

NOTES ON GEOGRAPHIC DISTRIBUTION

Cnidaria, Hydrozoa: latitudinal distribution of hydroids along the fjords region of southern Chile, with notes on the world distribution of some species.

Horia R. Galea¹
Verena Häussermann^{1,2}
Günter Försterra^{1,2}

¹ *Huinay Scientific Field Station. Casilla 462. Puerto Montt, Chile. E-mail: h.galea@laposte.net*

² *Universidad Austral de Chile, Campus Isla Teja. Avenida Inés de Haverbeck 9, 11 y 13. Casilla 467. Valdivia, Chile.*

The coast of continental Chile extends over almost 4,200 km and covers a large part of the southeast Pacific. While the coastline between Arica (18°20' S) and Chiloé Island (ca. 41°30' S) is more or less straight, the region between Puerto Montt (ca. 41°30' S) and Cape Horn (ca. 56° S) is highly structured and presents a large number of islands, channels and fjords. This extension is formed by two parallel mountain ranges, the high Andes on Chile's eastern border, and the coastal mountains along its western edge which, in the area of Puerto Montt, drop into the ocean with their summits, forming the western channels and islands, while the Andes mountain range constitutes the continental fjords. The Chilean oceanographic institute SHOA calculated that the thousands of islands, channels and fjords enlarge the coast of this region to a length of almost 90,000 km (map scale).

During the last three decades, an important number of papers dealt with the biogeography of Chilean benthic invertebrates. While most studies treated a single taxon (e.g. Moyano 1991; Desqueyroux-Faúndez 1994; Ojeda et al. 2000; Häussermann and Försterra 2005; Montiel et al. 2005; Häussermann 2006), some summarize available data on biogeography and oceanographic processes (e.g. Viviani 1979; Brattström and Johanessen 1983; Castilla et al. 1993; Lancellotti and Vasquez 1999; Fernandez et al. 2000; Camus 2001). Most studies have proposed two main biogeographic regions within Chile, the Peruvian or warm-temperate Province between the Peninsula Illescas (or Bayovar) (ca. 6° S) and Chiloé Island, and the Magellanic or cold-temperate Province, between Chiloé Island

and Cape Horn. Viviani (1979) and Pickard (1971) subdivided the Magellanic Province into three regions: the Northern Patagonian Zone, from Puerto Montt to the Peninsula Taitao (ca. 46°–47° S), the Central Patagonian Zone to the Straits of Magellan (ca. 52°–53° S), and the Southern Patagonian Zone south of the Straits of Magellan. A recent study, including a wide set of invertebrates from the intertidal to 100 m depth (Lancellotti and Vasquez 1999), negates the widely assumed faunal break at 42° S, and proposes a Transitional Temperate Region between 35° and 48° S, where a gradual but important change in the species composition occurs.

Since 2005, in the framework of an inventory of the benthic biodiversity of the Chilean fjords region, we have organized a series of four, mainly vessel-based expeditions ("Huinay Fiordos 1 to 4") with three to seven participants each (Försterra et al. 2006; Willenz et al. 2007): the first focused on Chiloé Island and Guaitecas Archipelago, while the second and third took us to the fjords and channels of the Central Patagonian Zone (48°–52° S), and the fourth again to the Northern Patagonian Zone (encompassing the Chiloé Island, Chaitén, and Raul Marin Balmaceda). Due to the remoteness and inaccessibility of the more exposed channels and islands of the Northern and Southern Patagonian Zone, no or a very few sampling could be carried out in these areas. Additional hydroid samples were collected during a continuous survey of the benthic invertebrate fauna of fjord Comau, and some results are already available in Galea et al. (2007). A map of the studied area with the location of collection sites for hydroids is available in Figure 1.

NOTES ON GEOGRAPHIC DISTRIBUTION

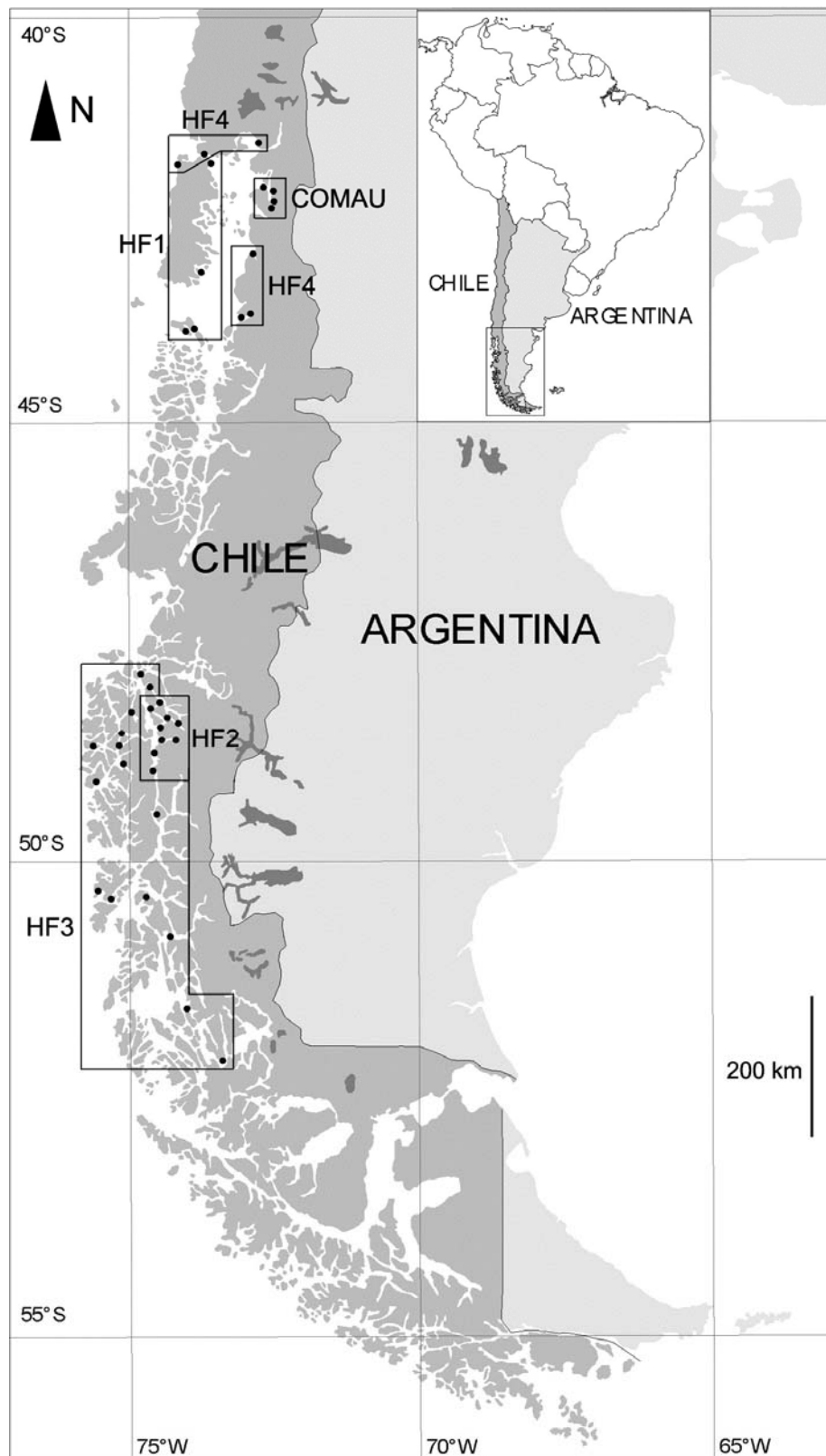


Figure 1. Map of the explored areas during "Huinay Fiordos 1–4" Expeditions and the fjord Comau, showing location of collection sites for hydroids.

NOTES ON GEOGRAPHIC DISTRIBUTION

A total of 57 species of hydroids were found. They were assigned to six families of athecates and thirteen families of leptothecates. A list of species and their biogeographical distribution are

summarized in Table 1. The latitudinal distribution along the studied area is presented in Figure 2. The lesser known species are illustrated in Figures 3-4.

