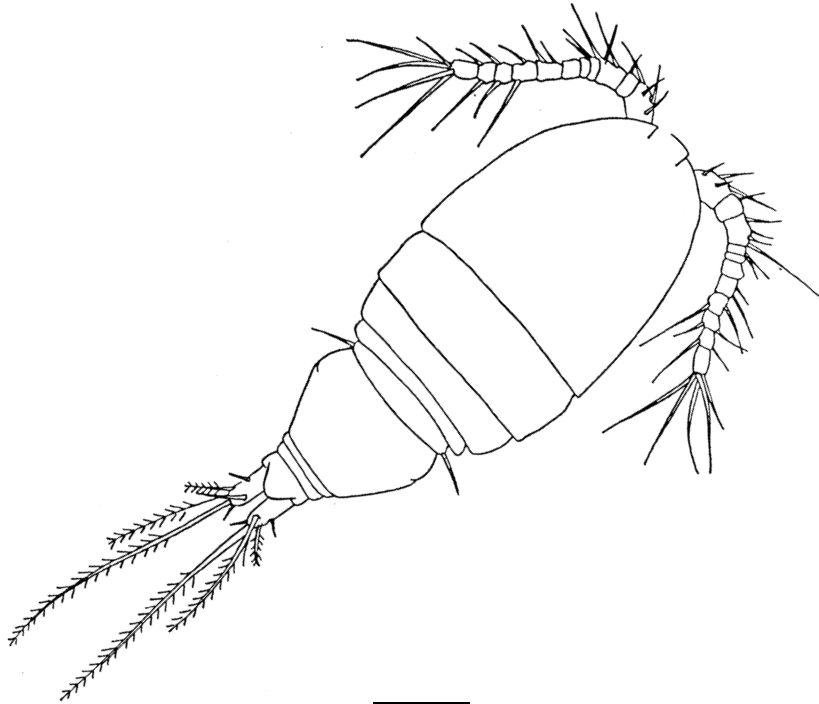


**World Directory
of
Crustacea Copepoda
of
Inland Waters
II - Cyclopiformes**

B. Dussart & D. Defaye



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PREFACE

As for the “World Directory of Crustacea Copepoda of Inland Waters. I. Calaniformes” (2002), this second edition appears about twenty years after the first one “Répertoire mondial des Copépodes Cyclopoïdes”. A quantity of changes have occurred in the systematics of this group, numerous species have been described, new synonymies and keys have been published. Several genera have been revised, some new ones have been discovered. The first edition was in great need to be updated and the readers of the previous edition will be surprised by the quantity of changes. Not only is it a witness to the vitality of the freshwater copepod systematics, but it also points out the fact that the copepodologists of the world are particularly active and that the world of copepods is far from being known as we could expect in the beginning of the 21st century.

The contents are organized as in the previous edition. The references cited in the taxonomic part are given in alphabetical order, the abbreviations of the references follow the ISO-4 standards (ISDS, 1985 and following years).

The scientific index includes the synonyms in roman characters, which should allow the reader to follow the trail of any citation to its present valid name. The genera are presented according to the chronological order of description.

For each genus, the type-species is given first and is marked by an asterisk. The order followed for the other species is chronological.

For each species, a synonymy is given, followed by:

The category “Other ref(s).” contains diverse information, ranging from a simple citation to references on morphology, physiology, biology or ecology of the species.

The category “Distribution.” gives a more or less precise indication of the geographical distribution of the taxon, mainly using the terms of political geography according to present knowledge. [But geographical regions or lakes have also been used when the data were available or gave better accuracy or information]. The term “including” highlights a particular locality or region within a general distribution.

“Note:” refers to any additional useful information on the biology or on the taxonomy of the taxon.

Any reader not yet familiar with this group of Crustacea Copepoda should consult the volumes of the series “Guides to the identification of the microinvertebrates of the continental waters of the world” (Coordinating Editor H.J.F. Dumont, Backhuys Publishers): Introduction to the Copepoda (B. Dussart & D. Defaye, 2001); Copepoda: Cyclopoida. Genera *Paracyclops*, *Ochridacyclops* and Key to the Eucyclopinae (S. Karaytug, 1999); Copepoda: Cyclopoida. Genera *Cyclops*, *Megacyclops*, *Acanthocyclops* (U. Einsle, 1996); Copepoda: Cyclopoida. Genera *Mesocyclops* & *Thermocyclops*, (eds. H. Ueda & J.W. Reid, 2003).

As in the first edition, this inventory does not pretend to be exhaustive although its aim is to be as complete as possible. As new habitats are more and more investigated, we can expect that new taxa will be discovered and consequently, our present knowledge will be questioned, leading to revisions. Copepodology is a dynamic field of research. We would be grateful to receive suggestions, remarks and corrections so that we can update this survey.

INTRODUCTION

Among the nine orders of the subclass Copepoda (Crustacea) (Platycopioidea, Calanoida, Misophrioida, Harpacticoida, Mormonilloidea, Gelyelloidea, Cyclopoida (including Poecilostomatoida), Siphonostomatoida, Monstrilloidea), the Cyclopoida, or **Cyclopiformes**, are particularly well represented in the inland waters, the family Cyclopidae being the major group, largely diversified in all the types of aquatic ecosystems. Free-living cyclopoids play an undeniable role in aquatic food webs and their importance need not be demonstrated anymore. They have colonised a large number of habitats and a lot of taxa are likely still unknown. This can be illustrated by the number of new taxa described during the last two decades. The attention given to the analysis of firstly morphological characters and microcharacters have led to defining new taxa, based on the discovery of new material but also on reexamination of ancient or new material. The result is a noticeable enrichment of the knowledge of freshwater copepods, on their taxonomy but also on their environment. The investigations in areas until now accessible with difficulty already have, and certainly will provide new taxa on the colonisation of cyclopids in all aquatic or humid inland habitats.

