

CHILOPODA

Compiled by Alessandro Minelli

Centipedes (Chilopoda) and millipedes (Diplopoda) are terrestrial arthropods, most abundant in forest environments. A few species, however, have a more or less obligate relationship to the shore and are usually found under jetsam. Centipedes are predators, whereas most millipedes feed on litter, dead wood and other decaying plant matter. The sources of the present list were Brölemann (1932), Eason (1964), Foddai *et al.* (1995), Strasser & Minelli (1984).

References

- Brölemann H.W. (1932) Chilopodes. In: *Faune de France*, Paris, 25.
 Eason E.H. (1964) *Centipedes of the British Isles*. F. Warne & Co. Ltd. London.
 Foddai D., Minelli A., Scheller U. & Zapparoli M. (1995) Chilopoda, Diplopoda, Pauropoda, Symphyla, in Minelli A., Ruffo S. & La Posta S. (a cura di) *Checklist delle specie della fauna italiana*, 32: 1-35. Calderini, Bologna.
 Strasser C. & Minelli A. (1984) Elenco dei Diplopodi d'Italia. *Lavori Soc. ven. Sc. nat.*, 9:193-212.

Class Chilopoda**Order Geophilomorpha****Family Dignathodontidae**

Henia bicarinata (Meinert, 1870)

Family Schendylidae

Hydroschendyla submarina (Grube, 1872)

Family Geophilidae

Tuoba poseidonis (Verhoeff, 1901)
Geophilus fucorum Brölemann, 1900
algarum Brölemann, 1909

Family Linotaeniidae

Strigamia maritima (Leach, 1817)

DIPLOPODA

(see Chilopoda above)

Class Diplopoda**Order Julida****Family Nemasomatidae**

Thalassisobates litoralis (Silvestri)

Family Julidae

Dolichoilulus tongiorgii (Strasser, 1973)

INSECTA

Compiled by Anastasios Legakis and Declan Murray

The list of the marine insects is definitely not complete. There are two reasons for this situation. One is that references to marine insects are scattered in various entomological publications some of which are old and not readily available. Second, the definition of a marine insect is not commonly agreed. Some authors consider them as insects found in marine habitats while others include those that are sporadically associated with the marine environment. The definition proposed by Chang & Frank (1993) considers as marine species an insect which spends at least one of its developmental stages habitually in a marine habitat. Even in this case there are some who consider the supralittoral zone as terrestrial (Bigot *et al.*, 1984). In this list, the supralittoral zone is excluded as a very large number of species would have to be included. The list was compiled using several sources (Riedl, 1970; Chang & Frank, 1993; Hayward & Ryland, 1995).

The majority of juvenile Chironomidae inhabit freshwater but, uncommonly among insects, larvae of some are true halobionts and have been recorded from coasts all over the world (Pinder 1995). The following Chironomidae are known from European coastal waters (Ashe and Cranston, 1990).

References

- Ashe, P. & Cranston, P.S., 1990, Chironomidae. In Soos, A. & Papp, L. (Eds) *Catalogue of Palaearctic Diptera: 2 Psychodidae - Chironomidae*. 113-499. Akadémiai Kiadó, Budapest
 Bigot L., Picard J., Roman M.L. 1984.- Signification des peuplements d'invertébrés des plages et dunes du delta du Rhône; délimitation des domaines marin et terrestre. *C.R. Acad. Sci. Paris* (III)2980(1): 5-7.
 Chang L. & Frank J.H. 1993.- Marine insects and their reproduction. *Oceanogr. Mar. Biol. Annu. Rev.* 31: 479-506.
 Hayward P.J. & Ryland J.S. 1995.- *Handbook of the Marine Fauna of North-West Europe*. Oxford Univ. Press, pp. 462-476.
 Pinder, L.C.V., 1995, The habitats of chironomid larvae. In (Eds) Armitage, P.D., Cranston, P.S., & Pinder, L.C.V., *The Chironomidae - Biology and ecology of non-biting midges*. 107-135. Chapman and Hall, London
 Riedl R. 1970.- *Fauna und Flora der Adria*. Verlag Paul Parey, pp. 371-380.