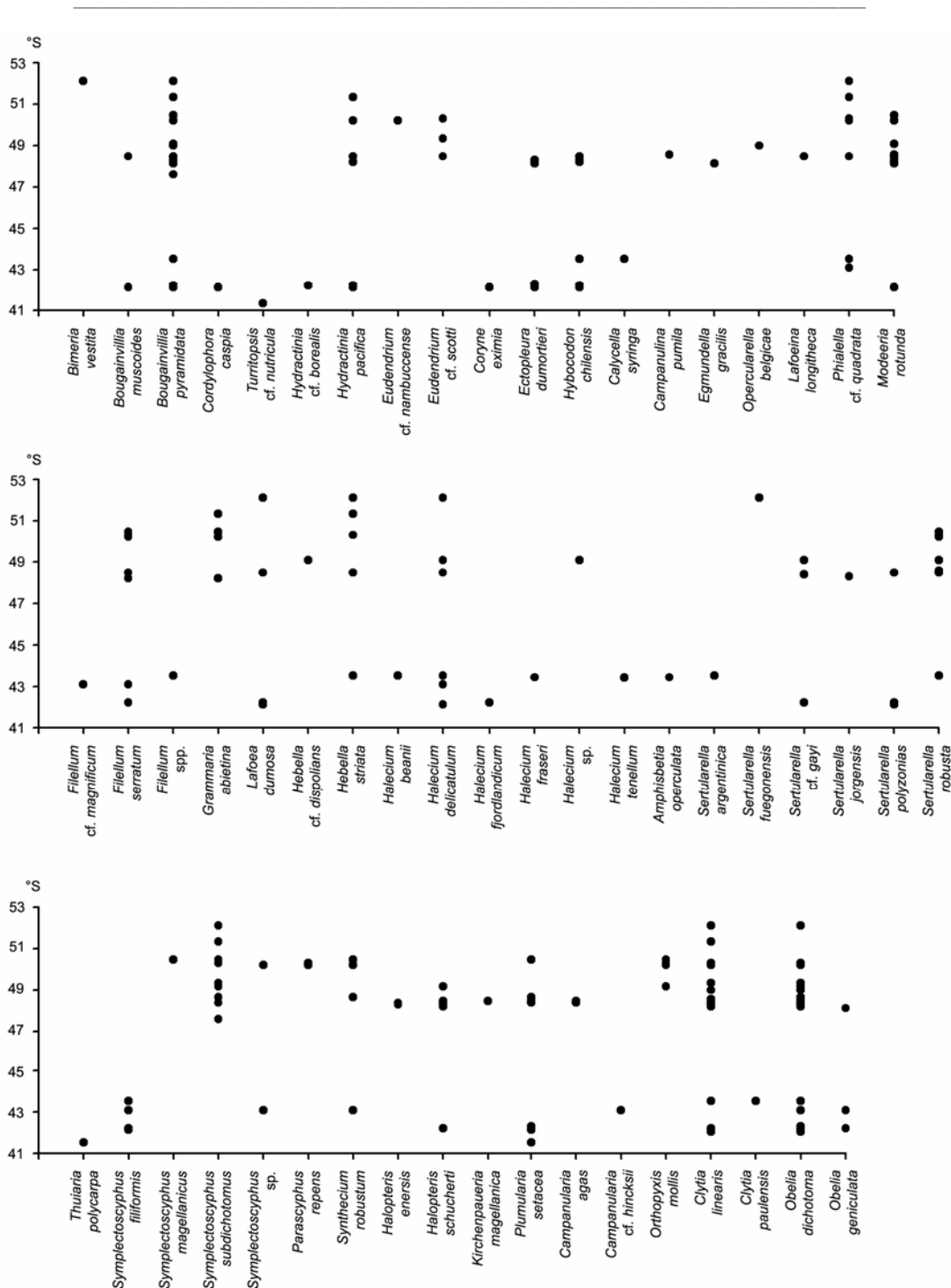


Figure 2. Latitudinal distribution of hydroid species within the studied area. No sampling has been carried out between 43°50' and 48°10' S.

NOTES ON GEOGRAPHIC DISTRIBUTION

Table 1. List of families, genera and species of hydroids and their biogeographical distribution. Abbreviations: PSA – Pacific coasts of South America, ASA – Atlantic coasts of South America, SAI – sub-Antarctic islands, MAG – Magellan area, ANT – Antarctica, BP – bipolar distribution, SC – scattered records, COS – cosmopolitan.

Families, genera and species	Records from Chile	Biogeographical distribution
Bougainvilliidae Luetken, 1850		
<i>Bimeria vestita</i> Wright, 1850	Calbuco (Hartlaub 1905), Canal Vicuña (Galea 2007)	COS
<i>Bougainvillia muscoides</i> (M. Sars, 1846)	Fjord Comau, Canal Fallos (Galea 2007)	SC
<i>Bougainvillia</i> ? <i>pyramidata</i> (Forbes & Goodsir, 1851) [possibly <i>B. muscus</i> (Allman, 1863)]	Roughly from 42°10' to 52°10' S (Galea 2007)	SC
Oceaniidae Eschscholtz, 1829		
<i>Cordylophora caspia</i> (Pallas, 1771)	Fjord Comau (Galea 2007)	COS
<i>Turritopsis</i> cf. <i>nutricula</i> McCrady, 1859	Lenca (Galea et al. in press)	COS
Hydractiniidae L. Agassiz, 1862		
<i>Hydractinia</i> cf. <i>borealis</i> (Mayer, 1900)	Fjord Comau (Galea 2007)	BP
<i>H. pacifica</i> Hartlaub, 1905	Calbuco (Hartlaub 1905), roughly between 42°10' and 51°40' S (Galea 2007)	PSA, SAI
Eudendriidae L. Agassiz, 1862		
<i>Eudendrium</i> cf. <i>nambuccense</i> Watson, 1985	Canal Copihue (Galea 2007)	SC
<i>E.</i> cf. <i>scotti</i> Puce, Cerrano & Bavestrello, 2002	Canals Fallos and Pasaje, Paso del Abismo (Galea 2007)	PSA, ANT
Corynidae Johnston, 1836		
<i>Coryne eximia</i> Allman, 1859	Fjord Comau (Galea 2007)	COS
Tubulariidae Allman, 1864		
<i>Ectopleura dumortieri</i> (van Beneden, 1844)	Roughly between 42° and 48° S (Galea 2007)	COS
<i>Hybocodon chilensis</i> Hartlaub, 1905	Calbuco (Hartlaub 1905), roughly between 42°10' and 48°50' S (Galea 2007)	SC
Campanulinidae Hincks, 1868		
<i>Calycella syringa</i> (Linnaeus, 1767)	Canal Betecoi (Galea 2007)	COS
<i>Campanulina pumila</i> (Clark, 1875)	Angostura Inglesa (Galea 2007)	SC
<i>Egmundella gracilis</i> Stechow, 1921	Isla van der Meulen (Galea 2007)	BP
<i>Lafoeina longitheca</i> Jäderholm, 1904	Canal Fallos (Galea 2007)	PSA, SAI, ANT
<i>Opercularella belgicæ</i> (Hartlaub, 1904)	Isla Lavinia (Galea 2007)	PSA, ASA, SAI, MAG, ANT
Phialellidae Russell, 1953		
<i>Phialella</i> cf. <i>quadrata</i> (Forbes, 1848)	Calbuco (Hartlaub 1905, as <i>Campanulina chilensis</i>), Coquimbo Bay, north of Golfo de Ancud, Strait of Magellan, Seno Ultima Esperanza (Leloup 1974, as <i>C. chilensis</i>), and roughly between 43° and 52° S (Galea 2007)	COS
Tiarannidae Russell, 1940		
<i>Modeeria rotunda</i> (Quoi & Gaimard, 1827)	Canal Chacao, Golfo de Ancud, Seno Reloncavi (Leloup 1974), and roughly between 42°10' and 50°50' S (Galea 2007)	COS
Lafoeidae Hincks, 1868		
<i>Filellum</i> cf. <i>magnificum</i> Peña et al., 2004	Piedra Lile, Isla Laitec (Galea 2007)	PSA, ANT
<i>F. serratum</i> (Clarke, 1879)	Canal Smyth (Hartlaub 1905, as <i>Lafoëa serrata</i>), Golfo de Ancud (Leloup 1974), and roughly between 42°10' and 50°50' S (Galea 2007)	COS
<i>Filellum</i> spp.	North-west of Melinka (Galea 2007)	-
<i>Grammaria abietina</i> (M. Sars, 1850)	Magellan Strait (Hartlaub 1905, as <i>G. stentor</i>), Canals Messier, Artilleria, Pitt Chico, and Sanviento (Galea 2007)	BP
<i>Lafoea dumosa</i> (Fleming, 1828)	Canal Trinidad (Hartlaub 1905), Golfo de Ancud, Strait of Magellan (Leloup 1974), and roughly between 42°10' and 52°10' S (Galea 2007)	COS (+ ANT)
Hebellidae Fraser, 1912		
<i>Hebella</i> cf. <i>dispolians</i> (Warren, 1909)	Isla Camello (Galea 2007)	SC
<i>H. striata</i> Allman, 1888	Canal Smyth, Long Island, Puerto del Hambre (Hartlaub 1905), Golfo de Ancud, Canal Chacao (Leloup 1974), and roughly from 43°50' to 52°10' S (Galea 2007)	SC
Haleciidae Hincks, 1868		
<i>Halecium beanii</i> (Johnston, 1838)	North-west of Melinka (Galea 2007)	COS
<i>H. delicatulum</i> Coughtrey, 1876	Puerto del Hambre, Punta Arenas (Hartlaub 1905, both as <i>H. flexile</i> and <i>H. delicatulum</i>), Tocopilla, north of Golfo de Ancud (Leloup 1974), and between 43°10' and 52°10' S (Galea 2007)	COS (+ ANT)
<i>H. fjordlandicum</i> Galea, 2007	Fjord Comau (Galea 2007)	PSA
<i>H. fraseri</i> Ralph, 1958	Golfo de Ancud (Leloup 1974), fjord Piti Palena (Galea et al. in press)	BP
<i>H. tenellum</i> Hincks, 1861	Isla Navarino, Canal Smith (Hartlaub 1905), Canal Fitzroy (Jäderholm 1910), Canal Chacao, Golfo de Ancud, Magellan Strait (Leloup 1974), fjord Piti Palena (Galea et al. in press)	COS
<i>Halecium</i> sp.	Isla Camello (Galea 2007)	-