Four families are represented in inland waters. The families Oithonidae, Cyclopinidae and Cyclopettidae comprise a number of species, certain of which are strictly marine. Consequently, they have been partially treated, only represented by the taxa living in brackish waters (more generally tolerant to less saline waters) and by their few representatives in true fresh waters. The larger family of Cyclopidae is the most widely distributed family in inland waters and it characterizes them, as the family Diaptomidae for Calaniformes. It is almost exclusively represented in inland waters, even sometimes saline. Some species are, however, able to adapt to coastal marine waters (see also in Razouls, 1981, 1995, 1996).

All the species described from 1898 have been registered until 2004(5). The chronological order used here has been chosen preferably in reference to the history of the copepod knowledge. The references by Schmeil (in Giesbrecht & Schmeil, 1898) then Kiefer (1929) are considered as complete and are the basis of the modern freshwater copepodology. Then, the following publications: Giesbrecht & Schmeil, 1898. Copepoda, Gymnoplea (Das Tierreich); Kiefer, 1929. Copepoda, 2-Cyclopoida Gnathostoma (Das Tierreich) but also Gurney, 1931-33. British freshwater Copepoda; Rylov, 1948/63. Freshwater Cyclopoida. Fauna of USSR; Dussart, 1969. Les copépodes des eaux continentales d'Europe occidentale, II; Monchenko, 1974. Gnathostomata (Cyclopidae). Fauna Ukraini; Kiefer, 1978. Freilebende Copepoda (Die Binnengewässer, XXVI); have provided synthetic accounts of references prior to their publication. We have not reported these references in full but most of the synonymies given by these authors have been included to make the synonymies as exhaustive as possible.

For the groups which have representatives both in fresh waters (or waters of low salinity) and in saline waters (of different salinities, thalassic or not), we have limited citations to species recognised as occurring in inland waters.

For other marine taxa, we recommend readers to consult the catalogue of marine planktonic and brackish calanoids of C. Razouls (1982, 1991, 1995) and C. Razouls & F. de Bovée: Diversity and Geographical Distribution of Pelagic Copepoda <http://copepodes.obs-banyuls.fr/>.

To be noted as well: for all copepod taxa, The world of Copepods website, managed by C. Walter World of Copepods <http://www.nmnh.si.edu/iz/copepod/>.

We recommend also the website managed by G.L. Pesce. Copepod web portal. <http://www.luciopesce.net/copepods/> which provides useful and rich information on freshwater copepods, particularly on groundwater copepods.

The freshwater Cyclopiforms are presently represented by 66 genera and 1008 valid species and subspecies. The family Cyclopidae presently comprises 58 genera and 830 species (986 species and subspecies).

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Family OITHONIDAE Dana, 1853

Other refs.: Kiefer, 1929; Lindberg, 1950; Ferrari & Bowman, 1980; Razouls, 1996; Dussart & Defaye, 2001; Boxshall & Halsey, 2004.

We will only consider here the species inhabiting fresh and brackish waters.

Two subfamilies were distinguished by Kiefer (1928): Oithoninae and Limnoithoninae; this division was followed by Razouls (1996) and Dussart & Defaye (2001) while Boxshall and Halsey (2004) did not mention it anymore, considering as Abiahy (2000) (unpublished PhD thesis) the family only composed of three genera: *Oithona* Baird, 1843; *Dioithona* Kiefer, 1935; and *Limnoithona* Burckhardt, 1913. We will presently consider here the two subfamilies still valid as Abiahy's work has not been published. The status of the family here presented will probably be modified in the near future. *Limnoithona* should be transferred to the family *Cyclopinidae*.

Subfamily OITHONINAE Kiefer, 1928

Other refs.: Kiefer, 1929; Razouls, 1996; Dussart & Defaye, 2001.

The subfamily is presently divided in two genera: *Oithona* Baird, 1843 and *Dioithona* Kiefer, 1935, the genus *Paroithona* Farran, 1906 being now considered as a synonym of *Oithona*.

Most of the species of both genera live in marine waters. However, some of them prefer more or less saline waters, and even fresh waters. Four groups of species can be distinguished by ecologists and biogeographers: 1- the species inhabiting epipelagic oceanic waters; 2 - these preferring the neritic marine waters; 3 - estuarine species; 4 - freshwater species. Only the latter and partly the species living in inland brackish waters will be considered here. *Oithona* is present in the fresh waters of Northern South America and considered there as endemic.

Genus *Oithona* Baird, 1843

Scribella Dana, 1846

Oithonella Sars, 1886

About fifty species living in marine, brackish and fresh waters.

Other refs.: Kiefer, 1929; Lindberg, 1950; Ferrari & Bowman, 1980; Razouls, 1981, 1996; Rocha, 1985; Rocha & Botelho, 1998; Dussart & Defaye, 2001; Boxshall & Halsey, 2004.

We will only consider the species living in inland waters (lagoons considered as inland).

Oithona brevicornis Giesbrecht, 1891

Other refs.: Ranga Reddy & Radhakrishna, 1984; Saint-Jean & Pagano, 1987; Razouls, 1996 (as *Oithona* (*O.*) *brevicornis*).

Distribution. Africa: Ivory Coast (Ebrié lagoon). Asia: India (Lake Kolleru), (see Razouls (1996) for marine distribution).