecae on wall of internode on opposite site. Hydrocladia homomerously segmented; first internode of hydrocladium short, athecate; remaining internodes all hydrothecate; hydrotheca small, cup-shaped, on distal third or fourth of internode. First hydrothecate internode with two and remaining internodes with three infracalycine (mesial) nematothecae, a pair of supracalycine (flanking) nematothecae near hydrothecal border. Gonothecae unknown.

Reported range.— Gulf of California (type locality: off San Marcos Island, Mexico) (Fraser, 1948).

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