

A CATALOGUE OF ACTINIARIA AND CORALLIMORPHARIA FROM THE CANARY ISLANDS AND FROM MADEIRA.

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The present catalogue is the first list of Actiniaria and Corallimorpharia from the Canary Islands and from Madeira (Central Macaronesia), including 41 species. The endemic actinofauna supports the idea of Central Macaronesian Archipelagos as a biogeographical unit, different from the other Macaronesian Archipelagos. 21 new records for the area are cited, some of them extending considerably the ranges for the species.

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INTRODUCTION

The first zoologist to study the actinofauna of Madeira was JAMES YATE JOHNSON (1861). Some years later, material from Macaronesian bottoms was collected during some of the most important oceanographic expeditions. First was material collected on the voyages of the *HIRONDELLE I & II* and the *PRINCESSE-ALICE I & II* (1888-1913) that was studied by GRAVIER (1918, 1922). Some years later the Macaronesian material collected during MICHAEL SARS North Atlantic Deep-sea Expedition was studied by CARLGREN but published only in 1934. PAX (1908) also gave some comments and later MAY (1912) published a list of sea anemones from La Gomera.

Until the 1970's there was no-one working on this subject, but in that decade the Rijksmuseum van Natuurlijke Historie of Leiden began an ambitious scientific project named CANCAP (see VAN DER LAND 1987). This project allowed J.C. den Hartog (curator of Coelenterata of RMNH and a member of the CANCAP expedition) to study the soft hexacorals of this region from a new scientific perspective.

When the CANCAP expedition was completed the University of La Laguna undertook

the Benthos Project in order to make a catalogue of marine invertebrates and also to study the main communities and marine ecosystems of the Canary Islands. Actiniaria and Corallimorpharia from Central Macaronesia (OCAÑA 1994) was the last project to study the sea anemones from the Macaronesian archipelagos.

Remarkably, a number of Actiniaria species have been found on branches of *Dendrophyllia ramea* and other biogenic substrates associated with this species. These hard corals occur in the Canary Islands from depths of 60 to 150 metres, where they constitute a rich community supporting a high number of benthonic invertebrates (see ARISTEGUI et al. 1987).

Now 41 species (including Actiniaria and Corallimorpharia) are listed, although there are still three undescribed species which are being studied (OCAÑA 1994). These latter taxa are not included in the present paper.

Dr. J.C. den Hartog was Curator of Coelenterata in the National Museum of Natural History in Leiden. For more than 10 years he worked on Macaronesian species of Actiniaria and Corallimorpharia and was able to amass a huge collection of sea anemones from this region. He was interested in Actiniaria and Corallimorpharia worldwide and acquire great

knowledge of these taxa during his lifetime. A number of high quality scientific papers covering the Atlantic, Pacific and Mediterranean regions and contributions to several prestigious marine biology books are just some of Dr. den Hartog valuable contributions to invertebrate zoology. Sadly, he left us too soon, although he lives on through his writings which are a brilliant light for all who are working on this area of zoology.

Orden Actiniaria Hertwig, 1882
Family Actiniidae (Gosse, 1858)

Actinia equina mediterranea Schmidt, 1971

Actinia equina mediterranea Schmidt, 1971: 162-168. SCHMIDT 1972: 63-67; Mediterranean, Atlantic: Canary Islands and Madeira.

Actinia equina mediterranea OCAÑA (1994): 67-74, A/1, B/1-3, C/ VI 4-5; DEN HARTOG & OCAÑA (*in press*).

Habitat

This taxon has mainly been recorded in intertidal areas, from pools to platforms, covered by seaweeds. Exceptionally, it can occur also under stones, in shallow waters up to 5 metres deep.

Distribution and abundance

We recorded it from Madeira and the Canary Islands: Lanzarote, Fuerteventura, Gran Canaria and Tenerife. It seems to be absent from La Gomera, La Palma and El Hierro. The species is not common in Central Macaronesia (Canary Islands and Madeira), but is more common in Fuerteventura and Lanzarote than in any other island that we have searched. The species was previously known from the western Mediterranean and the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Actinia nigropunctata den Hartog & Ocaña (*in press*)

Actinia mesembryanthemum, Johnson, 1861: 301; Madeira.

Actinia equina nigromaculata Ocaña, 1994: 75-82, A/2, B/4-6, C/VI 6-9.

Habitat

It is commonly recorded in intertidal (pools and under stones) and shallow water habitats like seaweed platforms, boulder beds and sublittoral caves.

Distribution and abundance

It has been recorded all around the Canary Island and Madeira, where it is much more common than *Actinia equina mediterranea*. *A. nigromaculata* is an endemic element of the sea fauna of Central Macaronesia, and possibly emerged during pleistocene times (see DEN HARTOG & OCAÑA *in press*).

Actinia virgata Johnson, 1861

Actinia virgata Johnson, 1861: 301-302; Madeira; *Actinia striata* Tur, 1989: 53.

Actinia equina virgata Ocaña, 1994: 83-85, A/2, C/VI 1-3; Canary Islands & Madeira
Actinia virgata Den Hartog & Ocaña (*in press*)

Habitat

It is only recorded on intertidal and shallow water habitats down to 10 metres.

Distribution and abundance

A. virgata is a very rare species and it has been recorded only at Madeira, where it is also very rare. *A. virgata* can be considered an endemic element from Madeira that possibly emerged during pleistocene times (see DEN HARTOG & OCAÑA *in press*).

Anemonia sulcata (Pennant, 1777)

Priapus viridis Forskal, 1775.

Comactis flagellifera Milne-Edwards, 1857: 236; Madeira.

Anthea cereus, Cocks, 1851: 10-11, pl. II figs. 23, 27, 28 and 34; England (Falmouth). JOHNSON (1861): 301; Madeira.

Anemonia sulcata MILNE-EDWARDS (1857): 233-234, planche C1, fig. 1; English Channel; Mediterranean. OCAÑA, 1994: 87-101, A/6, B/11-13, C/ VII 1-11; Canary Islands and Madeira.

Anemonia viridis Manuel (1981, 1988): 102-103, fig. 35; Atlantic: England, Scotland; Mediterranean.

Habitat

A. sulcata is a very common species that occurs in the intertidal (pools, and intertidal platforms and crevices) and in many sublittoral beds (seaweed beds, boulder beaches, rocky slopes, rocky platforms with *Diadema antillarum*, *Cymodocea nodosa* beds and littoral lagoons). The species can be also commonly observed in organically polluted areas.

Distribution and abundance

We recorded it from Madeira and all Canary Islands. It is more common in the Canary Islands than in Madeira. The species is previously known from the Atlantic coast of Europe, the Mediterranean and from North Africa to the West Sahara coast (OCAÑA & SAOUD *in prep.*)

Anemonia melanaster (Verrill, 1907)

Actinia melanaster Verrill, 1907: 257-258, fig. 112; Bermudas.

Anemonia sargassensis Hargitt, 1908: 117-118; Atlantic coast of North America: Woods Hole Region. CARLGREN & HEDGPETH (1952): 151-153, fig. 3, plate IV lower left; Mexico Gulf. CORRÊA, 1964: 55-58, estampa 7, figs. 19 and 20; Brasil, Curaçao. FISHER (1976): 110-119, figs. 31 and 32, tables 12 and 13; Jamaica.

Anemonia antillensis Pax 1924: 99-100, fig. 6; Curaçao.

Pseudactinia melanaster CAIRNS et al. (1986): 176-177; Bermudas.

Anemonia melanaster OCAÑA (1994): 102-112, A/ 7, B/ 14-17, C/ VII and VIII 1-12; Canary Islands and Madeira.

Habitat

A. melanaster occurs in the intertidal (pools, and intertidal platforms and crevices) and in many sublittoral beds (seaweeds beds, boulders beaches, rocky slopes, rocky platforms with *Diadema antillarum*, *Cymodocea nodosa* beds, sandy beaches and bottoms, caves and littoral lagoons).

