Census of Antarctic Marine Life

SYNOPSIS OF THE AMPHIPODA OF THE SOUTHERN OCEAN

Edited by Claude DE BROYER

Volume 3: Catalogue of the Hyperiidean Amphipoda (Crustacea) of the Southern Ocean with distribution and ecological data

by
Wolfgang ZEIDLER & Claude DE BROYER

INSTITUT ROYAL DES SCIENCES NATURELLES DE BELGIQUE
KONINKLIJK BELGISCH INSTITUUT VOOR NATUURWETENSCHAPPEN

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BIOLOGIE VOL 79 - SUPPLEMENT 1
BRUXELLES - BRUSSEL 2009

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BULLETIN
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BIOLOGIE

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VAN HET KONINKLIJK BELGISCH INSTITUUT VOOR NATUURWETENSCHAPPEN
BIOLOGIE

VOL. 79 Suppl. 1 - 2009 ISSN 0374-6429

Publié, verschenen, published: 15.XI.2009

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BIOLOGIE
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CONTENTS

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ABSTRACT

A catalogue of hyperiidean amphipods (Crustacea: Peracarida: Amphipoda) recorded from the Southern Ocean is established including full synonymy, complete distribution records and bibliographical references. The catalogue comprises 74 described species but only 15 have a distribution restricted to the region between the Subtropical Convergence and the Antarctic Continent, which is presented on maps. The remainder are widely distributed in nearly all of the world's oceans. Detailed information on geographical and bathymetric distribution in the Southern Ocean and information on the worldwide distribution is given for each species. Details on the type locality and location of type-material is also provided. Another 20 species that have been recorded south of 40°S but not in the Southern Ocean as defined here, are not included in the catalogue but are listed in an Appendix for future reference. Identification tools currently available for hyperiids are summarized in another Appendix. The catalogue is based on taxonomic and ecological literature checked until 28 February 2009. Some unpublished species records from the Southern Ocean (determined by WZ) in various museum collections have also been included.

RÉSUMÉ

Un catalogue des amphipods hypériens (Crustacea: Peracarida: Amphipoda) de l'Océan Austral est établi, comprenant la synonymie complète, les données de distribution et les références bibliographiques. Le catalogue inclut 74 espèces décrites dont 15 seulement ont une distribution limitée à la région comprise entre la Convergence Subtropicale et le continent antarctique, présentée sur cartes. Les espèces restantes sont largement distribuées dans presque tous les océans. Une information détaillée sur la distribution géographique et bathymétrique dans l'Océan Austral et une information générale sur la distribution mondiale sont fournies pour chaque espèce. Les détails de la localité-type ainsi que la localisation du matériel-type sont également mentionnés. Quelques 20 espèces récoltées au sud de 40°S mais non dans l'Océan Austral selon les limites adoptées ici, ne sont pas incluses dans le catalogue mais reprises dans un appendice aux fins de références futures. Un autre appendice inventorise les outils d'identification des hypériens actuellement disponibles. Le catalogue est basé sur la littérature taxonomique et écologique dépouillée jusqu'au 28 février 2009. Quelques signalements non encore publiés d'espèces de l'Océan Austral provenant de diverses collections muséales (déterminées par WZ) ont aussi été inclus.

Keywords
Amphipoda, Hyperiidea, Antarctica, Southern Ocean, catalogue, taxonomy, distribution, biogeography, Census of Antarctic Marine Life.

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Preface to Volume 1 of the *Synopsis of the Amphipoda of the Southern Ocean*

During my long life as an amphipodologist I had the chance, in 1982, to ask Théodore Monod to write the preface to the first volume of "The Amphipoda of the Mediterranean". That work in a certain sense inspired the "Synopsis of the Amphipoda of the Southern Ocean" for which I am now asked to write the preface. I accept the commitment and I consider it a privilege to present a work so long awaited, since until today everybody who needed to identify Antarctic amphipods had to resort to several hundreds of specialist works in a variety of publications or in the series of reports of geographical expeditions that have punctuated the history of Antarctic researches, ever since over a century ago.

Today the amphipods of Antarctic and sub-Antarctic fauna, except the Hyperiids, totalized 815 species, a number that places these Crustaceans among the animals with the highest biodiversity for the Southern Ocean fauna. The knowledge of biodiversity at the specific level, which also allows to consider its variations due to environmental changes and thus to monitor anthropic pressure in time, has as its indispensable basis the identification of living species. This is the duty of taxonomy, which until a few years ago was considered an obsolete discipline of biology, but must be revalued and expanded, in close connection to ecology and molecular biology. The work which I am happy to present has this purpose and it is no chance that it was born in a great museum as the Institut Royal des Sciences Naturelles de Belgique. Today a work of this kind must be realised by a team, and this has already been the case for the preparation of "The Amphipods of the Mediterranean". However, an editor was needed who believed in the feat and helped the plan be born and develop, in cooperation with the 16 amphipodologists of 11 countries, chosen for its realisation. This person is my friend Claude De Broyer who, with organizational capability and great tenacity, completed the first stage of a journey which I hope will not be too long. To Claude De Broyer and all the authors are due the thanks of all of us amphipodologists.

The first volume begins with a novelty for a taxonomic work since it contains the "Catalogue of the Gammaridean and Corophiidean Amphipoda of the Southern Ocean". This is uncommon for a work that is destined to the identification of species but, I believe, is very practical because the Catalogue, over 300-pages-long, includes the citation of all the authors who have considered every species, the detailed geographic distribution, the depth range, the type-locality (with the geographic coordinates, if known) and the type specimen location. All the above allow to significantly lighten the part that is destined to the identification of taxa, to the great advantage of the users, through illustrated keys of genera and species, as electronic interactive keys up to the rank of subfamily are planned.

Amphipod systematics is conveniently represented along an alphabetical order because, due to the nearly absolute absence of paleontological proof, little or nothing can be said about an arrangement that can reflect its evolution. However, the results of the cladistic analysis are considered, which cancelled the suborder Caprellidea, instituted the suborder Corophiidean (Myers & Lowry, 2003) and considers the superfamily Talitroidea (Serejo, 2004). The question mark still remains on the superfamily Hadzioidea that hopefully can soon be reconsidered and clearly reordered. From a zoogeographic viewpoint, the total absence of the Gammaridae, which are so characteristic of the boreal hemisphere, catches the eye.

This work comes out in 2007, exactly 300 years since the birth of Carl Linnaeus. It can therefore be considered a significant tribute to the great naturalist whose system still today allows to use a conventional means, accepted unanimously, for naming living beings, through an historical and immutable language, and for ordering their units based on the progress of research. This work represents the state of the art of the knowledge on Antarctic marine amphipods, so it allows to increase with greater certainty all what we know today about a group of animals of great environmental importance.

Best wishes to the future scholars who now have the luck to have such an instrument at their disposal!

Sandro Ruffo

Foreword to the *Synopsis of the Amphipoda of the Southern Ocean*

Amphipod crustaceans are one of the most speciose animal groups in the Antarctic and sub-Antarctic waters, where they show a high diversity in terms of life styles, trophic types, habitats and size spectra. They constitute a significant trophic resource for a number of Southern Ocean fishes, invertebrates, seabirds and mammals.

Nowadays, in the "Global Change" context, polar regions experience greater rates of climate change than elsewhere in the world. Their biota is highly adapted to their extreme environment and appears vulnerable to shifts in climate. Because of the key-role of the Southern Ocean in the Earth system and the growing impact of global environmental change, it is crucial to establish comprehensive baseline information on the Antarctic marine biodiversity as a sound benchmark against which future change can reliably be assessed.

Accurate species identification is fundamental in biodiversity studies and relies on efficient identification tools, which are still lacking for some highly diverse and taxonomically difficult groups of the Southern Ocean, such as amphipods or polychaetes.

Southern Ocean amphipods have been described from the beginning of Antarctic exploration in the second half of the nineteenth century, marked by the works of Pfeffer (1888) and Stebbing (1888). At the turn of the twentieth century Antarctic exploration intensified, resulting in important taxonomic contributions mostly by Walker (1903a, 1907) and Chevreux (1906e, 1913c). The third period, between 1925 and 1938 was the most productive in the history of Antarctic amphipod taxonomy and nearly half of the present fauna was described mostly by Schellenberg (1926a, 1931a) and K.H. Barnard (1930, 1932). The increased activity in the Antarctic following the International Geophysical Year (1957-58), the establishment of permanent coastal stations and the development of many national Antarctic programmes under the coordination of SCAR resulted in a number of contributions by contemporary specialists, which substantially augmented the number of known Antarctic taxa.

However, the current knowledge of the Antarctic benthic biodiversity in general remains highly patchy in terms of coverage of geographical areas, bathymetric zones, habitats, taxonomic groups, ecofunctional groups, or size spectra. Vast areas of the High Antarctic continental shelf are still untouched and the Antarctic deep sea is hardly explored. It has been estimated that only one third of the macrobenthic species from the Antarctic shelf is already known (Gutt *et al.* 2004). Concerning the amphipods, new species are discovered by each exploratory cruise on the shelves around the continent or around the islands of the Scotia Arc and the first systematic investigations of the Antarctic abyssal basins by the *Polarstern* ANDEEP cruises have recently collected an impressive number of unknown taxa.

In the framework of the "Ant'Phipoda" project (De Broyer *et al.* 2001b), an international network of specialists (the «Antarctic Amphipodologists Network») was established to undertake the taxonomic revision of the Antarctic fauna of gammaridean and corophiidean amphipods (about 600 spp presently recognized), to synthesize their biogeographical and ecological traits and to elaborate the highly-needed identification guides and electronic identification keys.

The initial impetus for developing this Synopsis project came from Wolfgang Wägele (Bonn), editor of the very welcome - but now provisionally suspended - series "Synopses of the Antarctic Benthos", who encouraged me to edit the amphipod volumes. Having in mind the nice example of the successful "Amphipoda of the Mediterranean" volumes edited by Sandro Ruffo, a number of specialists (forming the "Antarctic Amphipodologist Network") accepted with enthousiasm to participate in the project and to contribute particular families to cover the whole Antarctic benthic fauna. I would like to thank G. Alonso de Pina (Buenos Aires), H.G. Andres (Hamburg), D. Bellan-Santini (Marseille), J. Berge (Longyearbyen), C.O. Coleman (Berlin), K. Conlan (Ottawa), C. d'Udekem d'Acoz (Bruxelles), J.M. Guerra-Garcia (Sevilla), E. Hendrycks (Ottawa), K. Jazdzewski (Lodz), T. Krapp-Schickel (Bonn), J.K. Lowry (Sydney), A. Myers (Cork), M. Rauschert (Berlin), I. Takeuchi (Matsuyama) and M.H. Thurston (Southampton) for their involvement in the project.

The Synopsis will cover all benthic amphipod taxa living in the Southern Ocean south to the Polar Front (formerly Antarctic Convergence), and, as far as possible, sub-Antarctic species living around the Subantarctic Islands and in the Magellan region of southern South America will also be taken into account.

The volumes will deal with the different family contributions as they appear ready to press. It was found preferable not to wait for the completion of the revision of the whole fauna by the various contributors. We hope that the

users of this Synopsis will understand the advantages of this presentation rather than its disadvantages. We hope to present in a second step electronic interactive keys for genera and species.

The Synopsis is designed to facilitate the identification process to non-specialists: all keys are illustrated, diagnostic characters in keys are chosen to minimize as far as possible the need for dissection.

We hope that this Synopsis will - step by step - constitute a significant contribution to the Census of Antarctic Marine Life (www.caml.aq) and the SCAR-Marine Biodiversity Information Network (www.scarmarbin.be) in the framework of the International Polar Year 2007-2008.

I wish to thank, also on behalf of the "Antarctic Amphipodologist Network":
- The Belgian Federal Science Policy for its support to the preparation of the Synopsis, through the BIANZO project (Biodiversity of the Antarctic Zoobenthos),
- The Royal Belgian Institute of Natural Sciences, and in particular Mrs C. Pisani, General Director, Dr J. Van Goethem, Head of Invertebrate Department, and Prof. K. Wouters, Editor of the Bulletin, for the publication as supplements of the "Bulletin de l'Institut Royal des Sciences Naturelles de Belgique",
- The Census of Marine Life (Albert P. Sloan Foundation, New York) for its support through the "Census of Antarctic Marine Life" (CAML) and SCAR-MarBIN.