NOTES ON GEOGRAPHIC DISTRIBUTION

Table 1. Continued.

Sertulariidae Lamouroux, 1812		
<i>Amphibettia operculata</i> (Linnaeus, 1758)	Guaitecas Islands (Jäderholm 1904a), Magellan Strait (Hartlaub 1905, as <i>Sertularia operculata</i>), Isla de Chiloé, Canal Chacao, Golfo de Ancud, Golfo Corcovado (Leloup 1974), Raul Marin (Galea et al. in press)	COS
<i>Sertularella argentinica</i> El Beshbeeshy, 1991	North of Melinka (Galea 2007)	PSA, ASA
<i>S. fuegonensis</i> El Beshbeeshy, 1991	Canal Vicuña (Galea 2007)	SC
<i>S. cf. gayi</i> (Lamouroux, 1821)	Fjord Comau, Canal Adalberto, Isla Camello (Galea 2007)	SC
<i>S. jorgensis</i> El Beshbeeshy, 1991	Canal Farquhar (Galea 2007)	PSA, ASA
<i>S. polyzonias</i> (Linnaeus, 1758)	Canal Trinidad, Punta Arenas, Strait of Magellan, Juan Fernández (Hartlaub 1905), Seno Reloncavi, Golfo de Ancud (Leloup 1974), and roughly between 42°10' and 49°11' S (Galea 2007)	COS
<i>S. robusta</i> Coughtrey, 1876	Canal Calbuco (Leloup 1974, as <i>S. microtheca</i>), Golfo de Ancud (Leloup 1974, as <i>S. robusta</i>), and roughly between 43°50' and 50°50' S (Galea 2007)	COS
<i>Symplectoscyphus filiformis</i> (Allman, 1888)	Puerto del Hambre (Hartlaub 1905), and roughly between 42°09' and 43°56' (Galea 2007)	PSA, ASA
<i>S. magellanicus</i> (Marktanner-Turneretscher, 1890)	Canal Pitt Chico (Galea 2007)	PSA, ASA, SAI, MAG
<i>S. subdichotomus</i> (Kirchenpauer, 1884)	Punta Arenas (Hartlaub 1905, as <i>Sertularella subdichotoma</i>), Corral, Guaitecas Islands (Jäderholm 1904a), Calbuco, Canal Smyth, Strait of Magellan, Tocopilla, Canal Chacao, Seno Reloncavi, Golfo Corcovado (Leloup 1974), and roughly between 48°58' and 52°09' S (Galea 2007)	SC
<i>Symplectoscyphus</i> sp.	Piedra Lile (Isla Laitec), Las Hermanas (Raul Marin), Canal Copihue (Galea 2007)	-
<i>Thuiaria polycarpa</i> Kirchenpauer, 1884	Valparaíso (Kirchenpauer 1884), Canal Chacao (Leloup 1974, as <i>Parathuiaria polycarpa</i>), Puñihuil, Isla de Chiloé (Galea et al. in press)	PSA
Thyroscyphidae Stechow, 1920		
<i>Parascyphus repens</i> (Jäderholm, 1904)	Canals Copihue and Pasaje (Galea 2007)	PSA, ASA, SAI, MAG
Syntheceidae Marktanner-Turneretscher, 1890		
<i>Syntheceium robustum</i> Nutting, 1904	Calbuco (Hartlaub 1905, as <i>S. chilense</i>), Golfo de Ancud, Seno Reloncavi (Leloup 1974), and roughly between 43°10' and 50°50' S (Galea 2007)	PSA, ASA, MAG
Halopterididae Millard, 1962		
<i>Halopteris enersis</i> Galea, 2006	Canals Farquhar and Adalberto (Galea 2007)	PSA
<i>H. schucherti</i> Galea, 2006	Roughly between 42°22' and 49°11' S (Galea 2007)	PSA
Kirchenpaueriidae Stechow, 1921		
<i>Kirchenpaueria magellanica</i> (Hartlaub, 1905)	Tierra del Fuego, Ushuaia (Hartlaub 1905, as <i>Plumularia magellanica</i>), Canal Castillo (Galea 2007)	BP
Plumulariidae Hincks, 1868		
<i>Plumularia setacea</i> (Linnaeus, 1758)	Guaitecas Islands (Jäderholm 1904a), Talcahuano, Calbuco (Hartlaub 1905), from Tocopilla to Strait of Magellan (Leloup 1974), and roughly between 41°49' and 50°50' S (Galea 2007)	COS
Campanulariidae Hincks, 1868		
<i>Campanularia agas</i> Cornelius, 1982	Calbuco (Hartlaub 1905, as <i>C. laevis</i>), Canals Adalberto and Castillo (Galea 2007)	PSA, ASA, MAG, ANT
<i>C. cf. hincksii</i> Alder, 1856	Piedra Lile, Isla Laitec (Galea 2007)	COS
<i>C. mollis</i> (Stechow, 1919)	Canal Smyth (Hartlaub 1905, as <i>C. tincta</i>), Tierra del Fuego, Puerto Pantalon (Hartlaub 1905, as <i>Eucopeella crenata</i>), Tocopilla (Leloup 1974), and roughly between 49°11' and 50°50' S (Galea 2007, as <i>Orthopyxis mollis</i>)	SC
<i>C. linearis</i> (Thornely, 1900)	Roughly from 42° to 52° S (Galea 2007)	COS
<i>Clytia paulensis</i> (Vanhöffen, 1910)	Melinka, Canal Betecoi (Galea 2007)	COS
<i>Obelia dichotoma</i> (Linnaeus, 1758)	Guaitecas Islands, Melinka (Jäderholm 1904a, as <i>Campanularia obtusidens</i>), Tocopilla, Coquimbo and San Vicente Bays, Seno Reloncavi, Golfo de Ancud (Leloup 1974), and roughly between 42° and 52° S (Galea 2007)	COS
<i>O. geniculata</i> (Linnaeus, 1758)	Canal Beagle (Hartlaub 1904), Corral (Jäderholm 1904a), Valparaíso, Talcahuano, Canal Smyth, Strait of Magellan, Islas Navarino and Lennox (Hartlaub 1905), Tocopilla, Archipelago de los Chonos (Leloup 1974), and roughly from 43°10' to 48°10' S (Galea 2007)	COS