Distribution and abundance

We recorded it from Madeira and all Canary Islands. It is more common in the Canary Islands than in Madeira. This taxon was previously known from the south coast of the USA, the Caribbean, Bermuda and Brasil. We also know of its presence from the tropical coast of Africa.

Remarks

According to the diagnosis of the genus *Anemonia* (CARLGREN 1949: 50) *Anemonia melanaster* exhibits sufficient characters to merit its inclusion within this genus. Other authors have considered this opinion previously (see synonymy). Although the species was originally described in the genus *Actinia* (VERRILL 1907), the lack of a deep fosse and the common presence of a b-mastigophore in the acrorhagi of *A. melanaster* are solid characters which void its placement in *Actinia*. In spite of the short description offered by Verrill of his *Actinia melanaster* Verrill, 1907 there is no doubt that his species and *Anemonia sargassensis* Hargitt, 1908 are conspecific.

Anthopleura ballii (Cocks, 1851)

Actinia ballii Cocks, 1851: 9, Pl. II figs. 9, 17 and 18; Atlantic: England (Falmouth).

Bunodes ballii Gosse (1860): 198, Pl. IV fig. 4; England. FISCHER (1874): 229; England, France. JOURDAN (1880): 30; Mediterranean.

Bunodes listeri Johnson, 1861: 302-303; Madeira: Funchal. PAX (1908): 272-273; Madeira. GRAVIER (1918a): 12-4; Equatorial Guinea.

Anthopleura ballii Stephenson (1935): 167, Pl. X figs. 1 and 2, Pl. XI figs. 1 and 6, Tex. fig. 4 F, 9 and 70; England, Ireland. SCHMIDT (1972): 91; Mediterranean. OCAÑA (1994): 116-126, A/8 B/18-21, C/V 5-11, Canary Islands and Madeira.

Habitat

A. ballii occurs in the intertidal (pools) and in several sublittoral habitats down to a depth of 10 metres: seaweed beds, boulders beaches, organically polluted areas and caves.

Distribution and abundance

We recorded it from Madeira and all Canary

Islands except El Hierro. The species is rather common in the Macaronesian archipelagos and has previously been recorded from European coasts, the Western Mediterranean, North Morocco and Bermuda.

Anthopleura thallia (Gosse, 1854)

Actinia thallia Gosse, 1854: 283.

Cereus thallia Milne-Edwards (1857): 266; Atlantic: England.

Bunodes thallia Gosse (1860): 195-197 Plate IV figs. 5 and 6; England.

Anthopleura thallia Portielje (1933): 143; Atlantic: The Netherlands. STEPHENSON (1935): 162-167; Atlantic: England. MANUËL (1981, 1988): 116-117 Fig.41; Atlantic: England. LÓPEZ-GONZÁLEZ (1993): 280-283; Gibraltar Strait; *Anthopleura thallia* OCAÑA (1994): 127-135, A/9, B/22-24, C/V 4; Canary Islands and Madeira.

Habitat

The species mainly occurs in the intertidal (pools, boulders).

Distribution and abundance

A. thallia is a rare species in Central Macaronesia archipelagos; we only recorded it from Madeira (a single locality), and Tenerife and La Palma in the Canary Islands. Previously the species has been recorded only from some European localities and the Strait of Gibraltar.

Bunodactis rubripunctata (Grube, 1840)

Actinia rubripunctata Grube, 1840; see SCHMIDT (1972): 88.

Bunodes rigidus Andres, 1884: 212-213, Taf. 6 figs. 6-9; Mediterranean.

Bunodes duregnei Fischer, 1889: 301-5, Plate VI figs. 1-2; French Atlantic.

Bunodactis rubripunctata PAX & MÜLLER (1962): 178-179; Adriatic.

Anthopleura rubripunctata SCHMIDT (1972): 88-91, Abb. 34 b, c and 35; Mediterranean.

Bunodosoma rubripunctata OCAÑA (1994): 136-143, A/10, B/25-27; Canary Islands.

"*Bunodactis*" *rubripunctata* DEN HARTOG (1987): 543 and 556.

Habitat

The species only occurs in intertidal habitats (pools and crevices).

Distribution and abundance

It is a rare species in the Central Macaronesia archipelagos. We have recorded it from the Canary Islands (Gran Canaria and Fuerteventura), but it appears to be absent from the Madeiran archipelago. The species has been previously recorded only in some localities from the Bay of Biscay to the Canary Islands and the Mediterranean Sea. We recently recorded the species from the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Bunodactis verrucosa (Pennant, 1777)

Actinia verrucosa Pennant, 1777; see SCHMIDT (1972): 82; England.

Actinia gemmacea Ellis & Solander, 1786: 3; England. *Bunodes gemmacea* (or *gemmaeus*), GOSSE (1860): 190-194 Pl. IV figs. 2 and 3; England, Scotland, Ireland.

Bunodactis verrucosa STEPHENSON (1935): 156-161 Tex. fig. 4D and 70, Plate IX figs. 1, 2 and 4; England, France, Belgium; Mediterranean. PAX & MÜLLER (1962): 175-178, Abb. 88 and 89 (juvenile); Adriatic. SCHMIDT (1972): 82-87; Mediterranean.

Aulactinia verrucosa DUNN et al (1980): 2078-2079.

Aulactinia verrucosa OCAÑA (1994): 144-151, A/11, B/28-30, C/ IV and V; Canary Islands.

Habitat

B. verrucosa occurs mainly in intertidal habitats (pools), it is less frequent on shallow water biotopes (stony bottoms with seaweeds).

Distribution and abundance

An uncommon sea anemone in the Central Macaronesian archipelagos. We have only recorded it from the Canary Islands: Tenerife, Gran Canaria and Fuerteventura. The species seems to be absent from Madeira. It is common along the European coast from England to the Strait of Gibraltar but is much less common in the

Mediterranean. We also recorded this species along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Actinostella flosculifera (Lesueur, 1817)

Actinia flosculifera Lesueur, 1817: 174; see CARLGREN (1949): 67; Caribbean.

Oulactis flosculifera DUCHASSAING & MICHELOTTI (1860): 46-7, Pl. VII figs. 7 and 11. McMURRICH (1889): 56-8, Pl. II fig. 2, Pl. IV figs. 12, 13 and 14; Bahamas.

Actinostella flosculifera CAIRNS et al. (1986): 178-179, Pl. 51; Bermudas; OCAÑA (1994): 152-160; A/12, B/31-34, C/VI; Canary Islands.

Metridium praetextum (or *praetexta*) Dana, 1849: 5, Pl. 5 figs. 39 a and b; Rio de Janeiro.

Phyllactis conquirella Carlgren, 1949: 67; Caribbean. CORRÊA (1964): 85-90; Brasil, Bermudas, Caribbean.

Asteractis expansa Duerden, 1902: 343-347, Pl. II fig. 8, Pl. VIII fig. 29, 30 and 31, Pl. IX fig. 32 and 33; Puerto Rico.

Habitat

This taxon occurs in intertidal and shallow water habitats. It can be observed in sandy mesolittoral pools with seaweeds and also in sandy bottoms from depths of 2 to 50 metres.

Distribution and abundance

An uncommon sea anemone in the Central Macaronesian archipelagos. We could not find it in Madeira and it has only been recorded from the Canary Islands: Tenerife, La Palma, La Gomera and Fuerteventura. *A. flosculifera* is an amphiatlantic element very common in the Caribbean Sea, also occurring in some areas of northern Brazil.

Bolocera tuediae (Johnston, 1832)

Actinia tuediae Johnston, 1832: 163, in CARLGREN (1949): 54.

Bolocera tuediae Gosse, 1860: 185-188, plate V fig. 1; England. OCAÑA (1994): 161-162, Canary Islands.

Bolocera longicornis Gravier, 1922: 4 and 21-24, plate I fig. 3-6; 29°06'30"N 13°02'45"W off Lanzarote, Azores, Iceland, Norway, Barents sea, NW Spain.