Claude De Broyer
Editor
Institut royal des Sciences naturelles de Belgique,
Brussels, May 2007

Foreword to Volume 3

The initial Synopsis project primarily focused on the benthic fauna and did not intent to cover the pelagic Hyperiidea. However, in the context of the Census of Antarctic Marine Life and SCAR-MarBIN, it was felt useful to attempt covering the whole Antarctic amphipod fauna, and then to also catalogue the Hyperiidea, a key component of the Southern Ocean plankton.

INTRODUCTION

This is the third volume in a series of monographs cataloguing the amphipod fauna of the Southern Ocean. This catalogue encompasses the suborder Hyperiidea, an entirely pelagic and mostly oceanic group, often associated with gelatinous zooplankton (see Harbison *et al*. 1977; Madin & Harbison 1977; Laval 1980). Their association with gelatinous plankton makes laboratory and field studies very difficult and also complicates the study of their biogeography. Because of the lack of appreciation that hyperiideans are parasitoids, most previous distributional and ecological studies are of limited value, except for those species that are known to be less host dependent, such as *Themisto* and the Phrosinidae. Generally, the distributional studies of hyperiideans that take account of the host-parasite relationship remain to be done.

Hyperiidean amphipods are important marine crustacean zooplankters, ranking third (or fourth) in abundance behind the Copepoda and Euphausiacea (Shih 1982). Some species can be particularly abundant in cold waters, where they constitute an important food source for marine mammals, sea birds and fish (see Lavaniegos & Ohman 1999). The suborder is currently divided into two infraorders, the smaller-eyed (or eyes absent), mainly bathypelagic, Physosomata, and the generally larger-eyed, mainly epipelagic, Physocephalata. The latter, being epipelagic, are the most common hyperiideans in plankton collections. Collections from deeper waters (> 300 m) are still relatively rare and collections from depths greater than 1000 m are extremely rare. Most hyperiideans are entirely oceanic in habit with a worldwide distribution. Few are restricted to the Southern Ocean and the occurrence of others may be explained as being due to the influx of warmer water, or some may be deep-water species only inhabiting the colder deeper waters and hence may also be collected in the deeper waters of the Southern Ocean. However, there are a few species that seem to have an almost bi-polar distribution, which is more difficult to reconcile, and are worthy of more detailed taxonomic scrutiny. For example, *Primno macropa* was once considered to be a bi-polar species but Bowman (1985) demonstrated that this species is retricted to the Southern Hemisphere and that the Northern Hemisphere species is *Primno abyssalis*. Similarly, future studies may demonstrate that *Hyperia spinigera*, type locality Spitzbergen, is a strictly Northern Hemisphere species with *Hyperia antarctica* a valid Southern Hemisphere species (but see Thurston 1977).

The format of this catalogue follows that of De Broyer *et al*. (2007) and is compiled primarily from literature records with a few records of specimens from museum collections that have been examined by the senior author. However, researchers are directed to additional records on the SCAR-MarBIN website (www.scarmarbin.be. Species/browse taxonomy, enter taxon name). This data, mostly compiled by the Australian Antarctic Division, Hobart, Tasmania, could not be included because it is beyond the scope of the current work and relies on unpublished data but should be regarded a companion to this catalogue.

The following catalogue lists 74 species as having been recorded from the Southern Ocean *s.l.,* but only 15 are restricted to the region between the Subtropical Convergence and the Antarctic Continent. Several species are included on the basis of only one or two records and these should be treated as suspect pending verification of the identification and locality data. Another 20 species, not included in this catalogue, which have been recorded south of 40°S, and thus may be found in the Southern Ocean in the future, are listed in Appendix 1 for future reference. The catalogue comprises, for each species, a complete list of references with synonymy, detailed information on geographical and bathymetric distribution in the Southern Ocean *s.l.* and information on the worldwide distribution. Details on the type locality and location of type material is also provided for each species.

The application of geographical limits is more difficult for hyperiideans, because, being pelagic, the influx of cold water north or south can result in a range extension beyond normal limits; unlike the benthic gammarideans and caprellideans that may take longer to adapt and would not be affected by short-term changes in water currents. De Broyer *et al.* (2007) discuss some of the problems in trying to define the limits of biogeographic zones in the Southern Ocean. Similarly, depth distribution data is rarely precise because most records are from vertical hauls to the surface with opening-closing nets rarely used.

It is interesting to note that most Southern Ocean records are from around the Antarctic Peninsula and South of New Zealand, probably reflecting the level of research activity in the more accessible regions of Antarctica. There are few records from other sectors, particularly from the Indian Ocean Sector, apart from Prydz Bay which is an area studied extensively by the Australian Antarctic Division, Hobart, Tasmania.

In compiling any catalogue, such as this one, there will inevitably be some errors and omissions, especially to references listing hyperiideans as food of mammals, sea birds, fish etc. An additional problem is that this catalogue relies substantially on literature records and probably includes some mis-identifications. Thus, for some records it is important to re-examine historical material.

Material and methods

This catalogue is compiled from published literature records up to, and including, February 2009 and covers those species recorded from the Southern Ocean *sensu lato* within the SCAR-MarBIN/RAMS Geographic Scope (Fig. 1; Table 1). The location of the Antarctic Polar Front (Antarctic Convergence) and the sub-Tropical Front defining respectively the northern limits of the Antarctic and sub-Antarctic zones

is based on Orsi *et al.* (1995) modified for the Kerguelen region by Moore *et al.* (1999). Additional unpublished records of species recently identified in museum collections (by WZ) have also been incorporated into the catalogue, but we note that this is a limited record because there are major collections from the Southern Ocean in museums and allied institutions worldwide that remain to be sorted, identified and catalogued.

Taxonomic citations are complete, although it is recognised that there may be omissions of references in obscure journals, of which the authors are unaware, or of references listing hyperiideans as food of mammals, sea birds, fish etc. in vertebrate orientated or ecological journals.

Distribution and depth records in the Southern Ocean, including geographic co-ordinates when available, are compiled for each species from the literature and specimen labels/data sheets. Similarly, the worldwide distribution for each species is summarised, illustrating that most are oceanic in habit, having a widespread distribution in most of the world's oceans.

Information on the type locality is sourced from the literature and, for those species where the type-material is still extant, the data has mostly been confirmed by the examination of type specimens, often resulting in the provision of more detailed information. "Not found" means an unsuccessful attempt by the senior author or by museum authorities to locate type

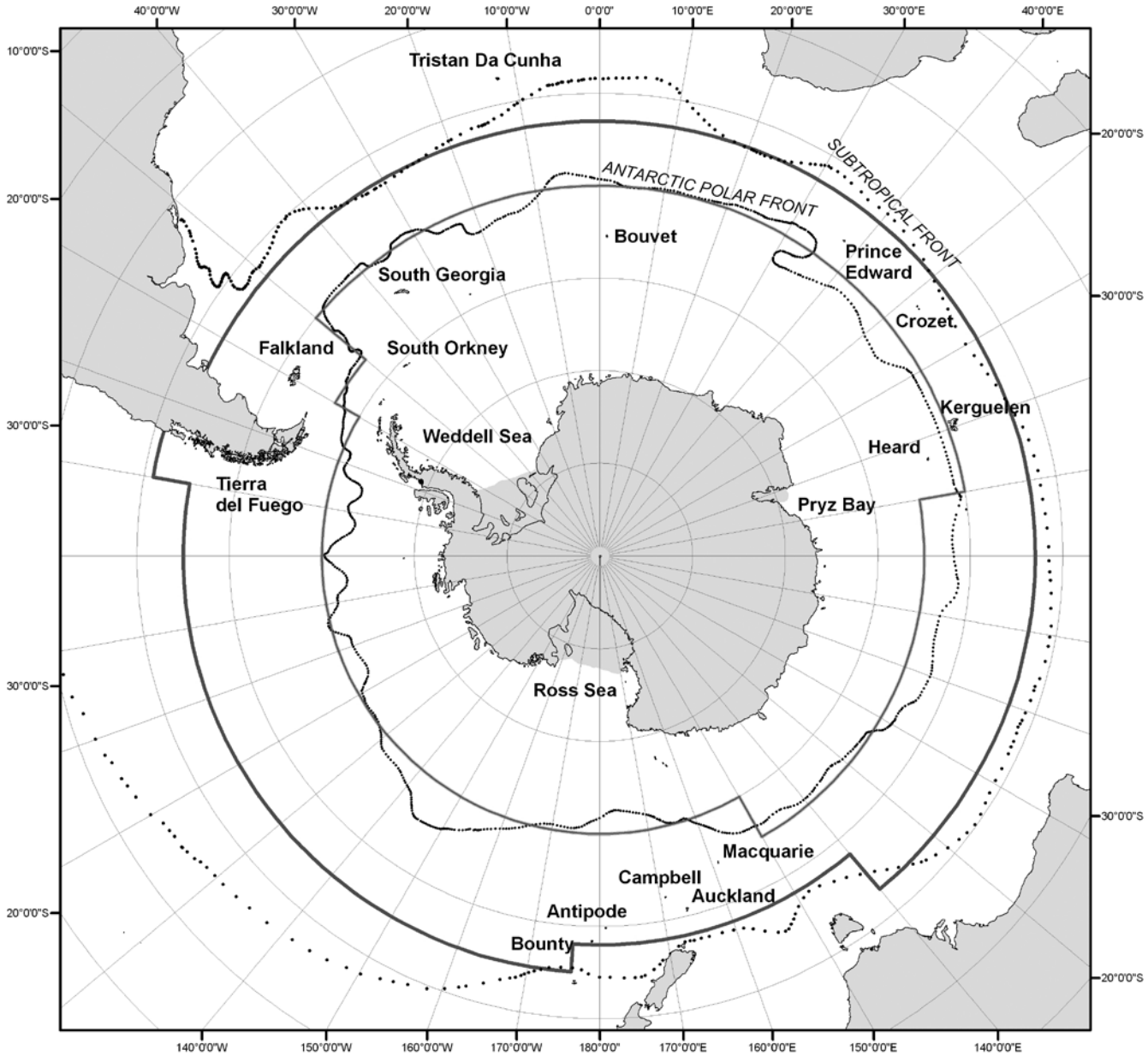

Figure 1. Map of the Southern Ocean with indication of the limits of the geographic scope of the Synopsis (see text and Table 1).

Table 1. Geographic Scope of the SCAR-MarBIN Register of Antarctic Marine Species (RAMS).

ANTARCTIC ZONE (Southern Ocean s.s.)	
- True northern limit: Antarctic Polar Front (located between 48°S to 63°S; convenient average limit: 55°S).	
- Operational northern limits:	
South Atlantic Sector	
- Between 60°W and 50°W: - Between 50°W and 30°E:	57°S (different from CCAMLR) 50°S (same as CCAMLR)
Indian Sector	
- Between 30°E and 80°E: - Between 80°E and 150°E:	50°S (different from CCAMLR) 55°S (same as CCAMLR)
South Pacific Sector	
- Between 150°E and 60°W:	60°S (same as CCAMLR)
SUB-ANTARCTIC ZONE	
- True northern limit: sub-Tropical Front (located between 30°S to 47°S; convenient average limit: 43°S).	
- Operational northern limits:	
South Atlantic and Indian Sectors	
- Between 65°W and 140°E:	43°S
Pacific Sector	
- Between 140°E and 176°W: - Between 176°W and 80°W: - Between 80°W and 72°W:	48°S 45°S 41°S

material. Acronyms for museums and institutions that are depositories of type-material are listed in Table 2. Other abbreviations used are "m" = metres and "mw" = metres of wire (attached to sampling device).

In this catalogue we have adopted the custom of crediting authorship of higher taxon names (family and above) to the authors who first proposed the new name. This custom is advocated because it enables researchers to relate the establishment of the name to the relevant literature. The alternative of crediting higher taxon names to the original author of the group ("Principle of Coordination"; Article 36, ICZN 1999) results in the loss of bibliographic and historic information. Martin and Davis (2001) discuss this controversy at length, noting that the International Code of Zoological Nomenclature (1999) "does not fully regulate the names of taxa above the family group".

Notes on species

Vibilia propinqua Stebbing, 1888. Southern Ocean records of this species by Walker (1907) and Hempel *et al*. (1983) are a mis-identification of *Vibilia antarctica* Stebbing, 1888 according to Chilton (1912), K.H. Barnard (1930) and Weigmann-Haass (1990). Thus, this species has not been included in this catalogue.

Vibilia stebbingi Behning & Woltereck, 1912. All previous Southern Ocean records of this species, except for those of Kane (1962), have been confirmed to be a mis-identification of *Vibilia antarctica* Stebbing, 1888. It is therefore likely that, following Hurley (1960a), Kane also mis-identified her specimens. Thus, a re-examination of these specimens may result in the exclusion of *V. stebbingi* from the Southern Ocean fauna.