NOTES ON GEOGRAPHIC DISTRIBUTION

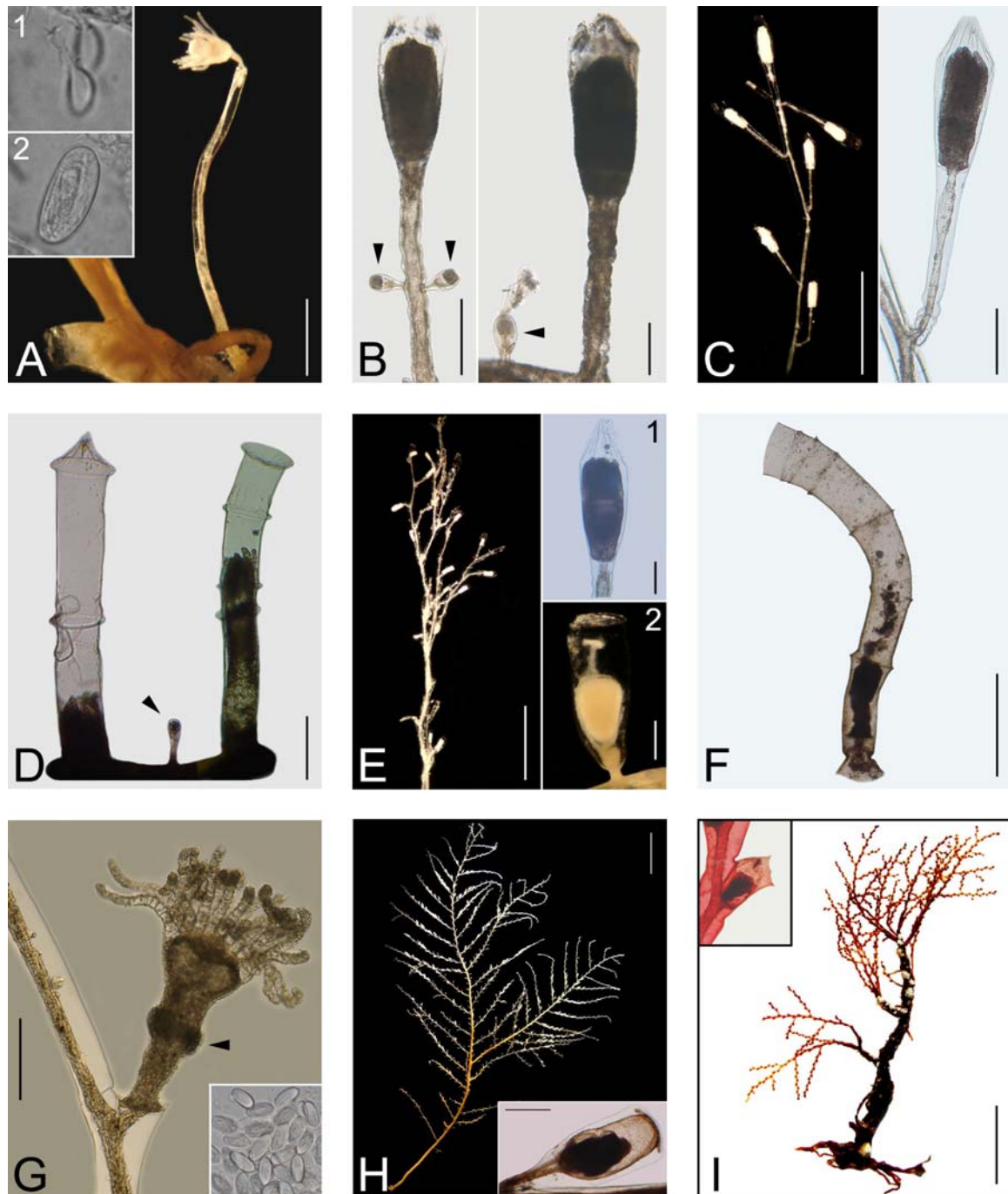


Figure 3. A: *Eudendrium* cf. *scotti*, scale bar 1 mm; insert 1 – discharged microbasic euryteles from tentacles; insert 2 – undischarged macrobasic euryteles from hydranth body. B: *Egmundella gracilis*, showing nematothecae (arrowheads) on both the hydrothecal pedicel (left) and stolon (right); scale bars 200 μ m (left), 100 μ m (right). C: *Opercularella belgicae*, colony (left, scale bar 1 mm) and detail of hydrotheca (right, scale bar 200 μ m). D: *Lafoeina longitheca*, showing two hydrothecae and a nematotheca (arrowhead); scale bar 200 μ m. E: *Phialella* cf. *quadrata*, whole colony (left, scale bar 200 μ m); insert 1 – hydrotheca, scale bar 100 μ m; insert 2 – gonotheca, scale bar 200 μ m. F: *Filellum* cf. *magnificum*, hydrotheca, scale bar 500 μ m. G: *Halecium fjordlandicum*, showing the sheath of large macrobasic mastigophores around hydranth body (arrowhead and detail in insert). H: *Halecium fraseri*, whole colony, scale bar 1 cm; insert – female gonotheca, scale bar 300 μ m. I: *Sertularella argentinica*, whole colony, scale bar 2 cm; insert – shape of hydrotheca.

NOTES ON GEOGRAPHIC DISTRIBUTION

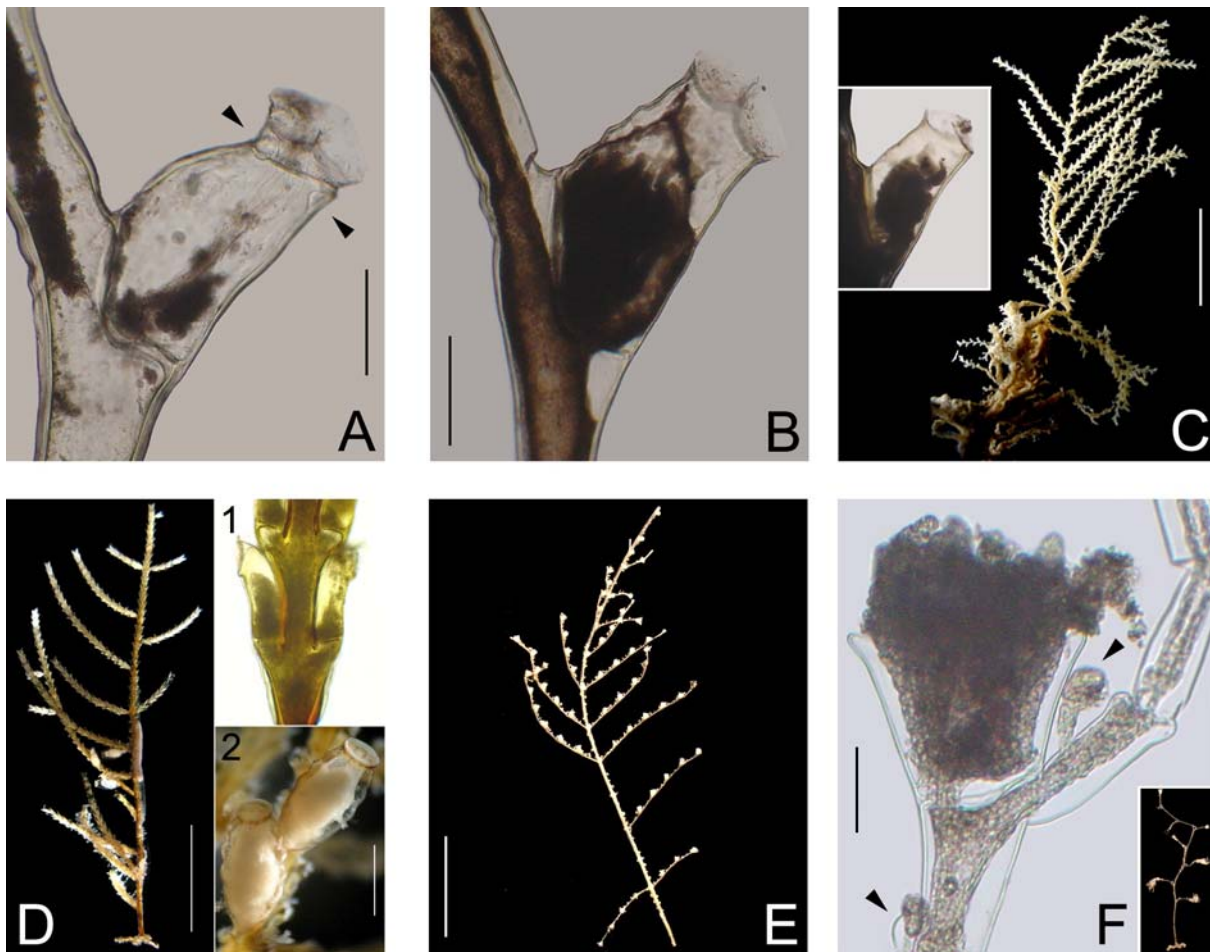


Figure 4. A: *Sertularella fuegonensis*, hydrotheca, showing internal projections of perisarc below aperture (arrowheads), scale bar 200 μ m. B: *Sertularella jorgensis*, hydrotheca, scale bar 200 μ m. C: *Symplectoscyphus magellanicus*, whole colony, scale bar 2 cm; insert – shape of hydrotheca. D: *Thuiaria polycarpa*, whole colony, scale bar 1 cm; insert 1 – a pair of hydrothecae; insert 2 – two gonothecae, scale bar 1 mm. E: *Halopteris enersis*, whole colony, scale bar 4 mm. F: *Kirchenpaueria magellanica*, cladial hydrothecate segment, showing nematothecae (arrowheads), scale bar 50 μ m; insert – shape of colony.