Habitat

The species has been recorded by GRAVIER (1922) off Lanzarote on deep muddy bottoms (1000 metres deep).

Distribution and abundance

We know very little about this species in the Central Macaronesian archipelagos, but possibly it is common in deep waters around the archipelagos. The species has been previously recorded from many areas in the North Atlantic; it is absent from the Mediterranean Sea.

Family Haloclavidae Verrill, 1899

Anemonactis mazeli (Jourdan, 1880)

Ilyanthus mazeli Jourdan, 1880: 41 and 102-103, Plate II Fig. 5; Mediterranean: Marseille.

Eloactis mazeli ANDRES (1884): 248-249, Fig. 39, Taf 8 Figs. 4-7; Mediterranean: Naples. CARLGREN (1921): 111-115, Tex-Figs. 140-143, Plate I Fig. 1; Norway, England; Mediterranean. NOBRE (1931): 58; Portugal. STEPHENSON (1935): 91-95, Pl XXIII Figs. 1 and 2, Text-Figs. 60 and 61; England.

Anemonactis mazeli FISCHER (1887): 407-408; Banyuls. PAX & MÜLLER (1962): 149-151, Abb 75; Adriatic. MANUEL (1981): 184-185; England. OCAÑA (1994): 167-69, Canary Islands. FAUTIN (1998).

? *Eloactis mazeli* UCHIDA (1941): 383 and 385, Fig. 2, cita, Pacífico: Japón (Mutsu Bay, Onagawa Bay).

Habitat

This taxon occurs in the intertidal (under stones with sand and water), and also in shallow waters (*Cymodocea nodosa* beds) down to depths of 10 metres.

Distribution and abundance

In the Canary Islands it is a very rare species that can be overlooked easily as it lives buried in sand. We could not find it in Madeira. This taxon is also known from the Atlantic coast of Europe, the Mediterranean, the Senegal coast and apparently also from Japan and California.

Family Halcampoididae Appellöf, 1896

Halcampoides purpurea (Studer, 1878)

Halcampa purpurea Studer, 1878: 145, North Sea.

Halcampoides purpurea CARLGREN (1921): 82-92, 17 text-figs., North Sea; MANUEL (1981): 182-183, fig. 64 Great Britain; RIEMANN-ZÜRNECK (1993): 38; OCAÑA-MARTÍN (2000): 112 and 130, Granada coast (Mediterranean).

Halcampoides mediterranea WIRTZ (1995): 44. Madeira.

Habitat

It occurs buried in sandy beds. According to WIRTZ (1995) the species only expands at night; it may possibly be expanded in dark places such as caves with sandy bottoms.

Distribution and abundance

The species is rare in the Canary Islands and locally common in Madeira. It has been also recorded from the North Sea, England and the Mediterranean.

Remarks

H. purpurea may represent a complex of more than one species. According to RIEMANN-ZÜRNECK (1993) a revision of this genus will be necessary in the future.

Family Halcampidae Andres, 1883

Halcampaster sp.

Habitat

The taxon occurs buried in sublittoral sandy bottoms at a depth of 30 metres, near a rocky platform.

Distribution and abundance

Apparently a very scarce sea anemone although it can be easily overlooked. We only recorded this species from La Graciosa (Lanzarote).

Remarks

The Macaronesian material may represent a previously undescribed species. However, we only have one specimen and more material is

required to enable a more detailed study

Family Actinostolidae Carlgren, 1932

Actinoscyphia saginata (Verrill, 1882)

Actinernus saginatus Verrill, 1882: 225, i
CARLGREN (1949): 84.

Actinoscyphia saginata RIEMANN-ZÜRNECK (1978): 145-150, Figs. 1, 2 and 5; Atlantic: off Ireland, off Lanzarote coast, off north Morocco United States of America: off North Carolina, off New York coast. OCAÑA (1994): 171-172, Canary Islands.

Habitat

This taxon occurs only on bathyal muddy bottom at depths of 800 to 2300 metres. The basal disc is buried in the substrate and is often attached to biogenic material.

Distribution and abundance

We know very little about this species in the Canary Islands as it was only recorded off northern Lanzarote. It was recorded previously off Ireland, in the Bay of Biscay, North Morocco and the Atlantic coast of the United States.

Actinoscyphia aurelia (Stephenson, 1918)

Actinernus aurelia Stephenson, 1918: 31, i
CARLGREN (1949): 84.

Actinoscyphia aurelia RIEMANN-ZÜRNECK (1978): 150-153, figs. 2-5; off SW Ireland, Azores, off Lanzarote, off Sahara-Mauritania coast. OCAÑA (1994): 172-4, Canary Islands.

Habitat

This taxon occurs only on bathyal muddy bottoms at depths of 900 to 2160 metres. The basal disc is buried in the substrate.

Distribution and abundance

We know very little about this species in Canary Islands as it was only recorded off northern Lanzarote. It was recorded previously off Ireland, the Azores and the Sahara coast.

Sicyonis hemisphaerica Carlgren, 1934

Sicyonis hemisphaerica CARLGREN (1934a): 9-10, figs. 2 and 3; 28°8'N 13°35'W. CARLGREN

(1949): 81. OCAÑA (1994):174-5; Canary Islands.

Habitat

To date, only one specimen had been recorded.

Distribution and abundance

Off eastern Fuerteventura, at 1365 metres.

Family Hormathiidae Carlgren, 1925

Adamsia carciniopados (Otto, 1823)

Actinia carciniopados Otto, 1823; see MANUEL (1981): 176.

Actinia picta Risso, 1826: 186; Mediterranean.

Cribrina palliata Ehrenberg, 1834: 41; Red Sea. Brandt, 1835: 15; Mediterranean.

Adamsia palliata COCKS (1851): 4; England. GOSSE (1860): 125-133, plate III Figs. 7 and 8; England; Mediterranean; North Atlantic. JOURDAN (1880): 38-39; Mediterranean: Gulf of Marseille. FISCHER (1889): 272-273; France. STEPHENSON (1935): 245-252, Plate XVII Fig. 6, Tex-figs. 85-86; England, Ireland, Scotland, Norway, France, Isles Channel; Mediterranean. SCHMIDT (1972): 35-37, Abb. 19c; Atlantic: from Norway to Cape Vert?; Mediterranean: Adriatic.

Adamsia carciniopados MANUEL (1981, 1988): 176-177, Fig. 62; England, Norway; Mediterranean. OCAÑA (1994): 177-184, A/13, B/35-36, C/IV; Canary Islands and Madeira.

Habitat

This species has a strong commensal relationship with the hermit crab *Pagurus prideauxi* and occurs in many infralittoral habitats where the hermit crab also dwells. It is common in *Cymodocea nodosa* beds and on sandy bottoms, infralittoral seaweeds bottoms, in caves and the *Dendrophyllia ramea* community.

Distribution and abundance

A. carciniopados is a rather common species in the Central Macaronesian archipelagos, although we have only recorded it from Tenerife, La Palma and Gran Canaria, and also from Madeira. The species is common along the European coast from Norway to the Mediterranean. We have also recorded this taxon along the Atlantic coast of

Morocco (OCAÑA & SAOUD *in prep.*

Calliactis parasitica (Couch, 1838)

Actinia parasitica Couch, 1838: 80; see CARLGREN (1949): 97.

Adamsia effoeta Milne-Edwards, 1857: 278-279; Atlantic: English Channel.

Sagartia parasitica GOSSE (1860): 112-118, Plate 2, fig. 6; England, Channel Islands, Ireland; Mediterranean, Red sea?.

Adamsia rondeletti Andres, 1884: 153-156, tex-fig. 18, taf. 3 fig. 4; Mediterranean: Naples. RIOJA & MARTÍN (1905): 457-459, Lam. V; Santander. GRAVIER (1922): 5 and 45-47; Atlantic: Cape Vert, Vizcaya Bay, Finisterre Cape.

Sagartia effoeta NOBRE (1931): 49-50, Stampa 15 fig. 4; Portugal.