Table 2. Acronyms for museums and institutions, depositories of type-material

Acronym	Institution
ANSP, Philadelphia	Academy of Natural Sciences, Philadelphia, Pennsylvania, USA. Formerly: Museum of the National Academy of Sciences, Philadelphia.
MOM, Monaco	Musée Océanographique de Monaco, Monaco.
MUG, Moscow	Zoological Museum of Moscow State University, Moscow, Russia.
NHM, London.	The Natural History Museum, London, UK. Formerly: British Museum (Natural History), (BMNH).
NRS, Stockholm.	Naturhistorika Riksmuseet (Swedish Museum of Natural History), Stockholm, Sweden.
SAMA, Adelaide.	The South Australian Museum, Adelaide, South Australia.
USNM, Washington.	US National Museum of Natural History, Smithsonian Institution, Washington DC, USA.
ZMB, Berlin.	Museum für Naturkunde der Humboldt Universität, Berlin, Germany.
ZMUC, Copenhagen.	Zoologisk Museum, University of Copenhagen, Denmark.

Hyperoche medusarum (Krøyer, 1838). The genus *Hyperoche* is currently under review by the senior author. Research to date indicates that this is most likely a Northern Hemisphere species, with records from the Southern Ocean proving to be mis-identifications of *Hyperoche luetkenides* Walker, 1906. Thus, this species has not been included in this catalogue.

Themisto gracilipes (Norman, 1869) (= *T. gaudichaudii* Guérin, 1925). Records of this species north of the current geographic scope of the Southern Ocean may refer to *Themisto australis* Stebbing, 1888; e.g. Hurley (1955), Kane (1963b), Nagata (1986). The distribution of *T. gaudichaudii* is currently restricted to the Southern Ocean.

Themisto gaudichaudii Guérin, 1925. Schneppenheim & Weigmann-Haass (1986) demonstrated that this species is restricted to the Southern Hemisphere and that Northern Hemisphere records refer to *Themisto compressa* Goës, 1865. Thus, all Northern Hemisphere records of *T. gaudichaudii* have been excluded from this catalogue.

Dairella. Zeidler (2004b) demonstrated that this genus is monotypic, with *D. latissima* Bovallius, 1887 a junior synonym of *D. californica* (Bovallius, 1885).

Phronima species. All records in this catalogue have taken into account the corrections by Shih (1991a).

Phronima stebbingi Vosseler, 1900. All previous references credit Vosseler (1901) with the species name, however, in an earlier publication Vosseler (1900) introduces this species as new, in a discussion on the secondary sexual characteristics of the genus, and distinguishes it from other species in a number of characters. Thus, the correct citation for *P. stebbingi* is Vosseler, 1900.

Primno macropa Guérin-Méneville, 1836. Bowman (1985) demonstrated that this species is restricted to the Southern Hemisphere and that the Northern Hemisphere records refer to *Primno abyssalis* (Bowman, 1968). Thus, all Northern Hemisphere records of *P. macropa* have been excluded from this catalogue.

Lycaea pauli Stebbing, 1888. The genus *Lycaea* is badly in need of taxonomic revision. The validity of *L. pauli* needs to be verified to exclude it from the *Lycaea pulex* Marion, 1874 species complex.

Hemityphis tenuimanus Claus, 1879. Zeidler (1996) re-examined the type of *Typhis rapax* Milne Edwards, 1830 and found that it is a specimen of *Parapronoe crustulum* Claus, 1879. Thus, the correct name for this species is *H. tenuimanus* and not *H. rapax*, as used by many previous authors. Zeidler (1998) also examined the type of ***Hemiscelus diplochelatus*** Stewart, 1913 and determined that it is a juvenile of *H. tenuimanus*.

Acknowledgements

The authors are very grateful to the following for providing access to collections (for WZ) or for the provision of specimen information. At the ANSP, Dr E.E. Spamer for his hospitality and collection access; at the MOM, Mr. M. Bruni for information on type specimens; at the NHM, Ms. M. Lowe and Mr. P. Clarke for collection access; at the NRS, Ms. K. Sindemark for collection access; at the USNM, Ms. J. Clarke-Walker for collection access and Dr. C.F. Bright and Ms. E. Nelson for specimen information; at the ZMB, Dr. O. Coleman for his hospitality and collection access and also Dr. H. Gruner, who originally sorted the *Dana* collections thus making them accessible; at the ZMUC, Dr. J. Olesen for collection access and for his expertise in gaining a Carlsberg Foundation grant for WZ to travel to the ZMUC in 2002, 2003 and 2007, and also Mr. B. Bisballe for specimen information.

Russ Hopcroft (University of Alaska, Fairbanks), Dhugal Lindsay (Japan Marine Science & Technology Center, Tokyo), Martin Rauschert (formerly at Alfred Wegener Institut, Bremerhaven), Volker Siegel (Institut für Seefischerei, Hamburg) kindly provided the quality colour pictures of the most common species.

The South Australian Museum supported WZ to enable him to examine collections in European and North American museums and a prolonged stay at the Smithsonian (USNM) in 1993 was supported by a Smithsonian Fellowship. Special acknowlegement is due to the Carlsberg Foundation for providing funds for WZ to study the collections at the ZMUC during July 2002, September 2003 and July/August 2007. Finally the compilation of this catalogue was made possible by a SCAR-MarBIN/CAML Mini-Grant from the TOTAL Foundation to WZ.

At IRScNB, Jiayun Zhou efficiently contributed to the completion of the database and the production of GIS maps, Thierry Kuyken designed the lay-out, and Henri Robert and Nicole Moortgat contributed to the preparation of the manuscript. CDB was supported by the Antarctic Research Programme of the Belgian Federal Science Policy.

This is contribution n° 26 to the Census of Antarctic Marine Life (CAML).

CATALOGUE

Suborder HYPERIIDEA Milne Edwards, 1830

Infraorder PHYSOSOMATA Pirlot, 1929

Superfamily ARCHAEOSCINOIDEA Vinogradov, Volkov & Semenova, 1982

Family ARCHAEOSCINIDAE Stebbing, 1904

Archaeoscina steenstrupi (Bovallius, 1885)

Bovallius, 1885b: 12-15, pl. 2, figs. 13, 14, (*Mimonectes Steenstrupii*).
Bovallius, 1887a: 15, (*Mimonectes Steenstrupii*).
Bovallius, 1887b: 558-559, pl. 47, figs. 111-115, (*Mimonectes Steenstrupii*).
Hansen, 1888: 56, (*Mimonectes Steenstrupii*).
Bovallius, 1889: 70-73, pl. 6, figs. 11-21, (*Mimonectes Steenstrupii*).
Stebbing, 1904: 19-20, pl. 3A, (*Archaeoscina Bonnieri*).
Woltereck, 1904b: 622 (key), (*Mimonectes Steenstrupii*).
Woltereck, 1904c: 629 (key), (*Mimonectes Steenstrupii)*.
Woltereck, 1906a: 190-191, figs. 1-4, (*Micromimonectes irene*).
Woltereck, 1906a: 191-193, figs. 5, 6, (*Micromimonectes typus Physosoma*).
Woltereck, 1906a: 193-194, (*Micromimonectes Steenstrupii*).
Woltereck, 1909: 154, pl. 5, fig. 12, (*Micromimonectes irene*).
Stephensen, 1913: 96, (*Mimonectes Steenstrupii*).
Stephensen, 1923a: 7 (part), (*Mimonectes Steenstrupii*).
Schellenberg, 1927: 600, fig. 11, (*Mimonectes steenstrupi*).
K.H. Barnard, 1932: 250-251, fig. 157, (*Micromimonectes irene*).
Stephensen & Pirlot, 1931: 534-538, figs. 13, 14, (*Micromimonectes steenstrupi*).
Stephensen, 1932a: 375 (list), (*Micromimonectes steenstrupi*).
Stephensen, 1933: 64-66, figs. 29-30, (*Micromimonectes steenstrupi*).
Pirlot, 1939a: 18-19.
Vinogradov, 1956: 200-201, 213 (map), figs. 2, 3.
Vinogradov, 1962: 2.
Hurley, 1969: 33, pl. 19, (map 8).
Vinogradov, 1970: 384 (table).
Vinogradov *et al*., 1982: 44-46, fig. 3.
De Broyer & Jazdzewski, 1993: 106 (list).
Vinogradov, 1999: 1169, fig. 4.34.
Vinogradov *et al*., 2004: 9, 25 (table).
Zeidler, 2006: 9-13, figs. 1, 2.

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932).
Pacific Sector: Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Found in all the world's oceans, except the Mediterranean Sea. In the Atlantic it ranges from 65°N to 43°S. In the Indian Ocean it is recorded only from the tropical waters near Sumatra. In the north-west Pacific it extends to 60°N and in the eastern Pacific it ranges from 54°N to 27°S. Recorded from catches from depths of 200-500 m and with 5000 mw to the surface.
***Type locality*:** North Atlantic, mouth of Davis Strait.
***Type material location*:** One syntype female is in the ZMUC, Copenhagen (CRU-8250); from just east of Davis Strait (57°45'N 43°53'W).

Paralanceola anomala K.H. Barnard, 1930

(Fig. 2)

K.H. Barnard, 1930: 398-400, fig. 52.
Hurley, 1969: 33, pl. 18, (map 1).
Vinogradov *et al*., 1982: 47-48, fig. 4.
De Broyer & Jazdzewski, 1993: 106 (list).
Zeidler, 2006: 21-25, figs. 6, 7.

***Southern Ocean distribution*:**
Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 282 (71°41'S 166°47'W), 0-1000 m; (K.H. Barnard 1930).
***Worldwide distribution*:**
Known only from the type locality.
***Type locality*:** *Terra Nova* stn. 282, as above.
***Type material location*:** The unique holotype male is in the NHM, London (1954.5.1.1).

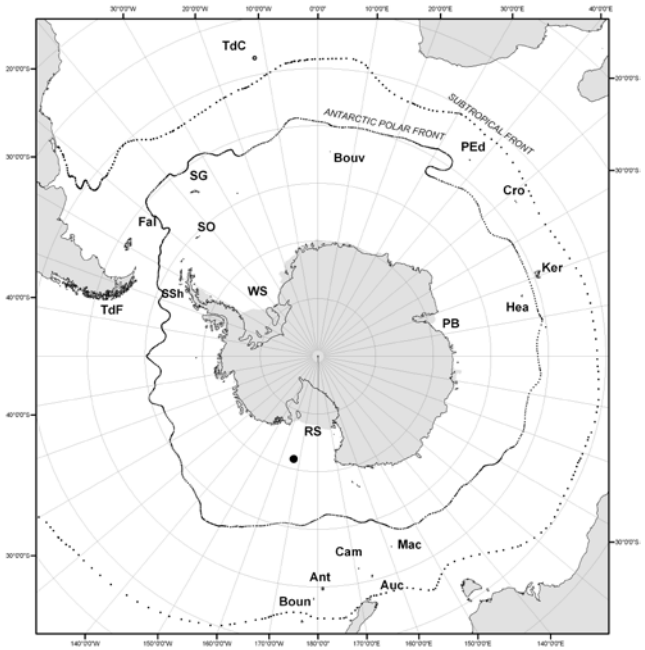

Figure 2. Distribution records of *Paralanceola anomala*.