The most represented family is Sertulariidae, with twelve species, followed by Campanulariidae with seven species, Haleciidae with six species, and both Campanulinidae and Lafoeidae with five species each. The remaining families are more scarcely represented, with lesser species, varying between one and three.

Eight hydroids are restricted to South America, but only *Halecium fjordlandicum* (Figure 3G), *Halopteris enersis* (Figure 4E), *H. schucherti*, *Kirchenpaueria magellanica* (Figure 4F), and *Thuiaria polycarpa* (Figure 4D) were found, for instance, exclusively on the Pacific coast of

southern Chile (Galea et al. 2007; Galea 2007, see also Table 1). The remaining three species were recorded on both the Atlantic and Pacific coasts of the continent, i.e. *Sertularella argentinica* (Figure 3I) (El Beshbeeshy 1991; Galea 2007), *S. jorgensis* (Figure 4B) (El Beshbeeshy 1991; Galea 2007), and *Symplectoscyphus filiformis* (Hartlaub 1905; Blanco 1982; Galea 2007).

Additional species, i.e. *Hydractinia pacifica*, *Symplectoscyphus magellanicus* (Figure 4C), *Parascyphus repens*, *Synthecium robustum* and *Campanularia agas*, are found not only along the coasts of South America, but also on some sub-

NOTES ON GEOGRAPHIC DISTRIBUTION

Antarctic islands and/or Antarctica. *Hydractinia pacifica* was found on the Pacific coast of Chile (Hartlaub 1905; Galea 2007) and the Kerguelen Islands (Stepanjants 1979). *Symplectoscyphus magellanicus* is known from the Argentine Patagonia (Vervoort 1972; Blanco 1984; El Beshbeeshy 1991), Falkland Islands (Hartlaub 1905, as *Sertularella affinis*, Stepanjants 1979), south-western Atlantic from an area comprised between Tierra del Fuego, Isla de Los Estados, Falkland Islands, and Burdwood Bank (Vervoort 1972), Magellan Strait (Marktanner-Turneretscher 1890; Vervoort 1972; El Beshbeeshy 1991), and the Central Patagonian Zone of Chile (Galea 2007). *Parascyphus repens* was previously found from the Rio Negro, Argentina (Blanco 1984), Crozet Islands (Stepanjants 1979; El Beshbeeshy 1991), Tierra del Fuego (Jäderholm 1904b, as *Thyroscyphus repens*), and Chile (Leloup 1974; Galea 2007). Available records of *Synthecium robustum* are from Argentina (Vervoort 1972; Stepanjants 1979; El Beshbeeshy 1991; Genzano and Zamponi 2003), southern Chile (Hartlaub 1905, as *S. chilense*, Leloup 1974; Galea 2007), and an area comprised between Tierra del Fuego, Magellan Strait, Falkland Islands, and Burdwood Bank (Nutting 1904; Ritchie 1907; Vervoort 1972). Only *C. agas* Cornelius, 1982 penetrates into the Antarctic waters (Vanhöffen 1910, as *C. laevis* Hartlaub 1905), but it was equally recorded from Argentina (El Beshbeeshy 1991, as *C. laevis*, and Genzano and Zamponi 2003), Chile (Hartlaub 1905; Leloup 1974, as *C. laevis*, Galea 2007) and Magellan Strait (Vervoort 1972, as *C. laevis*).

Four species are mainly known from Antarctica, i.e. *Eudendrium* cf. *scotti* (Figure 3A) (Puce et al. 2002), *Opercularella belgicae* (Figure 3C) (Hartlaub 1904; Hickson and Gravely 1907; Vanhöffen 1910; Ritchie 1913; Billard 1914; Totton 1930; Briggs 1938; Naumov and Stepanjants 1962; Stepanjants 1972; 1979; Peña Cantero et al. 2004), *Lafoeina longithecata* (Figure 3D) (Jäderholm 1904b; Hickson and Gravely 1907; Ritchie 1913; Billard 1914; Naumov and Stepanjants 1962; Stepanjants 1972; 1979; Peña Cantero et al. 2004) and *Filellum magnificum* (Figure 3F) (Peña Cantero et al. 2004). Moreover, *O. belgicae* was additionally recorded from several sub-Antarctic regions, such as the Kerguelen Islands (Millard 1977) and Magellan

Strait (Vervoort 1972, as *Opercularella* sp.), but also from temperate regions, e.g. Mar del Plata, Argentina (Genzano 1995; Genzano and Zamponi 2003), and southern Chile (Leloup 1974; Galea 2007). *Lafoeina longithecata* was equally found from the Kerguelen Islands (Stepanjants 1979) and southern Chile (Galea 2007). A new record of *Filellum* cf. *magnificum* is from the Northern Patagonian Zone of Chile (Galea 2007).

Four species are likely to have a bipolar distribution, including the sub-polar to temperate waters of both hemispheres: *Hydractinia* cf. *borealis*, *Egmundella gracilis* (Figure 3B), *Grammaria abietina* and *Halecium fraseri* (Figure 3H). Both the polyp and medusa stages of *H. borealis* were previously recorded from the British Isles, Iceland, North Sea, and the Atlantic coasts of North America (Schuchert 2001b). *Egmundella gracilis* was for instance recorded from the Pacific coast of Canada (Stechow 1923) and southern Chile (Galea 2007). *Grammaria abietina* is a circumpolar species, ranging southward to the North Sea in the eastern Atlantic, and to southern New England in the Western Atlantic. In the southern hemisphere, it was recorded near Crozet, Kerguelen and Falkland Islands, Tierra del Fuego, and Patagonia (Schuchert 2001b). *Halecium fraseri* was found from the eastern Pacific from Moresby Island to San Juan Archipelago (Ralph 1958) and southern Chile (Leloup 1974; Galea et al. in press); it was equally reported from the northwestern Atlantic, from Narragansett Bay, south of Hope Island (Fraser 1944).

The records of the following eleven species are relatively scattered around the world. Both the polyp and medusa stages of *Bougainvillia muscoides* were previously found in the boreal waters of the Atlantic and Pacific Oceans, the Arabian Gulf and off Mozambique (Buecher et al. 2005). Galea (2007) assigned abundant material of a *Bougainvillia* species to *B. pyramidata*, mainly based on the morphology of the mature medusa. However, it is now recognized that, in both the polyp and medusa stages, intermediate forms between *B. muscus* and *B. pyramidata* may occur (Schuchert 2007), and the distinction between the two is sometimes very difficult using morphological criteria. It is therefore possible that