Calliactis parasitica Stephenson, 1935: 233-244, tex-figs. 25, 83 and 84, plate XXVIII figs. 1 and 2, plate XXIX fig. 2; Ireland, England, Channel Islands, France; Mediterranean. SCHMIDT (1972): 38-40, Abb. 19 a, b; Mediterranean, North Africa. OCAÑA (1994): 185-192, Anexo A/14, Anexo B/37-9; Canary Islands and Madeira.

Habitat

This species also has a commensal relationship with several crabs but especially with the hermit crabs *Dardanus callidus* and *D. arrosor*, and occurs in several infralittoral habitats where the hermit crabs live (seaweeds beds, rocky platform bottoms, sandy bottoms, caves), but it is very common in circalittoral habitats such as the *Dendrophyllia ramea* community.

Distribution and abundance

The species has been recorded from Madeira and the Canary Islands (Tenerife, Gran Canaria, Fuerteventura and Lanzarote). *C. parasitica* is common along the European coast from the North Sea to the Mediterranean. We have also recorded this taxon along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Hormathia alba (Andres, 1880)

Phellia nummus var. *alba* Andres, 1880: 326; Mediterranean: Naples.

Phellia nummus var. *alba* ANDRES (1884): 122-

123, Taf. 5 fig. 8; Mediterranean: Naples.

Phelliopsis nummus Fischer, 1887: 410-412; Mediterranean: Banyuls.

Hormathia alba Tur, 1989: 95-102, figs. 21 and 22, lám. III figs. a and b; Mediterranean, Catalonia coast. TUR (1993): 213-219; OCAÑA (1994): 193-198; Anexo A/15, Anexo B/40-42, Canary Islands and Morocco.

Habitat

Hormathia alba is mainly a bathyal species distributed at depths from 275 to 570 metres. However, in the Mediterranean it has been recorded at as little as 70 metres. This taxon apparently always occurs on shells of gastropoda, with or without hermit crabs.

Distribution and abundance

We have no data on the abundance of this species; it seems to be present in the Canary Islands but not in Madeira. The species has also been recorded from the Mediterranean and Morocco coast (OCAÑA & SAOUD *in prep.*).

Amphianthus dohrnii (Von Koch, 1878)

Gephyra dohrnii Von Koch, 1878: 78; see STEPHENSON (1935): 282.

Gephyra dohrnii ANDRES (1880): 314-315; Mediterranean: Naples. HADDON (1889): 325-326, Plate XXXI fig. 3-5, Plate XXXIII fig. 3-4; Atlantic: England. NOBRE (1931): 51-52, Est. XIV fig. 2; Portugal.

Amphianthus dohrnii STEPHENSON (1935): 282-288, plate XV fig. 8, plate XXX, tex-fig. 93; Atlantic: England, Ireland, France; Mediterranean. SCHMIDT (1972): 40-42, Abb. 20 d; Europe; Mediterranean, Adriatic. OCAÑA (1994): 200-206; Anexo A/16, Anexo B/43 and 44; Canary Islands.

Habitat

A. dohrnii occurs mainly on circalittoral and bathyal deeps attached to gorgonians although it can also occur in cold shallow waters. In Central Macaronesia we have only recorded it on bathyal bottoms.

Distribution and abundance

We have no data about the abundance of this

species, but it seems to be rare in Central Macaronesian archipelagos. We did not record it from Madeira and in the Canary Islands we know of its presence only in two of the islands, Tenerife and Lanzarote. The species has also been recorded from the European coast and the Mediterranean.

Paraphellia expansa (Haddon, 1886)

Chitonactis expansa Haddon, 1886: 616; see CARLGREN (1949): 96.

Paraphellia expansa HADDON (1889): 321-324, pl. XXXII figs. 1-4, pl. XXXIII fig. 6, pl. XXXIV figs. 1-4; Ireland. STEPHENSON (1935): 276-281, pl. XV fig. 2, pl. XVII fig. 1, tex-figs. 91 and 92; Atlantic: SW Ireland, England. DEN HARTOG (1977): 237-344. MANUEL (1981): 170-171, fig. 59; Atlantic: English Channel, Ireland, Bay of Biscay. OCAÑA (1994): 212-15; Anexo A/18, Canary Islands.

Habitat

We recorded only one specimen, on a bathyal bottom (300 metres deep) attached to an Ascidian species.

Distribution and abundance

It seems to be a rare species which has been recorded only from Ireland, England, the Bay of Biscay and the Canary Islands (Tenerife).

Pelliactis hertwigii Simon, 1892

Pelliactis hertwigii Simon, 1892: 75; see CARLGREN (1949): 96.

Pelliactis hertwigii CARLGREN (1934a): 14, fig. 9, West Ireland, West Scotland, East Fuerteventura. RIEMANN-ZÜRNECK (1973): 295 and 296-300, Abb. 8 a, e and f, Abb. 9; South of Portugal. OCAÑA (1994): 216-17, Canary Islands. *Pelliactis incerta* Carlgren, 1934: 15-16, tex-fig. 10, plate I fig. 10; South of Portugal.

Habitat

This species occurs only on bathyal muddy or sandy bottoms from 823 to 1400 metres deep.

Distribution and abundance

In the Canary Islands, the species is known only

from off Fuerteventura. It has been previously recorded from Ireland, Scotland, Iceland and Portugal.

Family Isophelliidae Stephenson, 1935

Telmatactis elongata (Delle Chiaje, 1825)

Actinia elongata DELLE CHIAJE (1825, 1841); TUR (1986): 146.

Actinia elongata SARS (1857): 33; Italy.

Phellia vestita Johnson, 1861: 299-300; Madeira. PAX (1908): 273, Madeira. PAX (1909): 338-339; La Gomera. MAY (1912): 168; La Gomera.

Phellia elongata JOURDAN (1880): 39-40, plate I Fig. 2, planche 10 Figs. 70-82; Gulf of Marseille. ANDRES (1884): 120-121, tavola 5 Fig. 7; Naples. FISCHER 1889: 296-299; Atlantic France. NOBRE (1931): 45; Portugal. PAX & MÜLLER (1962): 221-222; Adriatic.

Telmatactis forskalii = *elongata*? CARLGRÉN (1949): 90; Alexandria. SCHMIDT (1972): 42-45, Abb. 20 c, 21 c, d, 22 a; Italy. DEN HARTOG (1995): 158-162; Vizcaya Gulf, Portugal, Mediterranean, Azores, Madeira and Canary Islands, figs. 3 & 4.

Telmatactis elongata CARLGRÉN (1949): 90; Mediterranean, France; TUR (1989): 146-155, Figs. 33, 34 and 35, Lámina V Figs. b and d; Cataluña. OCAÑA (1994): 228-41; Anexo A/19, Anexo B/47-51, Anexo C Lám. I figs. 1-12, Canary Islands and Madeira.

Actinia forskalii = *Entacmaea forskalii* Ehrenberg, 1834: 37; Mediterranean: Alejandría. CARLGRÉN (1947): 10-11; Mediterranean: Alejandría.

Telmatactis forskalii DOUMENC et al. (1985): 521-522; Aegean sea. DOUMENC et al. (1989): 15-16; Aegean sea.

Habitat

This species occurs in many habitats but mainly in intertidal and shallow waters (pools, crevices, under stones, platforms, seaweeds bottoms, sublittoral slopes) down to 400 metres deep in the *Dendrophyllia ramea* community.

Distribution and abundance

It is a very common sea anemone in the Central Macaronesian Archipelagos, but can be easily

overlooked. We found it in Madeira and the Canary Islands (all Islands). It is has been previously recorded from the Bay of Biscay to the Strait of Gibraltar, the Mediterranean Sea, the Azores, Madeira, the Canary Islands and the Cape Verde Islands. We have also recorded this taxon along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Telmatactis cricoides (Duchassaing, 1850)

Entacmaea cricoides Duchassaing, 1850: 10; Caribbean sea: Antillas.