Superfamily SCINOIDEA Bowman & Gruner, 1973

Family MIMONECTIDAE Bovallius, 1885

Mimonectes sphaericus Bovallius, 1885

Bovallius, 1885b: 11-12, pl. 2, fig. 12.
Bovallius, 1887a: 15.
Bovallius, 1889: 60 (key), 66-69, pl. 6, figs. 1-10.
Woltereck, 1904a: 558.
Woltereck, 1904b: 622-624.
Woltereck, 1904b: 622-625, fig. 1 (female), (*Sphaeromimonectes valdiviae*).
Woltereck, 1904c: 629 (key).
Woltereck, 1904c: 629, (*Sphaeromimonectes valdiviae*).
Woltereck, 1906b: 868-869, fig. 6.5b, (*Sphaeromimonectes valdiviae*).
Woltereck, 1909: 148-150, pl. 1, fig. 4; pl. 2, fig. 6 (male), (*Sphaeromimonectes valdiviae pacifica*).
Woltereck, 1909: 148-150, pl. 2, fig. 7, (*Sphaeromimonectes valdiviae* forma *typica*).
Woltereck, 1909: pl. 2, fig. 7 (female), (*Sphaeromimonectes valdiviae*).
Stephensen, 1923a: 6.
Schellenberg, 1927: 600, fig. 10.
Woltereck,1927:82-84,figs.23,24b,25b,(*Sphaeromimonectes valdiviae*).
Stephensen & Pirlot, 1931: 516-519, figs. v, vi.
Stephensen & Pirlot, 1931: 530, (*Mimonectes valdiviae*).
Pirlot, 1932: 22-23, fig. 14, (*Mimonectes valdiviae*).
Pirlot, 1939a: 23, (*Mimonectes valdiviae*).
Behning, 1939: 354 (table), 356-357, fig. 4.
Shoemaker, 1945b: 219, fig. 24.
Vinogradov, 1956: 201.
Vinogradov, 1957: 165-166, 179 (table).
Vinogradov, 1960a: 218.
Vinogradov, 1962: 13.
Vinogradov, 1964: 126.
Hurley, 1969: 33, pl. 19, (map 8).
Vinogradov, 1970: 385 (table).
Vinogradov *et al*., 1982: 113 (key), 114-116, figs. 46, 47.
Barkhatov & Vinogradov, 1988: 245 (table).
Vinogradov, 1992: 325.
De Broyer & Jazdzewski, 1993: 106 (list).
Vinogradov, 1999: 1147 (table), 1171 (key), 1172, fig. 4.45.
Vinogradov *et al*. 2004: 9, 25 (table).
Gasca *et al*. 2006: 239 (table), fig. 3d.

***Southern Ocean distribution*:**
Pacific Sector: Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Relatively uncommon, found in the tropical and temperate regions of all the world's oceans, except the Mediterranean Sea. In the Atlantic, previous records are only from the northern part, from as far north as Greenland to tropical regions but there are specimens from the south-eastern part in the ZMUC. It seems to be rare in the Indian Ocean with only one previous literature record (Vinogradov 1964), mainly from tropical regions (06°N to 30°S); the ZMUC also has material collected from off Sumatra. In the Pacific it has been recorded from various regions ranging from the Bering Sea/ Kuril-Kamchatka region, through the tropics, to the Tasman Sea and the Southern Ocean, as above. Occasionally found at the surface but is usually found in the 200-2000 m range.
***Type locality*:** North Atlantic Ocean, near the Canary Islands (28°N 21'W).
***Type material*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Family PROSCINIDAE Pirlot, 1933

Mimoscina setosa (K.H. Barnard, 1930)

(Fig. 3)

K.H. Barnard, 1930: 395-397, fig. 51, (*Parascina setosa*).
Hurley, 1969: 33, pl. 18 (map 2).
Vinogradov, 1962: 10, figs. 8, 9.
Vinogradov *et al*., 1982: 129 (key), 130-132, fig. 58.
De Broyer & Jazdzewski, 1993: 106 (list).

***Southern Ocean distribution*:**
Indian Sector: Davis Sea, *Ob* stn. 111 (64°25'S 92°52'E), 0-2700 m; (Vinogradov 1962).
Pacific Sector: Near the Ross Sea, *Terra Nova*, stn. 178 (67°23'S 177°59'W), 0-500 m; (K.H. Barnard 1930) and

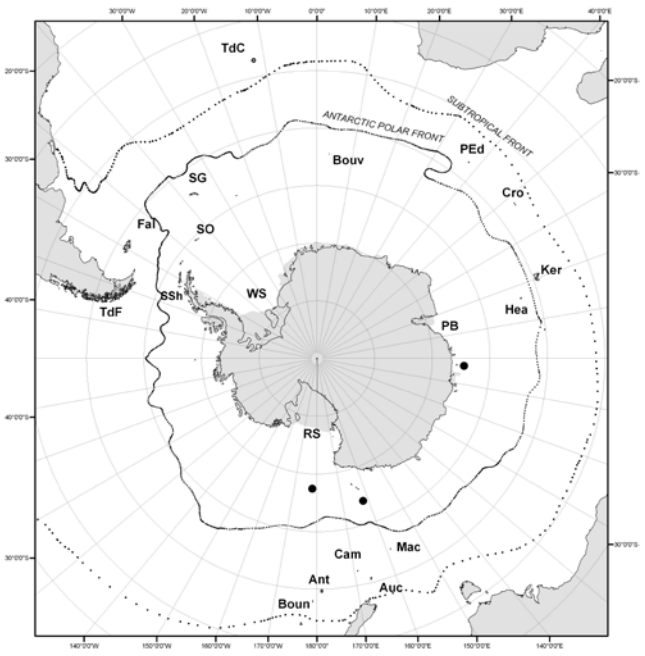

Figure 3. Distribution records of *Mimoscina setosa.*

near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known from only three specimens from the above Southern Ocean localities.
***Type locality*:** Near the Ross Sea, *Terra Nova* stn. 178, as above.
***Type material location*:** The unique holotype male is in the NHM, London (1954.4.30.1); on one microscope slide

Family SCINIDAE Stebbing, 1888

Ctenoscina brevicaudata Wagler, 1926

Wagler, 1926: 435-439, figs. 57-59.
Hurley, 1956: 7 (key).
Vinogradov, 1957: 171 (key), 176, 179 (table), fig. 17.
Vinogradov, 1960a: 226 (key).
Vinogradov, 1962: 15.
Hurley, 1969: 33, pl. 18, (map 2).
Dick, 1970: 29 (key), 51, fig. 3 (part).
Vinogradov, 1970: 385 (table).
Thurston, 1976: 384, 385 (table), 401.
Vinogradov *et al*., 1982: 186-188, fig. 94.
De Broyer & Jazdzewski, 1993: 106-107 (list).
Vinogradov, 1999: 1145 (table), 1172, fig. 4.47.

***Southern Ocean distribution*:**
Indian Sector: Off South Africa (55°27'S 28°59'E), 0-1000 m; (Wagler 1926) and off Wilkes Land, *Ob* stn. 29 (65°06'S 111°24'E), 0-2000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known from only nine specimens, from the type localities and Southern Ocean as detailed here, with one additional record from the Atlantic, from near the Canary Islands, in a day catch from 700 m (Thurston 1976).
***Type locality*:** Holotype not designated. Syntypes collected from the South Atlantic, off South Africa, *Valdivia* stn. 91 (33°23'S 16°19'E), 0-2000 m; the Indian Ocean off South Africa, *Valdivia* stn. 142 (55°27'S 28°59'E), 0-1000 m and the tropical Indian Ocean near the Maldives, *Valdivia* stn. 218 (02°29'N 76°49'E), 0-2000 m.
***Type material location*:** Some syntypes are in the ZMB, Berlin (22354).

Scina antarctica Wagler, 1926

(Fig. 4)

Wagler, 1926: 381-384, 445 (key), fig. 33.
Wagler, 1927: 105-107, 110 (table), fig. 11, & map.
K.H. Barnard, 1930: 401.
Behning, 1939: 354 (table), 359; (? = *Scina rattrayi keilhacki*).
Hurley, 1956: 7 (key).
Vinogradov, 1957: 171 (key).
Vinogradov, 1960a: 226 (key).
Vinogradov, 1962: 13-14.
Hurley, 1969: 33, pl. 18, (map 2).
Dick, 1970: 33 (key).
Dinofrio, 1977: 6 (list), 7 (key), 11-12, 28 (table), pl. 1, fig. 2; pl. 2, figs. 7, 9.
Vinogradov *et al.*, 1982: 137 (key), 160-161, fig. 75.
Jazdzewski & Presler, 1988: 63 (table), 66, fig. 1.
Zeidler, 1990: 197 (key).
De Broyer & Jazdzewski, 1993: 107 (list).
Vinogradov & Semenova, 1996: 617.
Dinofrio, 1997: 4,7.

***Southern Ocean distribution*:**
Atlantic Sector: Due south of South Africa, *Valdivia* stn. 132 (55°20'S 05°15'E), 2000-0 m; stn. 136 (55°57'S 16°14'E), 2000-0 m & stn. 139 (55°01'S 21°34'E), 1500-0 m; (Wagler 1926). Bransfield Strait, Drake Passage, and Weddell Sea (Dinofrio 1977). Off South Georgia, *PAMRE I 1975-76*, Profesor Siedlecki (Jazdzewski & Presler 1988). Weddell Sea, *Irizar 1985*, stn.17 (65°00'S 48°40'W), 0-200 m, (Dinofrio 1997).
Indian Sector: Due south of South Africa, *Valdivia* stn. 142 (55°27'S 28°58'E), 1000-0 m; stn. 145 (59°10'S 40°13'E), 1500-0 m & stn. 149 (62°26'S 53°21'E), 1500-0 m; (Wagler, 1926). Off Enderby Land, *Gauss* stns. (61°58'S 95°01'E, 0-2000 m; 65°32'S 85°30'E, 0-400 m; 65°03'S 85°04'E, 0-1200 m; 64°35'S 85°25'E, 0-400 m; 64°29'S 85°27'E, 0-3000 m; 65°02'S 81°14'E, 0-400 m; 65°18'S 80°27'E, 0-2000 m; 65°15'S 80°00'E, 3420 m); (Wagler 1927). Off South-Western Australia, *Ob* stn 34 (64°21'S 115°55'E), 0-1980 m & stn. 413 (58°58'S 109°21'E), 0-2180 m; (Vinogradov 1962).

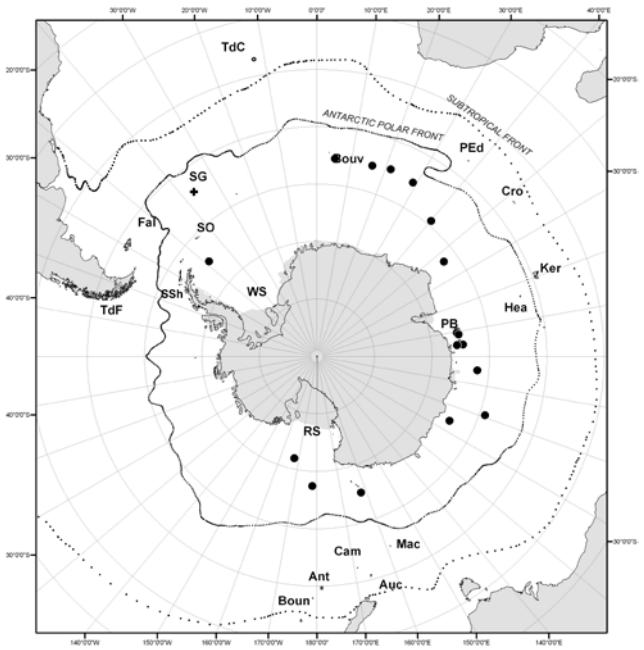

Figure 4. Distribution records of *Scina antarctica*.
+ : approximate coordinates.

Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 178 (67°23'S 177°59'W), 0-500 m & stn. 284 (71°49'S 167°32'W), 80 m; (K.H. Barnard 1930). Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962).

***Worldwide distribution*:**
Relatively common in Antarctic waters ranging from the Antarctic Convergence to the Antarctic Continent. Other records from the southern Atlantic and the tropical regions of the Indian Ocean (between the Seychelles and the Chagos Archipelago) are most likely as a result of the influx of Antarctic deep waters. Most records are from catches from 1000-2000 m to the surface.

***Type locality*:** Holotype not designated. Syntypes collected from the Antarctic waters of the Atlantic and Indian Ocean Sectors, as detailed above, and from the Indian Ocean between the Seychelles and the Chagos Archipelago, *Valdivia* stn. 228 (02°38'S 65°59'E), 2500-0 m & stn. 230 (02°43'S 61°12'E), 1500-0 m.