NOTES ON GEOGRAPHIC DISTRIBUTION

the present material assigned to *B. pyramidata* may correspond instead to *B. muscus*, a widespread species found in tropical and temperate waters of the world oceans (Schuchert 2007). There are records of *B. muscus* from the southern Pacific (Schuchert 1996), while *Bougainvillia pyramidata* was mainly recorded from the Atlantic, on the western coast of British Isles (Russell 1953). Besides the present record from Chile, *Eudendrium* cf. *nambuccense* was initially reported from eastern and south-eastern Australia (Watson 1985), but there are additional records from the Pacific coast of Brazil (Nogueira et al. 1997; Marques 2001). *Hybocodon chilensis*, initially described from Chile (Hartlaub 1905), was also reported from New Zealand (as *H. prolifer* in Schuchert 1996, see also Galea 2006b). *Campanulina pumila* was mainly recorded from the northern hemisphere, e.g. North Sea, North Atlantic, Pacific coasts of North America (Cornelius 1995a), and Greenland (Schuchert 2001b). The present record from southern Chile may suggest a bipolar distribution of this species. *Hebella* cf. *dispolians*, is here only tentatively identified based on its parasitic habit (hydrothecae arising from the hydrothecal apertures of *Symplectoscyphus subdichotomus*); both its occurrence and taxonomic status are poorly known, with only two previous records, one from India (Warren 1909) and another from South Africa (Millard 1975). The chief area of distribution of *Hebella striata* is represented by the seas around South America, with records from Argentine Patagonia (Vervoort 1972; El Beshbeeshy 1991), Crozet (Millard 1977), Kerguelen (Vanhöffen 1910), and Falkland Islands (Hartlaub 1905; Blanco 1982), Burdwood Bank (Jäderholm 1905; Ritchie 1907), Magellan Strait (Allman 1888; Hartlaub 1905; Vervoort 1972), Pacific coast of Chile (Hartlaub 1905; Leloup 1974; Galea 2007), and the adjacent Antarctic seas (Totton 1930). *Sertularella fuegonensis* (Figure 4A) was originally found from Tierra del Fuego (El Beshbeeshy 1991; Vervoort 1972, as *S. picta*, p. 114, fig 35A-B), but additional records are from New Zealand (Vervoort and Watson 2003). *Sertularella gayi* is widely distributed in the Mediterranean and eastern Atlantic (Bouillon et al. 2004), but also on the Pacific coast of Argentina (Blanco 1982); it is

presently recorded from southern Chile. *Symplectoscyphus subdichotomus* is widely distributed along both Atlantic and Pacific coasts of South America, e.g. Argentina (Blanco 1967a; El Beshbeeshy 1991; Genzano and Zamponi 2003), Chile (Hartlaub 1904; Leloup 1974; Galea 2007), Magellan Strait (Hartlaub 1905; Vervoort 1972), south-western Atlantic from an area situated between Tierra del Fuego, Isla de Los Estados and the Falkland Islands (Vervoort 1972), Kerguelen, Crozet (Millard 1977; Stepanjants 1979), and Falkland Islands (Jäderholm 1905). This species also penetrates into the Antarctic seas (Blanco 1967b). Additional records of *S. subdichotomus* are mentioned from Australia (Ralph 1961) and New Zealand (Vervoort and Watson 2003). *Campanularia mollis* has a complicated synonymy and was found on the Pacific coast of North America (Clark 1876, as *Campanularia everta*), Chile (Galea 2007, as *Orthopyxis mollis*), Tierra del Fuego (Hartlaub 1905, as *C. tincta*, *C. tincta* var. *eurycalyx*, and *Eucopeella crenata*), Atlantic coasts of Argentina (Blanco 1976, as *C. everta*, and El Beshbeeshy 1991, as *O. hartlaubi*), Magellan Strait and Falkland Islands (Vervoort 1972, as *C. everta*), Mediterranean (Stechow 1919, as *Clytia mollis*), Russia, Sea of Japan (Naumov 1969, as *C. everta*), New Zealand (Ralph 1957; Vervoort and Watson 2003, as *O. mollis*), Antarctica (Peña Cantero and García Carrascosa 1999, both as *O. crenata* and *O. hartlaubi*).

The remaining twenty two species have a (near) cosmopolitan distribution, but only *Lafoea dumosa* and *Halecium delicatulum* could penetrate into Antarctic waters (Peña Cantero and García Carrascosa 1999). The other species are largely distributed throughout the temperate to subtropical regions, i.e. *Bimeria vestita*, *Cordylophora caspia*, *Turritopsis* cf. *nutricula*, *Coryne eximia*, *Ectopleura dumortieri*, *Calycella syringa*, *Phialella* cf. *quadrata* (Figure 3E), *Modeeria rotunda*, *Filellum serratum*, *Halecium beanii*, *H. tenellum*, *Amphisbetia operculata*, *Sertularella polyzonias*, *S. robusta*, *Plumularia setacea*, *Campanularia* cf. *hincksii*, *Clytia linearis*, *C. paulensis*, *Obelia dichotoma* and *O. geniculata*.

NOTES ON GEOGRAPHIC DISTRIBUTION

Finally, several species listed herein could be identified to genus level only. *Filellum* spp. has hydrothecae whose dimensions and morphology do not fit into those of *F.* cf. *magnificum* and *F. serratum*. The present material is sterile and therefore could not be identified to species level. Moreover, it is possible that more than one species occur amongst this material. The material assigned to *Halecium* sp., though morphologically different from its five congeners, is scarce and sterile, and therefore unidentifiable. Also *Symplectoscyphus* sp. is unidentifiable due to the lack of gonothecae.

Some authors (Pickard 1971; Viviani 1979; Lancellotti and Vasquez 1999; Häussermann and Försterra 2005) hypothesized a faunal break at the Peninsula Taitao and the Golfo de Penas (ca. 48° S), at least for shallow water species of the inner fjords, accompanied by a significant change in the species composition. This hypothesis seems to be verified for a certain number of hydroids, e.g. *E.* cf. *scotti*, *L. longithecata*, *G. abietina*, *S. magellanicus*, *K. magellanica*, *P. repens* and *C. agas*, which presently have not been found northerly to 48° S along the Pacific coast of Chile. These species are known to have a sub-Antarctic and/or Antarctic distribution, so they were not expected to be found north of this limit. Conversely, the temperate species *C. caspia* and *C. eximia* seem to be present only north of the Golfo de Penas.

Additionally, a transition was presently observed in two members of the genus *Symplectoscyphus*: *S. filiformis* was widely found between 42–44° S, while *S. subdichotomus* totally replaced the former southerly to 47–48° S. However, *S. filiformis* was originally described from Puerto del Hambre (ca. 53° S, Allman 1888), and Leloup (1974) mentioned *S. subdichotomus* from Calbuco (ca. 41° S). Similarly, our record of *O. belgicae* is from Isla Lavinia (49° S), but this mainly Antarctic and sub-Antarctic species has been equally found south of Tocopilla (ca. 22° S, Leloup 1974).

Several hydroid species (i.e. *E. nambuccense*, *E. scotti*, *E. gracilis*, *F. magnificum*, *H. enersis*, *H. schucherti*, *K. magellanica*, *S. argentinica*, *S. fuegonensis*, *S. jorgensis*, *T. polycarpa*, *H.*

fjordlandicum, *H. fraseri*) were so scantily reported in the literature, that their geographical distribution is poorly known.

However, the absence of sampling between 43°50' and 47°50' S, and the very few records of several species, prevent us to associate with certainty the faunal-break hypothesis to the hydroids.

No typical representatives of the Antarctic hydroid fauna were recorded during the present study, i.e. members of the genera *Schizotricha*, *Oswaldella*, *Antarctoscyphus* and *Stauronotheca* (see Peña Cantero and García Carrascosa 1999).

In conclusion, numerous hydroid species show affinities partly with the cold-temperate Magellan region, and partly with Antarctica. The remaining species have either a scattered distribution around the world or are (near) cosmopolitan.

Acknowledgements

Many thanks to Jörg Mehnert, Elizabeth Atwood and David Thompson for helping to collect hydroids. This is publication nr. 29 of Huinay Scientific Field Station.

Literature cited

- Allman, G. J. 1888. Report on the Hydroidea dredged by H.M.S. Challenger during the years 1873-76. Part II. The Tubularinae, Corymorphinae, Campanularinae, Sertularinae and Thalamophora. Report of the Scientific Results of the Voyage of H.M.S. Challenger during the year 1873-76, Zoology 23(70): 1-90.
- Billard, A. 1914. Hydroïdes, p. 1-34 In Deuxième Expédition Antarctique Française (1908–1910), commandée par le Dr Jean Charcot. Paris, Masson.
- Blanco, O. M. 1967a. Contribucion al conocimieto de los Hidrozoarios Argentinos. Revista del Museo de La Plata 9(71): 243-297.
- Blanco, O. M. 1967b. Un nuevo aporte al conocimieto de la fauna hidroide Argentina. Revista del Museo de La Plata 10(77): 97-127.
- Blanco, O. M. 1976. Hidrozoos de la expedición Walther Herwig. Revista del Museo de La Plata 12(113): 37-74.
- Blanco, O. M. 1982. Adicion a los hidrozoos argentinos. I. Netrópica 28(80): 153-163.
- Blanco, O. M. 1984. Adicion a los hidrozoos argentinos. II. Revista del Museo de la Plata 13(147): 269-282.