Class Insecta**Order Archaeognatha****Family Machilidae**

Petrobius maritimus (Leach, 1809)
brevistylis Carpenter

Order Coleoptera**Family Carabidae**

Aepopsis robinii (Laboulbene, 1894)
Aepus marinus (Stroem, 1788)
Eurynebria complanata (L., 1767)
Broschus cephalotes (L., 1758)

Family Staphylinidae

Micralymma marinum (Stroem, 1785)
Diglossa

submarina (Fairmaire & Laboulbène, 1856)

Bledius

spectabilis (Kraatz, 1857)

Order Collembola

Family Entomobryidae

Pseudosinella

halophila (Bagnall)

Family Hypogastruridae

Hypogastrura

viatica (Tullberg, 1872)

Family Isotomidae

Axelsonia

littoralis (Moniez, 1890)

Family Neanuridae

Anurida

maritima (Guerin, 1838)

Anuridella

marina (Willem)

Family Onychiuridae

Onychiurus

debilis (Moniez)

thalassophila (Bagnall)

Order Dermaptera

Family Carcinophoridae

Anisolabis

maritima (Bonelli, 1832)

Order Diptera

Family Chironomidae

Clunio

adriaticus Schiner, 1856

balticus Heimbach, 1978

marinus Haliday, 1855

ponticus Michailova, 1980

Halocladus

braunsi (Goetghebuer, 1942)

fucicola (Edwards, 1926)

mediterraneus Hirvenoja, 1973

millenarius (Santos Abreu, 1918)

variabilis (Staeger, 1839)

varians (Staeger, 1839)

Telmatogeton

japonicus Tokunaga, 1933

pectinata (Deby, 1889)

Thalassomyia

frauenfeldi Schiner, 1856

Thalassosmittia

atlantica (Stora, 1936)

thalassophila (Bequaert & Goetghebuer, 1913)

Family Ephydriidae

Ephydra

macellaria Egger, 1862

Order Hemiptera

Family Saldidae

Aepophilus

bonnairei (Signoret)

PHORONIDA

Compiled by C. C. Emig, C. Roldán & J. M. Viéitez

The Phoronida is an exclusively marine group of lophophorate animals: infaunal, suspension-feeders, with a vermiform body enclosed in a slender, chitinous tube in which it moves freely and it is anchored by the ampulla, the end-bulb of the body. The tube is embedded in hard or soft substrata.

Phoronids are found in all oceans and seas and are not uncommon in favourable situations. In some habitats they are very abundant, reaching several tens of thousand individuals per square metre. Phoronids occur at depths ranging from the intertidal zone to about 400 m depth, but mainly between 0 to 70 m. Almost all species occurring in European waters have wide geographical ranges and most are probably cosmopolitan.

Several authors regard Phoronida as constituting a separate phylum; but others, including myself (Emig 1997), consider them as a class within the phylum Lophophorata, which also includes the Bryozoa and Brachiopoda. Recently, Cohen (2000) included the Phoronida in a subphylum named Phoroniformea within the Brachiopoda. The Phoronida are particularly distinguished from the other two lophophorate groups on the basis of its cylindrical body form living in a tube which can be compared to the shell of the Brachiopoda and to the exo-skeleton in the Bryozoa.

Currently only two genera, *Phoronis*, Wright, and *Phoronopsis*, Gilchrist, are recognised, together with respectively seven and three well-defined species (Emig 1982). The name *Phoronis* Wright, 1856 from the genus name, is one of the numerous epithets of the Egyptian goddess Isis. The genus *Phoronopsis* has an epidermal invagination at the base of the lophophore.

The characteristic larva of the Phoronida, named actinotroch or *Actinotrocha* Müller, 1846, has been described near Helgoland (Germany). He considered it as an adult form, and named it *Actinotrocha branchiata*. The transformation of the actinotroch into an adult phoronid was described for the first time by Kowalevsky (1867) who, following the metamorphosis, realised that the *Actinotrocha* was a larval stage of Wright's *Phoronis* species.

Separate names for larval and adult forms are still used in taxonomy. Despite the priority of the larval name *Actinotrocha*, the International Commission of Zoological Nomenclature accepted also as valid the name *Phoronis*. Consequently, the actinotroch keeps a separate "generic" name considered as a technical term under *Actinotrocha* which is sometimes still different from the adult species name.

From data of recent ecological surveys in Europe, mainly in the south of the Iberian Peninsula, the Chafarinas Islands and Canary Islands (Emig *et al.* 1999, 2000), the number of phoronid species occurring in the European waters increased to 9 of 10 species known in the world. The species not recorded in Europe, *Phoronis ijimai*, is presently known from Pacific and N. W. Atlantic waters. The Iberian Peninsula and the surrounding islands represent a privileged area for the Phoronida because all 9 species has been recorded along their coasts.

For more detailed information on Phoronida see the website at <http://www.com.univ-mrs.fr/DIMAR/Phoro/>.