***Type material location*:** Some syntypes are in the ZMB, Berlin (22341).

Scina borealis (Sars, 1882)

Sars, 1882: 76-77, pl. 3, figs. 1, 1a,b, (*Clydonia borealis*).
Bovallius, 1885a: 14, (*Tyro Clausii*).
Bovallius, 1887a: 4, (*Tyro borealis*).
Bovallius, 1887a: 4, (*Tyro Clausi*).
Bovallius, 1887b: 551-552, (*Tyro borealis*).
Bovallius, 1887b: 552, pl. 40, figs. 1-3, (*Tyro Clausi*).
Bovallius, 1887c: 6 (key), 16-18, text fig., (*Tyro borealis*).
Bovallius, 1887c: 6 (key), 18-20, pl. 2, figs. 19-28, (*Tyro Clausi*).
Chun, 1889b: 309.
Chun, 1889b: 309, (*Scina Clausi*).
Sars, 1895: 20, pl. 8.
Bonnier, 1896: 611-612, pl. 35, fig. 2.
Garbowski, 1896: 99.
Norman, 1900: 135.
Sars, 1900: 19.
Vosseler, 1901: 104-105, (*Scina Clausi*).
Fowler, 1903: 128.
Lo Bianco, 1903: 142.
Fowler, 1904: 48, 50/51 (list/table).
Stebbing, 1904: 23 (key), 28.
Stebbing, 1904: 23 (key), (*Scina Clausii*).
Chevreux, 1905: 1 (list).
Tattersall, 1906: 4 (list), 9-10.
Walker, 1909: 50 (list), 53.
Stephensen, 1918: 30-31, chart 3.
Chevreux, 1919: 16-17, 19 (table).
Chevreux, 1919: 20, (*Scina Clausi*).
Stephensen, 1923a: 10.
Stephensen, 1923a: 10, (*Scina Clausii*).
Stephensen, 1923b: 8.
Chevreux & Fage, 1925: 378 (key), 380-382, fig. 387.
Wagler, 1926: 337-344, 444 (key), figs. 9-11.
Schellenberg, 1927: 604 (key), 612-613, fig. 21.
Wagler, 1927: 94-95, 110-111 (table), fig. 4.
Stephensen, 1928: 34, fig. 5 (4-9).
Pirlot, 1929: 63 (key), 78-79.
Pirlot, 1929: 63 (key), (*Scina Clausi*).
Stephensen, 1929: 41, fig. 13,1.
K.H. Barnard, 1930: 401.
Pirlot, 1930: 8-9.
K.H. Barnard, 1932: 260.
Stephensen, 1932a: 376.
Stephensen, 1933: 66.
Chevreux, 1935: 143-145.
K.H. Barnard, 1937: 181.
Behning, 1939: 354 (table), 359.
Thorsteinson, 1941: 86-87, pl. 8, fig. 78.
Stephensen, 1942: 468, 504-505 (table).
Stephensen, 1944: 15.
Shoemaker, 1945b: 230.
Hurley, 1955: 124 (key).
Reid, 1955: 12-13.
Hurley, 1956: 7 (key), 8-9.
Vinogradov, 1956: 206.
Vinogradov, 1957: 171 (key), 172-173, 179 (table).
Irie, 1959: table 4.
Vinogradov, 1960a: 225 (key), 231.
Vinogradov, 1962: 12.
Siegfried, 1963: 6 (list), 8.
Vinogradov, 1964: 131-132, fig. 18 (map).
Hurley, 1969: 33, pl. 18 (map 2).
Lewis & Fish, 1969: 8.
Dick, 1970: 31 (fig. 3 – part), 32 (key), 47-48.
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 41 (list), 45 (key), 46-47, fig. 3 (map).
Sanger, 1973: passim.
Sanger, 1974: 3, 4 (table).
Thurston, 1976: passim.
Dinofrio, 1977: 6 (list), 7 (key), 7-8, 28 (table), pl. 1, fig. 1.
Brusca, 1978: 282 (key & table), 285-286, fig. 4.
Shih & Laubitz, 1978: 50, 51 (table).
Brusca, 1981a: 8 (list), 14 (key), 38, fig. 2e, 2j.
Herring, 1981: 162, 164, 165 (table).
Vinogradov *et al*., 1982: 136 (key), 146-147, fig. 65.
Vinogradov, 1990a: 52-53.
Zeidler, 1990: 168, 172-173, 198 (key), fig. 1A, 1B.
Vinogradov, 1991: 261 (table).
Gislason & Astthorsson, 1992: 221 (table), 223.
Vinogradov, 1992: 325.
De Broyer & Jazdzewski, 1993: 107 (list).
Yuanshao, 1993: 518, 519 (table), 52 (key).
Lin & Chen, 1994: 118 (table).
Shih & Chen, 1995: 11 (key), 12-14, figs. 3, 4.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 3-6, figs. 1, 2.
Lavaniegos & Ohman, 1999: 493 (table), 502 (table), 507.
Vinogradov, 1999: 1148 (table), 1173, fig. 4.48.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).

Gasca, 2003a: 307 (table).
Gates *et al*., 2003: 361, text fig.
Gasca, 2004: 997 (table), 999 (table).
Vinogradov *et al*., 2004: 9 (list), 25 (table).
Zelickman, 2005: xv (list).
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 120 (table), 122.
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: North of Bouvet Island, *Valdivia* stn. 123 (49°07'S 08°40'E), 400-250 m and east of the South Sandwich Islands, *Valdivia* stn. 135 (56°30'S 14°29'E), 1500-0 m; (Wagler 1926). Bransfield Strait, South Orkney Islands, Weddell Sea (Dinofrio 1977).
Indian Sector: Off South Africa, *Valdivia* stn. 142 (55°27'S 28°58'E), 100-0 m & stn. 151 (63°32'S 54°46'E), various samples from 1600 to 300 m; (Wagler 1926). Near the Davis Sea, *Gauss* stn. (64°29'S 85°27'E) 3000 m; (Wagler 1927). Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m; (Vinogradov 1962).
Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 178 (67°23'S 177°59'W), 0-500 m; stn. 270 (69°51'S 166°17'W), 0-600 m; stn. 276 (71°41'S 166°47'W), 0-1750 m & stn. 285 71°49'S 197°32'W), 0-600 m; (K.H. Barnard 1930). Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m & stn. 367 (63°46'S 165°43'E), 1100-2200 m; (Vinogradov 1962).
***Worldwide distribution*:**
Very common in the cold-water, temperate and even tropical regions of all the world's oceans, including the Mediterranean Sea; ranging from Arctic regions to the Antarctic Continent, as above. In the Atlantic it is found as far north as 80°N. In the Indian Ocean it is found from the Gulf of Aden through the tropical regions to the Antarctic Continent, as above. In the Pacific it is relatively common, ranging from the Bering Sea through tropical regions to Antarctic waters. It is found in a wide range of depths, from near-surface waters to 3000 m but seems to be more common in the 200-1000 m layer.
***Type locality*:** Norwegian Sea, near the Lofoten Peninsula.
***Type material location*:** Unknown.

Scina crassicornis (Fabricius, 1775)

Fabricius, 1775: 415, (*Astacus crassicornis*).
Fabricius, 1793: 481, (*Astacus crassicornis*).
Herbst, 1796: 134, (*Cancer Gammarellus crassicornis*).
Milne Edwards, 1830: 387, (*Hyperia cornigera*).
Milne Edwards, 1840: 80, (*Tyro cornigera*).
Dana, 1852: 219, (*Clydonia gracilis*).
Dana, 1852: 219, (*Clydonia longipes*).
Dana, 1853: 832, pl. 55, figs. 6a-b, (*Clydonia gracilis*).
Dana, 1853: 835, pl. 55, fig. 7a, 7b, (*Clydonia longipes*).
Bate, 1862: 284, pl. 47, fig. 8, (*Clydonia gracilis*).
Bate, 1862: 284, pl. 47, fig. 9, (*Clydonia longipes*).
Bate, 1862: 308-309, (*Tyro cornigera*).
Streets, 1877: 124, (*Clydonia longipes*).
Bovallius, 1885a: 14, (*Tyro atlantica*).
Bovallius, 1885a: 15, pl. 1, figs. 3, 3a, (*Tyro Sarsii*).
Bovallius, 1887a: 3, (*Tyro cornigera*).
Bovallius, 1887a: 4, (*Tyro atlantica*).
Bovallius, 1887a: 4, (*Tyro gracilis*).
Bovallius, 1887a: 4, (*Tyro Sarsii*).
Bovallius, 1887a: 5, (*Tyro longipes*).
Bovallius, 1887c: 6 (key), 7-8, (*Tyro cornigera*).
Bovallius, 1887c: 6 (key), 8-9, text fig., (*Tyro gracilis*).
Bovallius, 1887c: 6 (key), 9-13, pl. 1, figs. 1-17; pl. 2, figs. 1-10, (*Tyro Sarsi*).
Bovallius, 1887c: 6 (key), 13-14, pl. 2, figs. 11-18, (*Tyro atlantica*).
Bovallius, 1887c: 6 (key), 15-16, text fig., (*Tyro longipes*).
Stebbing, 1888: 365, (*Scina atlantica*).
Stebbing, 1888: 1273-1277, pl. 146, (*Scina cornigera*).
Stebbing, 1888: 1277.
Stebbing, 1895: 365, (*Scina cornigera*).
Garbowski, 1896: 103-104 (table), 107 (table), (*Scina atlantica*).
Garbowski, 1896: 99 (key), 103-107, pl. 1, fig. 2; pl. 3, figs. 19-33; pls. 4-7; pl. 8, figs. 97-109, (*Scina Edwardsi*).
Chevreux, 1900: 121-122, (*Scina cornigera*).
Vosseler, 1901: 103-104, (*Scina Edwardsi*).
Lo Bianco, 1902: 416, 422, 423, 446, (*Scina cornigera*).
Lo Bianco, 1903: 142, 146, 197, table facing p.278, (*Scina Edwarsii*).
Fowler, 1904: 47-48, 50/51 (list/table).
Stebbing, 1904: 23 (key), 24-25.
Chevreux, 1905: 1 (list).
Tattersall, 1906: 3 (list), 7.
Walker, 1909: 50 (list), 52, (*Scina cornigera*).
Stephensen, 1918: 19-27, chart 2.
Chevreux, 1919: 10-11.
Chevreux, 1919: 20, (*Scina longipes*).
Stephensen, 1923a: 9.
Spandl, 1924b: 263, (*Scina edwardsi*).
Chevreux & Fage, 1925: 378-379, fig. 335.
Wagler, 1926: 324-328, 443 (key), figs. 1-3.
Schellenberg, 1927: 604 (key), 605-606, fig. 4.
Wagler, 1927: 90-92, 110-111 (table), fig. 1.
Pirlot, 1929: 62 (key), 64-66.
Pirlot, 1929: 62 (key), (*Scina gracilis*).
K.H. Barnard, 1930: 401.
K.H. Barnard, 1932: 258-259.
Stephensen, 1932a: 376.
Chevreux, 1935: 146-148.
K.H. Barnard, 1937: 181.
Shoemaker, 1945b: 228.
Shoemaker, 1945b: 228-230, fig. 31, (*Scina crassicornis* var. *bermudensis*).
Hurley, 1955: 124 (key).
Reid, 1955: 12.
Hurley, 1956: 6 (key), 8.
Vinogradov, 1957: 171 (key), 171-172, 179 (table), fig. 19.
Hurley, 1960b: 278, 284 (table).

Vinogradov, 1960a: 224 (key), 227-228, figs. 15a, 15b, 16.
Siegfried, 1963: 6 (list), 8.
Vinogradov, 1964: 130, fig. 17 (map).
Hurley, 1969: 33, pl. 18 (map 2).
Dick, 1970: 32 (key), 31 (fig. 3-part), 48.
Yoo, 1971b: 41 (list), 45 (key), 46, fig. 1 (map).
Lorz & Pearcy, 1975: 1444 (table), (*Scina crassicornis* var. *bermudensis*).
Thurston, 1976: 393-395, tables pp. 384, 385, 390, 463 & 464.
Shulenberger, 1977a: 378 (list), 381 (table).
Brusca, 1978: 282 (key & table), 283-283, fig. 1.
Shulenberger, 1978: 613.
Shulenberger, 1979: 298 (table).
Brusca, 1981a: 8 (list), 14 (key), 38, fig. 2d, 2i.
Herring, 1981: passim.
Vinogradov *et al*., 1982: 135 (key), 138-139, fig. 59.
Young & Anderson, 1987: 712, 716 (table), 718 (table), fig. 1a.
Young, 1989: 715 (table), 717 (table).
Vinogradov, 1990a: 51-52.
Zeidler, 1990: 173, 198 (key), fig. 1C, 1D.
Vinogradov, 1991: 261 (table).
Zeidler, 1991: 127.
Zeidler, 1992: 86-87.
De Broyer & Jazdzewski, 1993: 107 (list).
Vinogradov, 1993; 42, 43 (table).
Yuanshao, 1993: 518, 519 (table), 521 (key).
Lin & Chen, 1994: 118 (table).
Lin *et al*., 1995: 118, 122 (table).
Shih & Chen, 1995: 10 (key), 11-12, fig. 2.
Zeidler, 1995a: 268-271, figs. 1, 2.
Lin *et al*., 1996: 229 (table).
Zeidler, 1997a: 123-124, fig. 1.
Lavaniegos & Ohman, 1999: 493 (table), 507.
Vinogradov, 1999: 1148 (table), 1172 (key), 1173, fig. 4.49.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 307 (table).
Gates *et al*., 2003: 361-362.
Gasca, 2004: 997 (table), 999 (table).
Vinogradov *et al*., 2004: 9 (list), 24 (table).
Zelickman, 2005: xv (list), fig. 1a-c (pp. 2-7).
Gasca, 2007: 120 (table), 123.
Gasca, 2008: 86 (table), 92.