Phellia americana Verrill, 1869: 327, Jamaica.

Phellia rufa Verrill, 1907: 254, Figs. 107 and 108 (no Figs. 107 a and 108 a, pro parte; no *Phellia rufa* Verrill, 1900: 557, plate LXVIII, Fig. 2). PAX (1924): 104-105; Curaçao.

Euphelia cinclidifera Pax, 1908: 275; Canary Islands: Tenerife.

Telmatactis valle-flori Gravier, 1918: 16-21, pl. II Figs. 12 and 13, Figs. tex. 7-13; Guinea Gulf. CARLGRÉN (1941): 7-9, Fig. 7; Santa Helena.

Telmatactis rufa CORRÊA (1964): 108-112, Estampa 13 fig. 34, Estampa 14 fig. 35, Estampa 16 fig. 40; Bermudas, Curaçao. DA COSTA BELÉM & SCHLENZ (1989): 343-353, 9 figs.; Brazil.

Telmatactis cricoides CAIRNS et al. (1986): 175, plate 50; Bermudas; DEN HARTOG (1995): 166-171, figs. 2, 7 & 8, East Mediterranean, Madeira, Canary Islands, Cape Vert, Senegal, Gulf of Guinea, Santa Helena, Brazil, Caribbean Sea and Bermuda. OCAÑA (1994): 242-255, Anexo A/20, Anexo B/52-56, Canary Islands, Madeira, Cape Vert, Senegal, Guinea Gulf, Santa Helena, Brasil, Caribbean Sea and Bermudas. WIRTZ (1996): 1-5, 6 figs., Canary Islands and Madeira.

Habitat

As *T. elongata*, this species occurs in several habitats. It is very scarce in the intertidal zone, but very common on infralittoral and circalittoral bottoms to depths of 60 metres (caves, crevices, under stones). Remarkably *T. cricoides* has a number of symbiont crustaceans (WIRTZ 1997).

Distribution and abundance

It is a very common sea anemone in the Central Macaronesian archipelagos. We found it in Madeira and the Canary Islands (all Islands). The

species has a wide distribution in the tropical and subtropical Atlantic (Caribbean, Brasil, Bermuda, Saint Helena, Gulf of Guinea, Cape Verde, Senegal, Canary Islands and Madeira); it is also present in the eastern Mediterranean.

Telmatactis solidago (Duchassaing & Michelotti, 1864)

Capneopsis solidago Duchassaing & Michelotti, 1864: 34-35; Caribbean: Saint Thomas.

Capneopsis solidago DUERDEN (1898): 459; Caribbean: Jamaica (Kingston Harbour). CARLGREN (1934): 29-32, Figs. 16-18; Curaçao, Jamaica.

Edwardsia horstii Pax, 1924: 94, Tafel IX fig. 11; Caribbean: Curacao.

Telmatactis solidago CAIRNS et al. (1986): 175, Plate 50, Bermudas; DEN HARTOG (1995): 162-166, figs. 1, 5 & 6, East Mediterranean, Canary Islands, Cape Vert, Senegal, Santa Helena, Bermudas and Caribbean. OCAÑA (1994): 256-261, Anexo A/21, Anexo B/57-60, Canary Islands, Cape Vert, Caribbean, Bermudas and Gulf of California.

Habitat

T. solidago only occurs in some intertidal and shallow water habitats such as stony beaches with conchiferous sand and shallow sandy bottoms, down to depths of 10 metres.

Distribution and abundance

It is a rare species that only occurs on Lanzarote island, we never recorded it from Madeira. The species is also known from the Caribbean, the Cape Verde, Saint Helena and the eastern Mediterranean.

Familia Sagartiidae Gosse, 1858

Sagartia troglodytes (Price, 1847)

Actinia troglodytes Price in Johnston, 1847: 216; see CARLGREN (1949): 101.

Actinia troglodytes COCKS (1851): 6, Pl. I Fig. 16; Atlantic: England (Falmouth, Castle).

Sagartia troglodytes GOSSE (1860): 88-104; England, Ireland, Scotland. JOURDAN (1880): 36-37; Marsella Gulf. STEPHENSON (1935): 324-341, Pl. XV Fig. 5, Pl. XX Figs. 1 and 2, Pl. XXI Figs.

1 and 2, Pl XXII Fig. 4, Tex. Fig. 103 (B) an 104; England, Scotland, Ireland, Germany Sweden, Faroe Islands, Norway, Denmark RIEMANN-ZÜRNECK (1969): 169-230, Abb. 1-15 Germany. SCHMIDT (1972): 48-51, Abb 24 a, b Mediterranean: Naples, Adriatic. OCAÑA (1994): 270-275, Anexo A/24 and B/ 72 and 73, Canary Islands.

Habitat

S. troglodytes has only been recorded mesolittoral habitats.

Distribution and abundance

It is a very rare species exclusively recorded from Gran Canaria. The species is also known from Iceland, Ireland, the British Isles, France, the North and Mediterranean Seas.

Cereus pedunculatus (Pennant, 1777)

Actinia pedunculata Pennant, 1777; see STEPHENSON (1935): 363.

Actinia bellis Ellis & Solander, 1786: 2-3; Atlantic: England (Cornwall). *Sagartia bellis* GOSSE (1860): 27-40, Pl I Fig. 2; England, Ireland. JOURDAN (1880): 35-36, Pl I Fig. 4; Mediterranean: Marseille.

Cereus pedunculatus FISCHER (1887): 399-402; French Atlantic: Roscoff; Mediterranean: Banyuls. STEPHENSON (1935): 363-371, Pl XV Fig. 9, Pl XXII Fig. 2, Pl XXXIII Text-figs. 16, 103(A), 105; England, Ireland, Scotland, Channel Islands, Man Island; France; Portugal; Mediterranean: Naples; North Sea. SCHMIDT 1972: 51-54, Abb 22b, Abb 23; Mediterranean, european atlantic coast. DOUMENC et al. (1985): 518-519; Aegean sea. OCAÑA (1994): 276-284, Anexo A/26 and B/ 74-77, Canary Islands.

Habitat

The species has mainly been found in intertidal pools but is also present in littoral lacunae.

Distribution and abundance

It is a rather common sea anemone in the Central Macaronesian archipelagos, but it can be easily overlooked. We could not find it in Madeira but it is present in the Canary Islands (Tenerife, La Gomera, Gran Canaria, Fuerteventura and

Lanzarote). *Cereus pedunculatus* has been previously recorded from Ireland, England, the Atlantic coasts of France, Spain and Portugal, and the Mediterranean. We also recorded this taxon along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Actinothoe sphyrodeta (Gosse, 1858)

Sagartia sphyrodeta Gosse, 1858: 415; CARLGREN (1949): 102. GOSSE (1860): 73-77, Plate I Figs. 8 and 9; England, Channel Islands. FISCHER 1874: 213; Atlantic: France; United Kingdom Channel Islands. NOBRE (1931): 49; Portugal.

Actinothoe sphyrodeta STEPHENSON (1935): 342-347 Plate XII Figs. 3-5, Plate XXXII; Atlantic: SW England, SW Ireland. CARLGREN (1949): 102; SW England, Ireland, France. PATRITI (1970): 120-121, Atlantic coast of Morocco; OCAÑA (1994): 285-291, A/27 and B/78-80, Canary Islands.

Habitat

The species has only been found on circalittoral bottoms in the *Dendrophyllia ramea* community.

Distribution and abundance

It is a very rare species in the Canary Islands (Tenerife) and has never been recorded from Madeira. *A. sphyrodeta* has been previously recorded from Ireland, England, the Atlantic coasts of France, Spain and Portugal, the Strait of Gibraltar and the Alboran Sea. We have also recorded this taxon along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Anthothoe affinis (Johnson, 1861)

Sagartia affinis Johnson, 1861: 299; Madeira (Funchal).

? *Calliactis vicentina* Pax, 1922: 87 Taf I Fig. 6; Atlantic: Cape Vert.