NOTES ON GEOGRAPHIC DISTRIBUTION

- Blanco, O. M., M. O. Zamponi, and G. N. Genzano. 2000. Campanulinidae de la Argentina (Coelenterata, Hydrozoa, Hydroida). *Revista del Museo de la Plata* 14(163): 267-278.
- Bouillon, J., M. D. Medel, F. Pagès, M. J. Gili, F. Boero, and C. Gravili. 2004. Fauna of the Mediterranean Hydrozoa. *Scientia Marina* 68 (Suppl. 2): 1-438.
- Brattström, H. and A. Johanssen. 1983. Ecological and regional zoogeography of the marine benthic fauna of Chile. Report No. 49 of the Lund University Chile Expedition 1948-49. *Sarsia* 68: 289-339.
- Briggs, E. A. 1938. Hydroida. Scientific Report of the Australasian Antarctic Expedition 1911–1914 9(4): 1-46.
- Buecher, E., J. Goy, and M. J. Gibbons. 2005. Hydromedusae of the Agulhas Current. *African Invertebrates* 46: 27-69.
- Camus, P. A. 2001. Biogeografía marina de Chile continental. *Revista Chilena de Historia Natural* 74: 587-617.
- Castilla, J. C., S. A. Navarette, and J. Lubchenco. 1993. Southeastern Pacific coastal environments, and global climate change, p 167-188 In H. A. Mooney, E. R. Fuentes, and B. I. Kronberg (ed.). *Earth system responses to global change: contrasts between North and South America*. San Diego, Academic Press.
- Clark, S. F. 1876. The hydroids of the Pacific coast of the United States, south of Vancouver Island. With a report upon those in the Museum of Yale College. *Transactions of the Connecticut Academy of Arts and Sciences* 3: 249-264.
- Cornelius, P. F. S. 1982. Hydroids and medusae of the family Campanulariidae recorded from the eastern North Atlantic, with a world synopsis of the genera. *Bulletin of the British Museum (Natural History), Zoology* 42(2): 37-148.
- Cornelius, P. F. S. 1995a. North-west European thecate hydroids and their medusae. Part 1. Introduction, Laodiceidae to Haleciidae. *Synopses of the British Fauna* 50: 1-347.
- Cornelius, P. F. S. 1995b. North-west European thecate hydroids and their medusae. Part 2. Sertulariidae to Campanulariidae. *Synopses of the British Fauna* 50: 1-386.
- Desqueyroux-Faúndez, R. 1994. Biogeography of Chilean marine sponges (Demospongiae), p. 183-189 In R. W. M. van Soest, T. M. G. van Kempen, and J. C. Braekman (ed.). *Sponges in time and space*. Balkema. Rotterdam, Balkema.
- Edwards, C. 1964. On the hydroids and medusae *Bougainvillia pyramidata* and *B. muscoides*. *Journal of the Marine Biological Association of the United Kingdom* 44: 725-752.
- El Beshbeeshy, M. 1991. Systematische, Morphologische und Zoogeographische Untersuchungen an den Thekaten Hydroiden des Patagonischen Schelfs. Ph.D. Thesis, Hamburg University. 390 p.
- Fernández, M., E. Jaramillo, P. A. Marquet, C. A. Moreno, S. A. Navarrete, E. P. Ojeda, C. R. Valdorinos, and J. A. Vásquez. 2000. Diversity, dynamics and biogeography of Chilean benthic nearshore ecosystems: an overview and guidelines for conservation. *Revista Chilena de Historia Natural* 73: 797-830.
- Försterra, G., V. Häussermann, and G. J. Foley. 2006. Adding pieces to a complex puzzle - discovering the benthic life in the channels and fjords of Chilean Patagonia. *Global Marine Environment* 3: 18-21.
- Fraser, C. M. 1944. Hydroids of the Atlantic coast of North America. The University of Toronto Press. 451 p.
- Galea, H. R. 2006a. On two new species of *Halopteris* (Cnidaria: Hydrozoa) from Chile. *Zootaxa* 1165: 57-68.
- Galea, H. R. 2006b. Rediscovery and redescription of *Hybocodon chilensis* Hartlaub, 1905 (Cnidaria: Hydrozoa) from Comau Fiord, southern Chile. *Zootaxa* 1258: 57-68.
- Galea, H. R. and L. Leclère. 2007. On some morphologically aberrant, auto-epizootic forms of *Plumularia setacea* (Linnaeus, 1758) (Cnidaria: Hydrozoa) from Southern Chile. *Zootaxa* 1484: 39-49.
- Galea, H. R. 2007. Hydroids and hydromedusae (Cnidaria: Hydrozoa) from the fjords region of southern Chile. *Zootaxa* 1597: 1-116.
- Galea, H. R., V. Häussermann, and G. Försterra. 2007. Hydrozoa, fjord Comau, Chile. *Check List* 3(2): 159-167.
- Galea, H. R., V. Häussermann, and G. Försterra. In press. Additions to the hydroids (Cnidaria: Hydrozoa) from the fjords region of southern Chile. *Zootaxa*.
- Genzano, G. N. 1995. New records of hydropolyps (Cnidaria, Hydrozoa) from south-western Atlantic Ocean. *Miscelanea Zoológica* 18: 1-8.
- Genzano, G. N. and M. O. Zamponi. 2003. Hydroids assemblages from Mar del Plata, Argentina, at depths between 0 and 500 m. Distribution and biological substrata. *Oceanologica Acta* 25: 303-313.
- Hartlaub, C. 1904. Hydroiden, p. 1-19 In *Expédition Antarctique Belge. Résultats du voyage du S.Y. Belgica en 1897-99. Rapports Scientifiques, Zoologie*.
- Hartlaub, C. 1905. Die Hydroiden der Magalhaensischen Region und chilenischen Küste. *Zoologische Jahrbücher* 6(3): 497-714.
- Häussermann, V. 2006. Biodiversity of Chilean sea anemones (Cnidaria: Anthozoa): distribution patterns and zoogeographic implications, with new records for the fjord region. *Investigaciones Marinas* 34: 23-35.