***Southern Ocean distribution*:**
Indian Sector: Near the West Ice Shelf and Davis Sea, *Gauss* stns. (64°15'S 80°39'E & 65°57'S 88°58'E), 3000-0 m; (Wagler 1927).
***Worldwide distribution*:**
Relatively common in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it is found from about 64°N to off the coast of South Africa (about 40°S). In the Indian Ocean it ranges from tropical regions to the Antarctic Continent, as above. In the Pacific it is not found north of 44° and ranges south, through the Indo-Pacifc and tropical regions, to the Tasman Sea and north of New Zealand. It is often found near the surface and is most common in the upper 500 m, but it is also known from catches from 1400-2700 m.
***Type locality*:** Mid-Atlantic, off Brazil.
***Type material location*:** The type is most probably based on a drawing by Parkinson now held in the NHM, London (see Zeidler 1995a).

Scina curvidactyla Chevreux, 1914

Chevreux, 1914: 3-6, fig. 2.
Stephensen, 1918: 31-32.
Chevreux, 1919: 12, 19 (table).
Wagler, 1926: 328-331, 443 (key), fig. 4.
Wagler, 1927: 92-93, 110 (table), 111 (table), fig. 2.
Pirlot, 1929: 63 (key).
K.H. Barnard, 1930: 401.
K.H. Barnard, 1932: 259.
Chevreux, 1935: 148-150, pl. 15, fig. 7.
K.H. Barnard, 1937: 181.
Shoemaker, 1945b: 230.
Hurley, 1955: 124 (key).
Hurley, 1956: 6 (key).
Vinogradov, 1957: 171 (key), 172, 179 (table).
Vinogradov, 1960: 224 (key), 228-230, figs. 15c, 17.
Siegfried, 1963: 6 (list), 12 (list).
Vinogradov, 1964: 130-131.
Lewis & Fish, 1969: 8.
Dick, 1970: 31 (fig. 3, part), 32 (key), 48.
Yoo, 1971: 41 (list), 45 (key), 46, fig. 2 (map).
Thurston, 1976: 384-385 (table), 395.
Brusca, 1978: 282 (key & table), 284-285, fig. 2.
Herring, 1981: 162, 164, 165 (table).
Vinogradov *et al*., 1982: 135 (key), 139-141.
Vinogradov, 1990: 52.
Zeidler, 1990: 174, 198 (key).
Vinogradov, 1991: 261 (table).
Vinogradov, 1993: 43 (table).
Yuanshao, 1993: 518, 519 (table), 521 (key).
Lin & Chen, 1994: 118 (table).
Montu, 1994: 132 (table).
Shih & Chen, 1995: 10 (key), 21-22, fig. 10.
Lin *et al*., 1996: 229 (table).
Lavaniegos & Ohman, 1999: 493 (table).
Vinogradov, 1999: 1148 (table), 1172 (key), 1173-1174, fig. 4.50.
Lowry, 2000: 331 (list).
Gasca, 2003a: 307 (table).
Gasca, 2003b: 118 (table).
Zelickman, 2005: xv (list).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932).
***Worldwide distribution*:**
Widely distributed in the tropical and temperate regions of all the world's oceans including the Mediterranean Sea;

favouring warmer waters. In the Atlantic it ranges from about 40°N to 43°S. In the Indian Ocean it is known mainly from tropical regions to about 33°S. In the North Pacific it ranges from the Kuroshio region (49°N) and the Californian coast to the tropics. The only records from the South Pacific are from off Peru, to about 26°S.

Type locality: Holotype not designated. Syntypes collected by *Princesse Alice* II, from the North Atlantic, off Portugal, stn. 2885 (40°19'N 13°11'W), 0-3000 m & stn. 3021 (38°46'N 10°10'W), 0-1550 m and from the Mediterranean Sea, off Spain, stn. 2910 (37°46'10''N 00°05'W), 0-520 m & stn. 2926 (39°36'N 05°56'E), 0-2800 m.

Type material location: The syntypes from stn. 3021 are in the MOM, Monaco; on a microscope slide. The diagnosis is of the male from stn. 2926.

Scina excisa Wagler, 1926

Wagler, 1926: 398-401, fig. 39.
Wagler, 1927: 103, 110-111 (table), fig. 10.
Shoemaker, 1945b: 130.
Hurley, 1956: 6 (key).
Vinogradov, 1960a: 225 (key), 234.
Siegfried, 1963: 6 (list), 12 (table).
Vinogradov, 1964: 138-139.
Dick, 1970: 32 (key), 30 (fig. 3-part), 48.
Thurston, 1976: 384-385 (table), 396.
Vinogradov *et al.*, 1982: 136 (key), 174-175, fig. 85.
Vinogradov, 1990a: 54.
Zeidler, 1990: 174.
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 107 (list).
Zeidler, 1998: 6, 11, figs. 5, 6.
Vinogradov, 1999: 1148 (table), 1173 (key), 1174, fig. 4.51.
Escobar-Briones *et al*., 2002: 368 (list).
Gates *et al*., 2003: 362.
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Indian Sector: Off the West Ice Shelf, *Gauss* stn. (64°29'S 85°27'E), 3000-0 m; (Wagler 1927).

***Worldwide distribution*:**
Relatively uncommon, known from scattered records from mainly tropical regions of all the world's oceans, except the Mediterranean Sea. In the Atlantic it ranges from about 30°N to 33°S. In the Indian Ocean it is found mainly in the equatorial regions, ranging to 33°S, with one record from Antarctic waters, as above. In the Pacific it is found south of 30°N, ranging from the east and west equatorial regions to the Tasman Sea. It seems to be most common in catches from 200 to 500 m.

***Type locality*:** Holotype not designated. Syntypes collected from the Atlantic Ocean, Gulf of Guinea, *Valdivia* stn. 54 (01°51'N 00°31'E), 200-0 m and Agulhas Bank, *Valdivia* stn. 91 (33°23'S 16°19'E), 2000-0 m; also from the Indian Ocean, south of Ceylon, *Valdivia* stn. 215 (07°01'N 85°56'E), 200-0 m; near the Seychelles, *Valdivia* stn. 232 (03°26'S 58°34'E), 1500-0 m and southern parts, *Valdivia* stns. 173 (29°06'S 89°39'E), 2500-0 m & *Valdivia* stn. 174 (27°58'S 91°40'E), 2000-0 m.

***Type material location*:** Most syntypes are in the ZMB, Berlin (22346).

Scina marginata (Bovallius, 1885)

Bovallius, 1885a: 15, (*Tyro marginata*).
Bovallius, 1887a: 5, (*Tyro marginata*).
Bovallius, 1887c: 6 (key), 21-23, pl. 3, figs. 18-33, (*Tyro marginata*).
Stebbing, 1888: 1272.
Stebbing, 1895: 351.
Garbowski, 1896: 99 (key), 100-103, pl. 2; pl. 3, figs. 17, 18.
Chevreux, 1900: 122, pl. 14, fig. 8; pl. 15, fig. 1.
Vosseler, 1901: 110.
Lo Bianco, 1902: 421, 446.
Lo Bianco, 1903: 122, 130, 143, table facing p.278.
Walker, 1903b: 224, 231.
Fowler, 1904: 50/51 (list/table), 52.
Stebbing, 1904: 23 (key), 25-26.
Chevreux, 1905: 1 (list).
Stephensen, 1918: 27-29, chart 3.
Chevreux, 1919: 13-14, 19 (table).
Wagler, 1926: 361-367, 444 (key), figs. 19-21.
Schellenberg, 1927: 604 (key), 608-609, fig. 17.
Wagler, 1927: 97-98, 110-111 (table).
Pirlot, 1929: 63 (key), 75-76.
K.H. Barnard, 1932: 261.
Chevreux, 1935: 154-155.
K.H. Barnard, 1937: 181.
Shoemaker, 1945b: 232.
Hurley, 1956: 5 (key).
Vinogradov, 1960a: 224 (key), 232.
Vinogradov, 1964: 135.
Hurley, 1969: 33, pl. 18 (map 2).
Dick, 1970: 29 (key), 30 (fig. 3-part), 49.
Thurston, 1976: 384-385 (table), 397.
Laval, 1980: 14, 17 (table), 23 (table).
Herring, 1981: 164, 165 (table), 167, fig. 3c.
Vinogradov *et al*., 1982: 135 (key), 153-155, fig. 71.
Vinogradov, 1990a: 53.
Zeidler, 1990: 175, 176 (key).
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 107 (list).
Vinogradov, 1993: 43 (table).
Yuanshao, 1993: 519 (table), 521 (key).
Shih & Chen, 1995: 10 (key), 14-16, fig. 5.
Zeidler, 1998: 17-20, figs. 11, 12.
Vinogradov, 1999: 1148 (table), 1173 (key), 1174, fig. 4.56.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gates *et al*., 2003: 363.

Gasca, 2004: 997 (table).
Zelickman, 2005: xv (list), fig. 3 (pp 12-13).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Pacific Sector: Near the Ross Sea (Hurley 1969).
***Worldwide distribution*:**
Relatively common in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. Most records are from the Atlantic where it ranges from about 52°N to 19°S. There are few records from the Indian Ocean, having been recorded from the northern Arabian sea to about 35°S, in the western part. In the Pacific it ranges from the Indo-Pacific/South China Sea region to the Tasman Sea with one doubtful record from Antarctic waters, as above. It seems to be more common in near-surface waters (0-200 m) but has been found in catches from depths of 200-500 m and 500-1000 m.
***Type locality*:** "The Atlantic".
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Scina nana Wagler, 1926

Wagler, 1926: 393-396, fig. 37.
Wagler, 1927: 103, 110 (table), fig. 8.
Hurley, 1956: 5 (key), 9.
Vinogradov, 1960a: 226 (key).
Siegfried, 1963: 6 (list), 12 (list).
Vinogradov, 1964: 138.
Dick, 1970: 32 (key), 30 (fig. 3-part), 49.
Brusca, 1981a: 8 (list), 14 (key), 38, figs. 2b, 2g.
Vinogradov *et al*., 1982: 137 (key), 171-172, fig. 83.
Zeidler, 1990: 175, 197 (key).
De Broyer & Jazdzewski, 1993: 107 (list).
Yuanshao, 1993: 519 (table), 521 (key).
Lin & Chen, 1994: 115, 118 (table).
Shih & Chen, 1995: 11 (key), 22-23, fig. 11.
Lin *et al*., 1996: 229 (table).
Lavaniegos & Ohman, 1999: 493 (table).
Vinogradov, 1999: 1148 (table), 1173 (key), 1174, fig. 4.57.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 307 (table).
Gasca, 2004: 997 (table), 999 (table).
Gasca & Suárez-Morales, 2004: 26 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Indian Sector: Off the West Ice Shelf, *Gauss* stn. (64°29'S 85°27'E); (Wagler 1927).
***Worldwide distribution*:**
Relatively uncommon, found mainly in tropical regions of all the world's oceans, except the Mediterranean Sea. In the Atlantic it is known from the equatorial regions to about 33°S. In the Indian Ocean, apart from the above record, it has been recorded only from equatorial regions. In the Pacific it has been recorded only from the warmer waters of the Indo-Pacific/South China Sea region and off the Californian coast. It seems to inhabit near-surface waters (100-500 m) but has been found in catches from depths exceeding 2000 m to the surface.
***Type locality*:** Holotype not designated. Syntypes collected from Atlantic Ocean, *Valdivia* stn. 55 (02°36'N 03°27'E), 200-0 m & stn. 91 (33°23'S 16°19'E), 2000-0 m; and from the Indian Ocean, *Valdivia* stn. 221 (04°05'S 73°24'E), 200-0 m; stn. 228 (02°38'S 65°59'E), 2500-0 m; stn. 231 (03°24'S 58°38'E), 2000-0 m; stn. 232 (03°26'S 58°34'E), 1500-0 m & stn. 235 (04°34'S 53°42'E), 2000-0 m.
***Type material location*:** Some syntypes are in the ZMB, Berlin (22345).