? *Anthothoe simpsoni* Carlgren, 1941: 16-17, Fig. 14; Santa Helena.

Anthothoe affinis OCAÑA (1994): 292-299, A/28 and B/81-83, Canary Islands and Madeira.

Habitat

The species occurs mainly in the circalittoral and upper bathyal in *Dendrophyllia ramea* bottoms, but it can also be observed in infralittoral habitats.

A. affinis is always attached to gastropod shells, and commonly it shares the shell with specimens of *Calliactis parasitica*.

Distribution and abundance

It is a rather common species in the Canary Islands (Tenerife, La Gomera, Gran Canaria, Fuerteventura and Lanzarote) and Madeira. The species may be an endemic element of the Macaronesian archipelagos, although this needs confirmation.

Familia Aiptasiidae Carlgren, 1924

Aiptasia mutabilis (Gravenhorst, 1831)

Actinia mutabilis Gravenhorst, 1831: 141; see SCHMIDT (1972): 19.

Aiptasia mutabilis ANDRES (1884): 161-162, Taf 13 Fig. 4, Taf 1 fig. 8, Taf 2 Fig. 24?; Naples. SCHMIDT (1972): 19-22, Abb. 14 a, d, 15 a, b, 16 a, b; Mediterranean; Atlantic: from England to Guinea Gulf. MANUEL (1981): 126-127; England, Ireland, France, Channel Islands, SW Europe, West Africa; Mediterranean. OCAÑA et al. (1994): 145-157, 1Table, 8 figs., Canary Islands and Madeira. OCAÑA (1994): 327-337, A/31, B/87-90, C/IX and X, Canary Islands and Madeira

Aiptasia couchii Gosse, 1860: 152-158, plate V Fig. 3; England, France. JOHNSON (1861): 300; Madeira. MAY (1912): 168; La Gomera. GRAVIER (1918): 14, 16 Pl. 2 Figs. 9, 10 and 11; Madeira, Canary Islands, Guinea

Habitat

The anemone is commonly found from the supralittoral to depths of 10 metres. It occurs in many habitats but mainly on hard substrates, such rocks and petrifying, calcareous seaweeds, always occupying shady biotopes (vertical walls, under stones and crevices of pools).

Distribution and abundance

It is a very common sea anemone in Madeira and the Canary Islands (all islands), *A. mutabilis* has been previously recorded from the European coast (from Ireland to the Strait of Gibraltar) and the Mediterranean Sea. The species is not present along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Aiptasia diaphana (Rapp, 1829)

Actinia diaphana Rapp, 1829 in SCHMIDT (1972): 22.

Aiptasia diaphana ANDRES (1884): 163-164, Taf 2 Figs. 13 a 19; Venecia, Naples Gulf. NOBRE (1931): 48-49; Portugal. PAX & MÜLLER (1962): 190-191; Adriatic. SCHMIDT (1972): 22-26, Abb 14c, 17a, b; Suez Channel, Aqaba Gulf. OCAÑA (1994): 338-347, A/32, B/91-94, C/X and XI, Canary Islands and Madeira

Habitat

The anemone has only been observed in large pools and on vertical walls (2-3 metres deep) in quiet habitats inside small harbors. In 2002 in littoral lagoons, Fuerteventura island.

Distribution and abundance

Uncommon in the Central Macaronesian archipelagos. We have found it only in the Canary Islands (Tenerife, La Palma, Fuerteventura and El Hierro). *A. diaphana* has been previously recorded from Portugal and the Mediterranean Sea. This species is also present off the American coast (OCAÑA & DEN HARTOG *in prep.*).

Aiptasiogeton hyalinus (Delle Chiaje, 1825)

Actinia hyalina Delle Chiaje, 1825 in TUR (1989).

Aiptasia lacerata, Andres, 1884: 159, Taf 2 Figs. 1-12, pro parte; Mediterranean: Naples.

Aiptasia hyalina FISCHER (1889): 282; Atlantic coast of France.

Aiptasiogeton comatus Schmidt, 1972: 26-29, Abb 14b and 35a; Atlantic European coast and Mediterranean.

Aiptasiogeton pellucidus (Holland, 1848); see Williams in MANUEL (1981):128-130; England, France, Mediterranean. DOUMENC et al. (1985): 524-525; Aegean sea: Tesalónica.

Aiptasiogeton hyalinus TUR (1989): 78-85, figs. 17 and 18, Lam. II figs. b and d; Blanes. OCAÑA (1994): 349-357, A/33, B/95 and 96, C/ Lám. XI figs. 4-7 Canary Islands and Madeira.

Habitat

A. hyalinus occurs mainly in shallow water habitats (stony bottoms, in crevices under

calcareous algae or under sponges, on *Cystosseira* bases) but also in the mesolittoral (platforms with seaweeds and pools).

Distribution and abundance

It seems to be an uncommon anemone, although it can be easily overlooked due to its small size. It has been recorded from Madeira and the Canary Islands and was previously known from England, the Atlantic coast of France and the Mediterranean Sea. The species is also present along the Atlantic coast of Morocco (OCAÑA & SAOUD *in prep.*).

Family Diadumenidae Stephenson, 1920

Diadumene leucolena (Verrill, 1866)

Sagartia leucolena Verrill, 1866: 336; Atlantic ocean. North-America.

Diadumene leucolena CARLGREN (1949): 109; North-America. HAND (1955): 223-230, Figs. 31 and 32; San Francisco Bay, California. CARLGREN (1950): 23-24 Fig. 4. CUTRESS (1977), Hawaii. OCAÑA 1994: 365-372, A/34, B/ 97 and 98; Canary Islands.

Diadumene kameruniensis Carlgren, 1927: 475-77 figs 1, 2; Cape-Cameroon, Cameroon.

Habitat

D. leucolena is a very rare actiniarian; only found in mesolittoral pools.

Distribution and abundance

In the Canary Islands, it was recorded from Fuerteventura. It has been previously recorded from the eastern North American coast, California and Cameroon. We have also recorded the species from Senegal and the Atlantic coast of Morocco (OCAÑA AND SAOUD, *in prep.*)

Haliplanella lineata (Verrill, 1869)

Sagartia lineata Verrill, 1869: 57; Pacific: Hong Kong Harbor. *Haliplanella lineata* WILLIAMS (1978): 17; see MANUEL (1981): 134. MANUEL (1981, 1988): 134-136, Fig. 47; Atlantic: Great Britain, Europe; Mediterranean and Northern hemisphere. OCAÑA (1994): 373-9, A/36, B/101 and 102 and C/ XI figs. 8 and 9; Canary Islands.

Sagartia luciae Verrill, 1898: 493-494; Atlantic: North America. HARGITT (1914): 241-243, Plate XLI Figs. 1 and 2; Atlantic: North-America (Woods Hole); Pacific: North-America (San Francisco). PAX (1921): 161-166, Figs. 1-3; England, Germany, The Netherlands.

Diadumene luciae CARLGREN (1927a): 444; Mediterranean: Suez Canal. STEPHENSON (1935): 197-207, Text. Figs. 75 and 79; England. UCHIDA (1940): 266 and 272-273; Japan. PAX & MÜLLER (1962): 185-187, Abb 93 and 94; Adriatic.

Aiptasiomorpha (Diadumene) luciae CARLGREN (1952): 381; Atlantic: North-America.

Haliplanella luciae Hand, 1956: 211-222, Figs. 29 and 30; California.

Habitat

It occurs in pools from the intertidal, but can also be found on shallow water bottoms.

Distribution and abundance

It seems to be an uncommon anemone, although due to its size and appearance it can easily be overlooked. The anemone has been recorded from Tenerife island. *H. lineata* has a wide distribution in temperate and subtropical north hemisphere waters.

Familia Aliciidae Duerden, 1897

Alicia mirabilis Johnson, 1861

Alicia mirabilis Johnson, 1861: 303-305, Figs. 1-4; Atlantic: Madeira (Funchal Bay).