NOTES ON GEOGRAPHIC DISTRIBUTION

- Häussermann, V. and G. Försterra. 2005. Distribution patterns of Chilean shallow-water sea anemones (Cnidaria: Anthozoa: Actiniaria, Corallimorpharia), with a discussion of the taxonomic and zoogeographic relationships between the actinofauna of the South East Pacific, the South West Atlantic and Antarctica, In W. E. Arntz, G. A. Lovrich, and S. Thatje (ed.). The Magellan-Antarctic connection: links and frontiers at high southern latitudes. *Scientia Marina* 69 (Suppl. 2): 91-102.
- Hickson, S. J. and F. H. Gravely. 1907. Hydroid zoophytes. National Antarctic Expedition, 1901-1904. *Natural History* 3: 1-34.
- Jäderholm, E. 1904a. Hydroiden aus den Küsten von Chili. *Arkiv för Zoologi* 2(3): 1-9.
- Jäderholm, E. 1904b. Mitteilungen ueber einige von der Schwedischen Antarctic-Expedition 1901-1903 eingesammelte Hydroiden. *Archives de Zoologie Expérimentale et Générale* 4(3): 1-14.
- Jäderholm, E. 1905. Hydroiden aus antarktischen und subantarktischen Meeren gesammelt von der schwedischen Südpolar-Expedition. *Wissenschaftliche Ergebnisse der Schwedischen Südpolar-Expedition 1901-1903* 5(8): 1-41.
- Jäderholm, E. 1910. Über die Hydroiden, welche Dr. C. Skottsber in den Jahren 1907-1090 gesammelt. *Arkiv för Zoologi* 6(14): 1-5.
- Kirchenpauer, G. H. 1884. Nordische Gattungen und Arten von Sertulariden. *Abhandlungen aus dem Gebiete der Naturwissenschaften* 8: 93-144.
- Lancellotti, D. A. and J. A. Vásquez. 1999. Biogeographical patterns of benthic macroinvertebrates in the Southeastern Pacific Littoral. *Journal of Biogeography* 26(5): 1001-1006.
- Leloup, E. 1974. *Hydropolypes calyptoblastiques du Chili*. Report no. 48 of the Lund University Chile Expedition 1948-1949. *Sarsia* 55: 1-61.
- Marktanner-Turneretscher, G. 1890. Die Hydroiden des k.k. naturhistorischen Hofmuseums. *Annalen des Naturhistorischen Museums in Wien* 5: 195-286.
- Marques, A. C. 2001. O gênero *Eudendrium* (Hydrozoa, Anthomedusae, Eudendriidae) no Brasil. *Papéis Avulsos de Zoologia* 41(22): 329-405.
- Millard, N. A. H. 1975. Monograph on the Hydroida of southern Africa. *Annals of the South African Museum* 68: 1-513.
- Millard, N. A. H. 1977. Hydroids from the Kerguelen and Crozet shelves, collected by the cruise MD. 03 of the Marion-Dufresne. *Annals of the South African Museum* 73(1): 1-47.
- Montiel, A., D. Gerdes, and W. Arntz. 2005. Distributional patterns of shallow-water polychaetes in the Magellan region: a zoogeographical and ecological synopsis, In W. E. Arntz, G. A. Lovrich, and S. Thatje (ed.), The Magellan-Antarctic connection: links and frontiers at high southern latitudes. *Scientia Marina* 69 (Suppl. 2): 123-133.
- Moyano, G. H. I. 1991. Bryozoa marinos chilenos VIII: una síntesis zoogeográfica con consideraciones sistemáticas y la descripción de diez especies y dos géneros nuevos. *Gayana, Zoologia* 55: 305-389.
- Naumov, D. V. 1969. Hydroids and hydromedusae of the USSR. Translated from Russian. Jerusalem, Israel program for scientific translation. 631 p.
- Naumov, D. V. and S. D. Stepanjants. 1962. Gidroidy podotryada Thecaphora, sobrannye v antarkticheskikh i subantarkticheskikh vodakh sovetskoi antarkticheskoi ekspeditsiei na dizel'-elektrokhode "Ob". In: *Resul'taty biologicheskikh issledovaniy sovetskoi antarkticheskoi ekspeditsii (1955w1958 gg)*, 1. *Issledovaniya Fauny Morei* 1(9): 69-104.
- Nogueira, C. C., P. Grohman, and V. M. A. P. Silva. 1997. Hydroids from the vicinity of a nuclear power plant site (CNAAA-Unidade I) at Angra dos Reis, Rio de Janeiro, southeastern Brazil, p. 365-369 In *Proceedings of the VI International Conference of Coelenterate Biology*.
- Nutting, C. C. 1904. American hydroids. Part II. The Sertularidae. *Special Bulletin of the United States National Museum* 4(2): 1-325.
- Ojeda, F. P., F. A. Labra, and A. A. Muñoz. 2000. Biogeographic patterns of Chilean littoral fishes. *Revista Chilena de Historia Natural* 73: 625-641.
- Peña Cantero, A. L. and A. M. García Carrascosa. 1999. Biogeographical distribution of the benthic thecate hydroids collected during the Spanish "Antártida 8611" expedition and comparison between Antarctic and Magellan benthic hydroid faunas. *Scientia Marina* 63 (Supl. 1): 209-218.
- Peña Cantero, A. L., A. Svoboda, and W. Vervoort. 2004. Antarctic hydroids (Cnidaria, Hydrozoa) of the families Campanulinidae, Lafoeidae and Campanulariidae from recent Antarctic expeditions with RV Polarstern, with the description of a new species. *Journal of Natural History* 38: 2269-2303.
- Pickard, G. L. 1971. Some physical oceanographic features of inlets of Chile. *Journal of Fisheries Research Board of Canada* 28: 1077-1106.
- Puce, S., C. Cerrano, and G. Bavestrello. 2002. *Eudendrium* (Cnidaria, Anthomedusae) from the Antarctic Ocean, with description of two new species. *Polar Biology* 25: 366-373.
- Ralph, P. M. 1957. New Zealand thecate hydroids. Part I. Campanulariidae and Campanulinidae. *Transactions of the Royal Society of New Zealand* 84(4): 811-854.
- Ralph, P. M. 1958. New Zealand thecate hydroids. Part II. Families Lafoeidae, Lineolariidae, Haleciidae and Syntheciidae. *Transactions of the Royal Society of New Zealand* 85(2): 301-356.

NOTES ON GEOGRAPHIC DISTRIBUTION

- Ralph, P. M. 1961. New Zealand thecate hydroids. Part III. Family Sertulariidae. Transactions of the Royal Society of New Zealand 88(4): 749-838.
- Ritchie, J. 1907. The hydroids of the Scottish National Antarctic Expedition. Transactions of the Royal Society of Edinburgh 45(2)(18): 519-545.
- Ritchie, J. 1913. The hydroid zoophytes collected by the British Antarctic Expedition of Sir Ernest Shackleton, 1908. Proceedings of the Royal Society of Edinburgh 33(1): 9-34.
- Russell, F. S. 1953. The Medusae of the British Isles Vol. I: Anthomedusae, Leptomedusae, Limnomedusae, Trachymedusae, and Narcomedusae. Cambridge University Press. 530 p.
- Schuchert, P. 1996. The marine fauna of New Zealand: athecate hydroids and their medusae (Cnidaria: Hydrozoa). New Zealand Oceanographic Institute Memoir 106: 1-159.
- Schuchert, P. 2001a. Survey of the family Corynidae (Cnidaria, Hydrozoa). Revue Suisse de Zoologie 108(4): 739-878.
- Schuchert, P. 2001b. Hydroids of Greenland and Iceland. Meddelelser om Grønland, Bioscience 53: 1-184.
- Schuchert, P. 2005. Taxonomic revision and systematic notes on some *Halecium* species (Cnidaria, Hydrozoa). Journal of Natural History 39(8): 607-639.
- Schuchert, P. 2007. The European athecate hydroids and their medusae (Hydrozoa, Cnidaria): Filifera Part 2. Revue Suisse de Zoologie 114(2): 195-396.
- Stechow, E. 1919. Zur Kenntnis des Hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete. Zoologische Jahrbücher, Systematik 42(1): 1-172.
- Stechow, E. 1921. Ueber Hydroiden der Deutschen Tiefsee-Expedition, nebst Bemerkungen über einige andre Formen. Zoologischer Anzeiger 55: 223-236.
- Stechow, E. 1923. Zur Kenntnis des Hydroidenfauna des Mittelmeeres, Amerikas und anderer Gebiete. II Teil. Zoologische Jahrbücher 47(1): 29-270.
- Stepanjants, S. D. 1972. Gidroidy pribrezhnykh vod morya devisa (po materialam XI sovetsko antarkticheskoy ekspeditsii 1965/66 g.). In: Resultaty biologicheskikh isledovaniy sovetskikh antarkticheskikh ekspeditsii. Issledovaniya Fauny Morei 11(19): 56-79.
- Stepanjants, S. D. 1979. Gidroidy vod antarktiki i subantarktiki. Rezul'taty biologicheskikh issledovaniy sovetskikh antarkticheskikh ekspeditsii, 6. Issledovaniya Fauny Morei 22(30): 1-99.
- Totton, A. K. 1930. Coelenterata. Part V. Hydroida. Natural History Report of the British Antarctic (« Terra Nova ») Expedition, 1910. Zoology 5(5): 131-252.
- Vanhöffen, E. 1910. Die Hydroiden der Deutschen Südpolar-Expedition 1901-1903. Deutsche Südpolar Expedition, Zoologie 3: 269-340.
- Vervoort, W. 1972. Hydroids from the Theta, Vema and Yelcho cruises of the Lamont-Doherty geological observatory. Zoologische Verhandlungen, Leiden 120: 1-247.
- Vervoort, W. and J. E. Watson. 2003. The marine fauna of New Zealand: Leptothecata (Cnidaria: Hydrozoa) (Thecate Hydroids). NIWA Biodiversity Memoir 119: 1-538.
- Viviani, C. A. 1979. Ecografía del litoral chileno. Studies on Neotropical Fauna and Environment 14: 65-123.
- Warren, E. 1909. On *Lafocia dispolians* sp. n., a hydroid parasitic on *Sertularia bidens* Bale. Annals of the Natal Museum 2: 105-112.
- Watson, J. E. 1985. The genus *Eudendrium* (Hydrozoa: Hydroida) from Australia. Proceedings of the Royal Society of Victoria 97(4): 179-221.
- Willenz, P., V. Häussermann, G. Försterra, M. Schrödl, R. Melzer, E. Atwood, and C. Jorda. 2007. Finding more pieces of the Chilean puzzle. Global Marine Environment 5: 26-29.

Received June 2007

Accepted September 2007

Published online October 2007