Scina pusilla Chevreux, 1919

Chevreux, 1919: 5-7, 19 (table), fig. 3.
Wagler, 1926: 404-407, 444 (key), fig. 42.
Pirlot, 1929: 64 (key), 78.
Chevreux, 1935: 162-163, pl. 15, fig. 3.
Hurley, 1956: 6 (key).
Vinogradov, 1960a: 225 (key), 234.
Vinogradov, 1962: 14.
Hurley, 1969: 33, pl. 18, (map 2).
Dick, 1970: 32 (key).
Vinogradov, 1970: 385 (table), 394.
Thurston, 1976: 384-385, (table), 397.
Vinogradov *et al*., 1982: 136 (key), 177-179, fig. 88.
Zeidler, 1990: 197 (key).
De Broyer & Jazdzewski, 1993: 108 (list).
Vinogradov, 1999: 1148 (table), 1173 (key), 1174-1175, fig. 4.60.
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Pacific Sector: Off Adélie Land and near the Balleny Islands, *Ob* stn. 48 (63 18'S 135 14'E), 0-3600 m & stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Relatively rare, known from a few scattered records, mainly from tropical waters. In the Atlantic it is known only from the eastern half, from the Azores to the Canary Islands and from near the Gulf of Guinea. It has not been recorded from the Indian Ocean. In the Pacific, apart from the above record, it has been recorded from the Kuril-Kamchatka, Kermadec and Bougainville deep-water trenches. It seems to inhabit deep waters, below about 500 m, with some catch records from as deep as 9120 m to the surface.
***Type locality*:** North Atlantic, near the Canary Islands, *Princesse Alice* II stn. 1794 (31°46'N 25°00'W), 0-5000 m.
***Type material location*:** The unique holotype male is in the MOM, Monaco; on a micoscope slide.

Scina rattrayi keilhacki Wagler, 1926

Wagler, 1926: 380-381, figs. 30b,d,f; 31b,c,d; 32b, (*Scina Rattrayi var. Keilhacki*).
Wagler, 1927: 104.
Vinogradov, 1956: 207-208, fig. 6.
Vinogradov, 1957: 174-175, 179 (table).
Vinogradov, 1960a: 226 (key).
Vinogradov, 1962: 14.
Vinogradov, 1964: 137.
Hurley, 1969: 33, pl. 18 (map 2).
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 42 (list), 46 (key), 48-49.
Vinogradov *et al*., 1982: 158-159, fig. 74.
Vinogradov, 1992: 325.
De Broyer & Jazdzewski, 1993: 108 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Vinogradov *et al*., 2004: 9 (list), 25 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Indian Sector: Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m & stn. 413 (58°58'S 109°21'E), 0-2180 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known from widely scattered records, from warm to cold waters, depending on the ocean. In the Atlantic it is known only from the northern tropical regions, from off western Africa, the Cape Verde Islands and the Sargasso Sea. In the Indian Ocean it is common in the equatorial regions, including the Arabian Sea and is also found in Antarctic waters, as above. In the Pacific it has not been recorded from the South Pacific or from the tropical regions, but is found north of 35°N in the western part to the Kuril-Kamchatka region and southern Bering Sea, and in the eastern part it has been found off British Columbia to about 55°N (specimens in SAMA). Catch records vary from 100-200 m and 200-500 m in the tropical regions to 2000-4000 m in the north-western Pacific, where it seems to be more common in the 1000-2000 m layer.
***Type locality*:** Central Indian Ocean, *Valdivia* stn. 215 (07º 01'N 85º56'E), 0-2500 m; stn.231 (03º24'S 58º38'E), 0-2000 m & stn. 237 (04º45'S 48º58'E), 0-2000 m.
***Type material location*:** Some syntypes are in the ZMB, Berlin (22340).

Scina rattrayi rattrayi Stebbing, 1895

(Colour plates 1a, 1b)

Stebbing, 1895: 358-360, pl. 53A, (*Scina Rattrayi*).
Chevreux, 1900: 123-124, pl.15, fig. 2, (*Scina Rattrayi*).
Vosseler, 1901: 105-108, pl. 9, figs. 8-17, (*Scina Bovallii* – mis-identification).
Lo Bianco, 1902: 422, 426, 446, 467, (*Scina Rattrayi*).
Lo Bianco, 1903: 121, 125, 126, 128, 131, 133, 137, 139, 141, 145, 147, 149-152, 154, 156, 197, (*Scina Rattrayi*).
Walker, 1903b: 223, 224, 231, (*Scina Rattrayi*).
Fowler, 1904: 50/51 (list/table), (*Scina Rattrayi*).
Stebbing, 1904: 23 (key), 26-27, (*Scina Rattrayi*).
Tattersall, 1906: 4 (list), 10-11, (*Scina Rattrayi*).
Stephensen, 1918: 29-30, (*Scina Rattrayi*).
Chevreux, 1919: 15-16, 19 (table), (*Scina Rattrayi*).
Stephensen, 1923a: 9, (*Scina Rattrayi*).
Wagler, 1926: 375-380, 445 (key), figs. 29, 30a, 30c, 30e, 31a, 32a, (*Scina Rattrayi*).
Schellenberg, 1927: 604 (key), 611, fig. 19.
Wagler, 1927: 104-105, 110-111 (table), fig. 10.
Pirlot, 1929: 64 (key), 83-84, (*Scina Rattrayi*).
K.H. Barnard, 1932: 261.
Stephensen, 1932a: 376.
Chevreux, 1935: 156-157, (*Scina Rattrayi*).
Hurley, 1956: 5 (key).
Vinogradov, 1957: 171 (key).
Vinogradov, 1960a: 226 (key).
Siegfried, 1963: 6 (list), 12 (table).
Vinogradov, 1964: 136-137.
Dick, 1970: 32 (key), 30 (fig. 3-part), 50.
Sanger, 1973: passim.
Sanger, 1974: 3, 4 (table), 5.
Thurston, 1976: 384-385 (table), 397-398.
Brusca, 1981a: 8 (list), 14 (key), 38, figs. 2f, 2k.
Herring, 1981: 165 (table).
Vinogradov *et al*., 1982: 137 (key), 157-158, fig. 73.
Jazdzewski & Presler, 1988: 63, 66, fig. 1, (*Scina cf. rattrayi*).
Zeidler, 1990: 197 (key).
De Broyer & Jazdzewski, 1993: 108 (list).
Yuanshao, 1993: 519 (table), 521 (key).
Vinogradov, 1999: 1148 (table), 1173 (key), 1175, fig. 4.61.
Lowry, 2000: 331 (list).
Vinogradov *et al*., 2004: 9 (list), 25 (table).
Zelickman, 2005: xv (list).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: South-east of Elephant Island (Jazdzewski & Presler 1988).
Indian Sector: Off the West Ice Shelf, *Gauss* stn. (64°29'S 85°27'E), 3000-0 m; (Wagler 1927).
***Worldwide distribution*:**
Known from various regions in all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from Iceland to about 33°S with one record from near the Antarctic Peninsula, as above. In the Indian Ocean it has been recorded from the northern part, from the Cocos-Keeling Islands to the Gulf of Aden, with one record from Antarctic waters, as above. In the Pacific it has been recorded from tropical regions and from the southern Bering Sea and off British Columbia. It has been found in catches from various depths ranging from 150 to 625 m and from depths greater than 500 m to the surface.

***Type locality*:** Tropical Atlantic, *Buccaneer* stn. (01°55'S 05°55'05"E), from 360 fathoms.
***Type material location*:** Not found in NHM, London; presumed lost.

Scina similis Stebbing, 1895

Stebbing, 1895: 362-363, pl. 54A.
Lo Bianco, 1903: 154, table facing p.278.
Stebbing, 1904: 23 (key).
Stephensen, 1918: 29.
Chevreux, 1919: 15, 19 (table).
Wagler, 1926: 390-393, 445 (key), fig. 36.
Wagler, 1927: 102-103, 110-111 (table), fig. 7.
Pirlot, 1929: 64 (key), 84-85.
Chevreux, 1935: 157.
Hurley, 1956: 5 (key).
Vinogradov, 1960a: 226 (key).
Vinogradov, 1964: 138.
Dick, 1970: 32 (key), 30 (fig. 3 - part), 50.
Thurston, 1976: 384-385 (table), 398.
Herring, 1981: 165 (table).
Vinogradov *et al*., 1982: 137 (key), 170-171, fig. 82.
Vinogradov, 1990a: 54.
Zeidler, 1990: 176, 197 (key).
Vinogradov, 1991: 261 (table).
Yuanshao, 1993: 519 (table), 521 (key).
Lin & Chen, 1994: 118 (table).
Shih & Chen, 1995: 11 (key), 17-18, fig. 7.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 20, 25, figs. 15, 16.
Vinogradov, 1999: 1148 (table), 1173 (key), 1175, fig. 4.62.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 307 (table).
Gasca, 2003b: 118 (table).
Gates *et al*., 2003: 364.
Gasca, 2004: 997 (table), 999 (table).
Vinogradov *et al*., 2004: 9-10 (list), 25 (table).
Zelickman, 2005: xv (list).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Indian Sector: North-east of Prydz Bay, *Gauss* stn. (64°29'S 85°27'E), 3000-0 m; (Wagler 1927).
***Worldwide distribution*:**
Known from scattered records, mainly from tropical regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from about 43°N to the equatorial regions. In the Indian Ocean it ranges from the equatorial region to about 35°S, with one record from Antarctic waters, as above. In the Pacific it has been recorded from the Indo-Pacific/South China Sea region, off Peru and from the Tasman Sea. It seems to inhabit near-surface waters (0-200 m) but has been found in catches of 200-500 m and from 4000 m to the surface.

***Type locality*:** Tropical Atlantic, *Buccaneer* stn. (03°00'8"N 07°43'W), from 50 fathoms.
***Type material location*:** Not located in the NHM, London; presumed lost.

Scina spinosa Vosseler, 1901

Vosseler, 1901: 108-110, pl. 10, figs. 11-15.
Wagler, 1926: 350, figs. 13c,15a-c, (*Scina spinosa spinosa*).
Wagler, 1927: 96, 110 (table), (*Scina spinosa spinosa*).
Shoemaker, 1945b: 230-232, fig. 32.
Vinogradov, 1956: 206.
Vinogradov, 1957: 170 (key), 173, 179 (table), fig. 15b.
Vinogradov, 1960a: 225 (key), 231-232.
Vinogradov, 1962: 12-13.
Vinogradov, 1964: 132-133.
Hurley, 1969: 33, pl. 18 (map 2).
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 41 (list), 45 (key), 47.
Herring, 1981: 165 (table).
Vinogradov *et al*., 1982: 136 (key), 148-150, figs. 66, 67.
Zeidler, 1990: 197 (key).
De Broyer & Jazdzewski, 1993: 108 (list).
Vinogradov, 1993: 42, 43 (table).
Yuanshao, 1993: 519 (table), 521 (key).
Shih & Chen, 1995: 10 (key), 20-21, fig. 9.
Vinogradov, 1999: 1148 (table), 1173 (key), 1175, fig. 4.63.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Zelickman, 2005: xv (list), figs. 2a, 2b (pp 8-11).
Gasca *et al*., 2006: 239 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Near Bouvet Island, *Valdivia* stn. 132 (55°21'S 05°16'E), 0-2000 m; (Wagler 1926).
Indian Sector: Near the Davis Sea, *Ob* stn. 111 (64°25'S 92°52'E), 0-2700 m; (Vinogadov 1962).
***Worldwide distribution*:**
Relatively uncommon. Apart from the above records it is known mainly from the tropical regions of the all the world's oceans, including one doubtful record from the Mediterranean Sea. In the Atlantic it ranges from Bermuda to the equatorial region off Brazil and off South Africa (34°S). In the Indian Ocean it is recorded from the equatorial regions and the warm waters of the south-western part. In the Pacific it is known only from the northern part, ranging from the deep waters of the Bering Sea to the Indo-Pacific/South China Sea region with one record from off the Californian coast. It seems to inhabit depths of more than 200-500 m to about 1000 m, but has also been found in depths of 1000-4000 m and from 8500 m to the surface.
***Type locality*:** Tropical Atlantic, South Equatorial Current, 'Plankton-Expedition' stn. 181 (01º10'N 16º40'W), 500-700 m.
***Type material location*:** Not found in any major European or North American Museum; considered lost.