Cladactis costae Panceri, 1869: 1-5 Tavola I Figs. 1-8; Capri. ANDRES (1880): 318-319; Naples.

Alicia costae DUERDEN (1895): 216:217, Plate IX Figs. 1-4. CARLGREN (1940): 31-32; Mediterranean: Naples.

Alicia mirabilis CARLGREN (1949): 43; Atlantic: Madeira. SCHMIDT (1972): 15-18, Abb. 12, 13a; Mediterranean. TUR (1989): 70-76 Figs. 15 and 16, Lamina II Fig. f; Catalonia. OCAÑA (1994): 389-396, A/37, B/103-105, C/ IV, Canary Islands and Madeira.

Habitat

It is exclusively found in sublittoral habitats (seaweeds platforms, stony bottoms, *Diadema* antillarum beds and sandy bottoms). It frequently

occurs on seaweeds, gorgonians and other biogenic substrates.

Distribution and abundance

It is a rather common sea anemone in the Central Macaronesian archipelagos. As it is nocturnal in activity, the species can be easily overlooked during the day. We found it in Madeira and the Canary Islands (all islands). *A. mirabilis* has been previously recorded from coasts of southern Europe and the Mediterranean. The species has been found on the Morocco coast (OCAÑA & SAOUD *in prep.*).

Familia Boloceroididae Carlgren, 1925

Bunodeopsis pelagica (Quoy & Gaimard, 1833)

Actinia pelagica Quoy & Gaimard, 1833: 146-147, Planche 11 Fig. 10(5); North Atlantic?.

Anemonia pelagica MILNE-EDWARDS (1857): 235; Atlantic.

Bunodeopsis pelagica FISHER (1976): 103-119, Figs. 26-30; Atlantic: Caribbean. OCAÑA et al. (1991): 109-113, Lam. I; Tenerife.

Boloceroides pelagica OCAÑA (1994): 397-403, A/38, B/106-107, C/IV, Canary Islands and Madeira.

Habitat

It occurs in large intertidal pools, seaweed bottoms and *Cymodocea nodosa* beds.

Distribution and abundance

It seems to be an uncommon species in the Central Macaronesian archipelagos. Nevertheless, due to its size, it can be very easily overlooked. We recorded it from Tenerife and Madeira, and it has been previously recorded from the Caribbean and the Bermudas.

Bunodeopsis strumosa (Andres, 1880)

Bunodeopsis strumosa Andres, 1880: 315; Naples.

Bunodeopsis strumosa ANDRES (1884): 227 and 228, Fig. 31, Taf 6 Fig. 1, Taf 13 Fig. 5; Naples. DUERDEN (1897): 11-14, Plate I Fig. 5; Naples. CARLGREN (1949): 41; Mediterranean. SCHMIDT (1972): 12-14, Abb. 11, 13b; Mediterranean.

Cystiactis strumosa OCAÑA (1994): 404-408, A/39, Canary Islands.

Habitat

B. strumosa occurs in littoral lagoons and *Cymodocea nodosa* beds.

Distribution and abundance

It is a rare species, only found in the Canary Islands (Tenerife). The species has previously been considered a Mediterranean endemic.

Order Corallimorpharia Carlgren, 1940
Family Corallimorphidae Hertwig, 1882

Corynactis viridis Allman, 1846

Corynactis viridis Allman, 1846: 417-419, pl. 11; GOSSE (1860): 289-294, pl.9, figs. 1-5, British Isles; MANUEL (1981, 1988): 206 and 207, Plate 2B, Figs 5C, 76; Britain, Scotland, Ireland, south-west Europe and the Mediterranean. DEN HARTOG et al. (1993): 5-27, 25 figures, tabs. 1-2, Ireland, English Channel, Portugal, Mediterranean, Azores, Madeira, Salvages Islands, Canary Islands, USA and Brazil; OCAÑA (1994): 416-420, B/110-111, C/XII and XIII, Canary Islands and Madeira. WIRTZ (1995): 52, one color plate, Canary Islands and Madeira.

Corynactis allmani Thompson, in JOHNSTON (1847): 474-475, fig.85.

Corynactis allmani COCKS (1851): 4, pl.1 fig.6

Corynactis mediterranea M. Sars, 1857: 22-28, pl.1 figs. 1-4, the Mediterranean.

Habitat

C. viridis can be found from depths of 0 to 100 metres but it normally occurs in intertidal to shallow waters down to 20 metres. It can occur in intertidal pools and mesolittoral crevices and small caves, sublittoral vertical walls with seaweeds, sublittoral vertical walls with calcareous algae, caves and tunnels, and also *Diadema antillarum* beds; see DEN HARTOG et al. (1993).

Distribution and abundance

It is a common sea anemone in the Canary Islands (all the Islands) and Madeira. The species has been recorded from the British Isles, France, the

Iberian Peninsula, Mediterranean Sea and the Azores. We recently found the species along the Moroccan coast (OCAÑA & SAOUD *in prep.*).

Pseudocorynactis caribbeorum den Hartog, 1980

Pseudocorynactis caribbeorum den Hartog, 1980: 19-25, figs. 3 and 4, pls. 2, 3, 8 and 9, fig. 1, 12 and 13, fig. 10, Caribbean sea; DEN HARTOG et al. (1993): 27-35, fig. 26-31 and 34-38, tab.4, Canary Islands and Caribbean sea. OCAÑA (1994): 421-425, B/112 and 113, C/XII, Canary Islands. WIRTZ (1995): 52, one color plate, Canary Islands.

Habitat

It can be found from depths of 0 to 108 metres but apparently it normally occurs in intertidal to shallow waters. Mainly it can be found on wall crevices and caves, but also in the *Dendrophyllia ramea* community.

Distribution and abundance

This is an uncommon sea anemone in the Canary Islands (Tenerife, La Palma and El Hierro) and has never been found in Madeira. The species is common in the Caribbean Sea. It has recently also been recorded from the Cape Verde Islands (WIRTZ com. pers.).

Corallimorphus ingens Gravier, 1918

Corallimorphus ingens Gravier, 1918: 23-24; 1922: 84-87, pl. 6 fig. 70-71, pl. 13 fig. 133; Azores and Bay of Biscay; CARLGREN (1934): 4-6, pl. 1, fig. 9, SW of Azores; DEN HARTOG et al. (1993): 51-64, figs. 47-55, tabs. 7-8, Canary Islands (Lanzarote); OCAÑA (1994): 420-421, Canary Islands.

Habitat

The specimens known so far were collected on muddy, sandy to clayey, deep-sea bottoms (1134 metres deep), either unattached or attached to solid fragments of substrate such as coral skeletons, mollusk shells or worm tubes.

Distribution and abundance

In the Canary Islands it is only known from off the Lanzarote coast. The species has been

previously recorded from the Bay of Biscay, the Sahara coast and the Azores.

REMARKS

On the basis of their actinofauna but also supported by other marine invertebrate groups (PÉREZ SANCHEZ, 1985; BRITO, 1985; SÁNCHEZ, 1986) the Central Macaronesian archipelagos (the Canary Islands and Madeira) are considered a biogeographical unit. Most of the actinofauna species are shared with Atlantic-Mediterranean zones, but there are also amphiatlantic and endemic taxa as an original and exclusive biogeographical component. There are 3 endemic species (*Actinia nigropunctata*, *Actinia virgata*, and *Anthothoe affinis*) and 7 amphiatlantic taxa shared with America (*Actinostella flosculifera*, *Anemonia melanaster*, *Bunodeopsis pelagica*, *Diadumene leucolena*, *Pseudocorynactis caribbeorum*, *Telmatactis cricoides*, and *Telmatactis solidago*). The presence of endemic intertidal and shallow water taxa of Actiniaria is a remarkable fact that may be explained as a consequence of a thermal isolation period which involved the Canary Islands and specially Madeira during Pleistocene glacial and interglacial periods (PETIT-MAIRE et al, 1986; MILLER, 1984). Thus, during this time, Madeira may have become a speciation center in Central Macaronesia, exporting species to the Canary Islands once the sea water reached a temperature adequate for them see DEN HARTOG & OCAÑA *in press*).

A total of 41 species of sea anemone are recorded from the two archipelagos together although 24 of the species recorded from the Canary Islands are not present in Madeira as far as we know. This difference can be plausibly explained by several factors: the greater length of coast and range of habitats available in the Canary Islands; and the more oceanic condition of Madeira, which is further from Africa than are the Canary Islands. The Pleistocene period should be considered to have brought about different environmental conditions in both archipelagos, enabling us to better understand the evolution of the islands' biota during the last glaciation. (see OCAÑA 1994; DEN HARTOG & OCAÑA *in press*).

In this paper 21 species, some of them rare or little-known taxa, are for first time recorded from the Central Macaronesian islands. *Hormathia alba* was previously known only from a restricted zone of the Mediterranean. *Paraphellia expansa* had been exclusively recorded from the British Islands and the Bay of Biscay and *Aiptasia diaphana* and *Bunodeopsis strumosa* were considered taxa endemic to the Mediterranean. *Diadumene leucolena* is the first record of this species from the north-eastern Atlantic; previously it had only been recorded from north coast of America, Hawaii and Cameroon.

In spite of the effort that has been made to look for sea anemones during the last twenty years, we can expect more species (10-15) of Actiniaria and Corallimorpharia to be found in the Canary Islands and Madeira in the time to come.

Table 1.
Deep range, abundance and distribution of the taxa listed in this paper

Taxon	Depth	Abundance	Regional distribution	World distribution
<i>Actinia equina mediterranea</i> Schmidt, 1971	5 m	***	Canary Islands: L, F, GC, T. Madeira.	Mediterranean
<i>Actinia nigropunctata</i> den Hartog & Ocaña, in press	10 m	*****	Canary Islands: all islands. Madeira.	
<i>Actinia virgata</i> Johnson, 1861	10 m	*	Canary Islands: Madeira	
<i>Anemonia sulcata</i> (Pennant, 1777)	15 m	*****	Canary Islands: all islands. Madeira	Europe, Mediterranean and North Africa till Sahara.
<i>Anemonia melanaster</i> (Verrill, 1907)	10 m	*****	Canary Islands: all islands. Madeira.	South USA, Caribbean, Bermudas, Brazil and tropical Africa.
<i>Anthopleura ballii</i> (Cocks, 1851)	20 m	****	Canary Islands: L, F, LP, GC, T & LG. Madeira.	Europe, Western Mediterranean and North Africa
<i>Anthopleura thallia</i> (Gosse, 1854)	1 m	***	Canary Islands: T, LP Madeira	North Europe to Strait of Gibraltar
<i>Bunodactis rubripunctata</i> (Grube, 1840)	1 m	**	Canary Islands: GC, F	Europe to Strait of Gibraltar.
<i>Bunodactis verrucosa</i> (Pennant, 1777)	1m	***	Canary Islands: T, GC, F. Madeira	Europe, Mediterranean and North Africa
<i>Actinostella flosculifera</i> (Lesueur, 1817)	50 m	***	Canary Islands: T, LP, G, F.	Caribbean Sea and north Brazil
<i>Bolocera tuediae</i> (Johnston, 1832)	1000 m	?	Canary Islands: Lanzarote	North east Atlantic
<i>Anemonactis mazeli</i> (Jourdan, 1880)	10 m	*	Canary Islands: T, GC	Europe, Mediterranean, Senegal and Japan.
<i>Halcampoides purpurea</i> (Studer, 1878)	5-20 m	***	Canary Islands: GC, T. Madeira	North Sea, England and Mediterranean
<i>Halcampaster</i> sp.	30 m	*	Canary Islands: Lanzarote	
<i>Actinoscyphia saginata</i> (Verrill, 1882)	800 m	?	Canary Islands: Lanzarote	Ireland, Biscay Gulf, North Morocco and Atlantic coast of USA.
<i>Actinoscyphia aurelia</i> (Stephenson, 1918)	900-2160 m	?	Canary Islands: Lanzarote	Ireland, Azores and off Sahara.
<i>Sycionis hemisphaerica</i> Carlgren, 1934	1000 m	?	Canary Islands: Fuerteventura	
<i>Adamsia carciniopados</i> (Otto, 1823)	5-100 m	*****	Canary Islands: T, LP, GC. Madeira	Norway to Mediterranean including coast of North Africa
<i>Calliactis parasitica</i> (Couch, 1838)	2-200m	*****	Canary Islands: T, GC, F, L. Madeira.	North Sea to Mediterranean and North Africa coast.
<i>Hormathia alba</i> (Andres, 1880)	275-500 m		Canary Islands: Tenerife	Mediterranean and North Africa.
<i>Amphianthus dohrnii</i> (Von Koch, 1878)	100-250 m	***	Canary Islands: T, L.	Europe and Mediterranean
<i>Paraphellia expansa</i> (Haddon, 1886)	300 m	*	Canary Islands: Tenerife	England.
<i>Phelliactis hertwigii</i> Simon, 1892	823-1400 m	?	Canary Islands: Fuerteventura	Ireland, Scotland, Iceland and Portugal.
<i>Telmatactis elongata</i> (Delle Chiaje, 1825)	400 m	*****	Canary Islands: all islands. Madeira	Gulf of Biscay to North Africa, Mediterranean and Azores.
<i>Telmatactis cricoides</i> (Duchassaing, 1850)	60 m	*****	Canary Islands: all islands. Madeira.	Tropical and subtropical Atlantic, also present in East Mediterranean.
<i>Telmatactis solidago</i> (Duchassaing & Michelotti, 1864)	0-10m	**	Canary Islands: Lanzarote	Caribbean, Cape Vert, Santa Helena and East Mediterranean
<i>Sagartia troglodytes</i> (Price, 1847)	0		Canary Islands: Gran Canaria	North Sea and Mediterranean

Table 1 (continued).

Deep range, abundance and distribution of the taxa listed in this paper

	Depth		Regional distribution	World distribution
	10-100 m		Canary Islands: Tenerife Madeira Canary Islands: T,G, GC, F & L	
<i>Aiptasia mutabilis</i> (Gravenhorst, 1831)	0-10 m		Madeira Canary Islands: all islands	Europe and the Mediterranean
<i>Aiptasia diaphana</i> (Rapp, 1829)	0-3 m		Canary Islands: T,P & H	Mediterranean and South Portugal
<i>Aiptasiogeton hyalinus</i> (Delle Chiaje, 1825)	0-10 m		Madeira Canary Islands: T & GC	England, France and Mediterranean
<i>Diadumene leucolena</i> (Verrill, 1866)	0		Canary Islands: Fuerteventura	North Atlantic coast of America, California, Cameroon and Senegal
<i>Haliplanella lineata</i> (Verrill, 1869)	0-5 m		Canary Islands: Tenerife	Cosmopolitan distribution in subtropical and temperate waters
<i>Alicia mirabilis</i> Johnson, 1861	2-50 m	*****	Madeira Canary Islands: all islands	South Portugal and Mediterranean
<i>Bunodeopsis pelagica</i> (Quoy & Gaimard, 1833)	0-5 m	***	Madeira Canary Islands: Tenerife	Caribbean and Bermudas
<i>Bunodeopsis strumosa</i> (Andres, 1880)	1-10 m	**	Canary Islands: Tenerife	Mediterranean
<i>Corynactis viridis</i> Allman, 1846	0-20 m	*****	Madeira Canary Islands: all islands	Europe, Mediterranean and Azores
<i>Pseudocorynactis caribbeorum</i> den Hartog, 1980	0-100 m	***	Canary Islands: T, P & H	Caribbean
<i>Corallimorphus ingens</i> Gravier, 1918	1000 m	?	Canary Islands: off Lanzarote	Biscay Bay, Sahara & Azores

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