Scina submarginata Tattersall, 1906

Tattersall, 1906: 4 (list), 12-14, pl. 2, figs. 1-8.
Stephensen, 1918: 32, fig. 7, (*Scina latipes*).
Chevreux, 1919: 13-14.
Chevreux, 1919: 20, (*Scina latipes*).
Wagler, 1926: 367-369, 444 (key), figs. 22-24.
Schellenberg, 1927: 604 (key), 609.
Wagler, 1927: 98-99, 110-111 (table).
Pirlot, 1929: 63 (key), (*Scina latipes*).
K.H. Barnard, 1932: 261.
Shoemaker, 1945b: 232.
Hurley, 1956: 5 (key).
Vinogradov, 1956: 206-207.
Vinogradov, 1957: 170 (key), 173, 179 (table).
Vinogradov, 1960a: 225 (key).
Vinogradov, 1964: 135-136, fig. 14.
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 42 (list), 45 (key), 48, fig. 4 (map).
Thurston, 1976: 384-385 (table), 398.
Herring, 1981: 164, 165 (table).
Vinogradov *et al*., 1982: 135 (key), 155-157, fig. 72.
Vinogradov, 1990a: 53.
Zeidler, 1990: 177, 196 (key).
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 108 (list).
Vinogradov, 1993: 43 (table).
Yuanshao, 1993: 519 (table), 521 (key).
Lin *et al*., 1995: 118, 122 (table).
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 25, 30, figs. 19, 20.
Vinogradov, 1999: 1148 (table), 1173 (key), 1175, fig. 4.66.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003b: 118 (table).
Gates *et al*., 2003: 364.
Vinogradov *et al*., 2004: 10 (list), 25 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Off South Africa, *Valdivia* stn. 136 (55°57'S 16°14'E), 2000-0 m; (Wagler 1926).
***Worldwide distribution*:**
Relatively uncommon, known mainly from the tropical and warm-temperate regions of all the world's oceans, except the Mediterranean Sea. In the Atlantic it ranges from 53°N (type locality) to mainly tropical regions with one record from Antarctic waters, as above. In the Indian Ocean it is known only from tropical regions, north of 33°S. In the Pacific records range from the south-western Bering Sea to the Indo-Pacific/South China Sea region, with isolated records from off Peru and the Tasman Sea. It inhabits a wide range of depths, from near-surface waters in the tropics to 200-500 m, 500-750 m and 1000-4000 m in the northern Pacific.
***Type locality*:** Off Northern Ireland, "40 mi N. by W. of Eagle Island", 600 fathoms and west of Porcupine Bank (53°07'N 15°06'W), 750 fathoms.
***Type material location*:** The syntypes are in the NHM, London (1947.11.4.57-59).

Scina tullbergi (Bovallius, 1885)

Bovallius, 1885a: 15-16, (*Tyro Tullbergii*).
Bovallius, 1887a: 4, (*Tyro Tullbergi*).
Bovallius, 1887b: 552, pl. 40, figs. 4-10, (*Tyro Tullbergi*).
Bovallius, 1887c: 6 (key), 23-25, pl. 3, figs. 1-9, (*Tyro Tullbergi*).
Stebbing, 1895: 360-362, pl. 53B, (*Scina concors*).
Vosseler, 1901: 113, (*Scina Tullbergi*).
Stebbing, 1904: 23 (key), (*Scina Tullbergi*).
Stebbing, 1904: 23 (key), (*Scina concors*).
Chevreux, 1919: 20, (*Scina Tulbergi*).
Chevreux, 1919: 15, 19 (table), (*Scina concors*).
Wagler, 1926: 384-390, 445 (key), figs. 34, 35a, 35c, (*Scina Tullbergi*).
Schellenberg, 1927: 604 (key), 609-611, fig. 18.
Wagler, 1927: 101-102, 110-111 (table), fig. 6.
Pirlot, 1929: 64 (key), (*Scina Tullbergi*).
Pirlot, 1929: 64 (key), (*Scina concors*).
K.H. Barnard, 1932: 261-262.
Chevreux, 1935: 146, (*Scina concors*).
Shoemaker, 1945b: 232.
Hurley, 1956: 5 (key), 9.
Vinogradov, 1960a: 226 (key), 233.
Vinogradov, 1962: 13.
Siegfried, 1963: 6 (list), 8.
Vinogradov, 1964: 137, fig. 20 (map).
Hurley, 1969: 33, pl. 18 (map 2).
Dick, 1970: 32 (key), 30 (fig. 3-part), 50-51.
Thurston, 1976: 384-385 (table), 399-400, 463 & 464 (table).
Zeidler, 1978: 4 (key).
Laval, 1980: 23 (table).
Stuck *et al*., 1980: 361.
Brusca, 1981a: 8 (list), 14 (key), 38, fig. 2c, 2h.
Herring, 1981: 165 (table).
Vinogradov *et al*., 1982: 137 (key), 168-170, fig. 81.
Vinogradov, 1990a: 54.
Zeidler, 1990: 177-178, 179 (key).
Vinogradov, 1991: 261 (table).
Gislason & Astthorsson, 1992: 221 (table), 223.
De Broyer & Jazdzewski, 1993: 108 (list).
Vinogradov, 1993: 42, 43 (table).
Yuanshao, 1993: 519 (table), 521 (key).
Lin & Chen, 1994: 118 (table).
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 11 (key), 16-17, fig. 6.
Lin *et al*., 1996: 229 (table).
Lavaniegos & Ohman, 1999: passim.
Vinogradov, 1999: 1148 (table), 1173 (key), 1175, fig. 4.67.
Lowry, 2000: 331 (list).
Escobar-Briones *et al*., 2002: 368 (list).

Gasca, 2003a: 307 (table).
Gasca, 2004: 997 (table), 999 (table).
Gasca & Suáres-Morales: 2004: 26 (table).
Vinogradov *et al*., 2004: 10 (list), 25 (table).
Zelickman, 2005: xv (list).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).
non K.H. Barnard, 1931: 126, (re-determined as *S. pacifica* by WZ).

***Southern Ocean distribution*:**
Atlantic Sector: Off Cape Horn (Bovallius 1887b).
***Worldwide distribution*:**
Very common in the tropical and warm-temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it is generally found in the warmer regions but it has also been recorded from just south of Iceland and from as far south as about 35°S. In the Indian Ocean it is known from the equatorial regions with one record from south of Australia (42°20'S 129°25'E). In the Pacific it it ranges from the Indo-Pacific/South China Sea region to the Tasman sea with records from off the Californian coast and off Peru. It seems to inhabit mainly surface waters but has also been found in catches from depths exceeding 700 m.
***Type locality*:** "The Atlantic", presumably off Cape Horn.
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Scina typhlops Wagler, 1926

Wagler, 1926: 407-410, 444 (key), figs. 43-44.
Hurley, 1956: 6 (key).
Vinogradov, 1957: 171 (key), 176, fig. 15c.
Vinogradov, 1960a: 225 (key).
Vinogradov, 1962: 14-15.
Hurley, 1969: 33, pl. 18 (map 2).
Dick, 1970: 32 (key).
Vinogradov, 1970: 385 (table).
Vinogradov *et al*., 1982: 136 (key), 179-180, fig. 89.
Zeidler, 1990: 196 (key).
De Broyer & Jazdzewski, 1993: 108 List).

***Southern Ocean distribution*:**
Indian Sector: Near the Davis Sea, *Ob* stn. 111 (64°25'S 92°52'E), 0-2700 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known from only four specimens and three localities; from the type locality in the Atlantic, from the Davis Sea, as above and from the Kuril-Kamchatka region (0-3100 m & 2500-3000 m) of the north-western Pacific.
***Type locality*:** Atlantic Ocean, south of the Canary Islands, *Valdivia* stn. 36 (20º54'N 19º52'W), 0-2000 m.
***Type material location*:** Not located in the ZMB, Berlin; presumed lost.

Scina uncipes Stebbing, 1895

Stebbing, 1895:363-364, pl. 54B.
Stebbing, 1904: 23 (key).
Tattersall, 1906: 4 (list), 11.
Stephensen, 1918: 31.
Chevreux, 1919: 17, 19 (table).
Wagler, 1926: 348-350, figs. 13b, 14, (*Scina uncipes Lamperti*).
Wagler, 1926: 345-348, 444 (key), figs. 12, 13a, (*Scina uncipes uncipes*).
Schellenberg, 1927: 604 (key), 611-612, fig. 20.
Wagler, 1927: 95-96, 110-111 (table).
Wagler, 1927: 96, 110 (table), (*Scina uncipes lamperti*).
Wagler, 1927: 96, (*Scina uncipes uncipes*).
Pirlot, 1929: 63 (key), 80.
K.H. Barnard, 1932: 260.
Chevreux, 1935: 158-159.
Hurley, 1956: 7 (key).
Thurston, 1976: 384 & 385 (table), (*Scina uncipes lamperti*).
Thurston, 1976: 384 & 385 (table), (*Scina uncipes uncipes*).
Laval, 1980: 23 (table), (*Scina uncipes lamperti*).
Herring, 1981: 165 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Off South Africa, *Valdivia* stn. 132 (55°21'S 05°16'E); (Wagler 1927).
Indian Sector: North-east of Prydz Bay, *Gauss* stn. (65°18'S 80°27'E); (Wagler 1927).
***Worldwide distribution*:**
Relatively rare. The only reliable records are from Antarctic waters as above, from the North Atlantic, ranging from the western coast of Ireland (53°N) to about 34°S and from the equatorial regions of the Indian Ocean. Recorded from as deep as 840-1350 m and from 2380 m to the surface.
***Type locality*:** Tropical Atlantic, *Buccaneer* stn. (07°54'N 17°25'W), from 50 fathoms.
***Type material location*:** Not located in the NHM, London; presumed lost.

Scina wolterecki Wagler, 1926

Wagler, 1926: 372-375, 444 (key), figs. 27-28, (*Scina Wolterecki*).
Wagler, 1927: 100-101, 110-111 (table).
K.H. Barnard, 1932: 261.
Hurley, 1956: 6 (key).
Vinogradov, 1956: 207.
Vinogradov, 1957: 171 (key), 174, 179 (table).
Vinogradov, 1960a: 226 (key), 233.
Vinogradov, 1962: 13.
Siegfried, 1963: 6 (list).
Vinogradov, 1964: 136.
Hurley, 1969: 33, pl. 18 (map 2).

Dick, 1970: 32 (key), 30 (fig. 3-part), 51.
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 42 (list), 48.
Thurston, 1976: 384 & 385 (table), 400-401, 464 (table).
Brusca, 1978: 282 (table, key), 287-288, fig. 6.
Herring, 1981: 165 (table).
Vinogradov *et al*., 1982: 137 (key), 162-164, fig. 77.
Vinogradov, 1990a: 53.
Zeidler, 1990: 196 (key).
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 108 (list).
Yuanshao, 1993: 519 (table), 521 (key).
Zeidler, 1998: 30, figs. 21, 22.
Vinogradov, 1999: 1148 (table), 1173 (key), 1175-1176, fig. 4.69.
Gates *et al*., 2003: 364.
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Indian Sector: Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m; (Vinogradov 1962).
***Worldwide distribution*:**
Moderately common in the tropical and warm-temperate regions of all the world's oceans, excluding the Mediterranean Sea. In the Atlantic it ranges from the tropical regions to the south-eastern parts, off South Africa (about 35°S). There are few records from the Indian Ocean, ranging from the tropics to about 30°S, with one record from Antarctic waters, as above. In the Pacific it has been recorded from the Bering Sea, the Sea of Okhotsk, the Indo-Pacific region, near Hawaii, off Peru and from the Tasman Sea. Catch records vary in depth from 200-500 m in the tropics to 2000-4000 m in the north-western Pacific, but it seems to be more common in the 1000-2000 m layer.
***Type locality*:** Holotype not designated. Syntypes collected from the Atlantic Ocean, *Valdivia* stns. 55 (03°36'N 03°27'E), 600-0 m, stn. 64 (00°25'N 07°00'E), 2000-0 m, stn. 66 (03°55S 07°48'E), 600-700 m & 500-350 m, stn. 86 (28°28'S 06°13'E), 1200-0 m, stn. 88 (31°00'S 08°00'E), 2000-0 m, stn. 89 (31°21's 09°45'E), 3000-0 m & stn. 91 (33°23'S 16°19'E), 2000-0 m, and from the Indian Ocean, stn. 173 (29°06'S 89°39'E), 2500-0 m.
***Type material location*:** Some syntypes are in the ZMB, Berlin (22339).

Superfamily LANCEOLOIDEA Bowman & Gruner, 1973

Family CHUNEOLIDAE Woltereck, 1909

Chuneola major Vinogradov, 1957

Vinogradov, 1957: 201, figs. 9, 10.
Vinogradov, 1960b: 249 (map), 253 (key).
Vinogradov, 1964: 118.
Vinogradov, 1970: 384 (table), 393-394.
Vinogradov *et al*., 1982: 92 (key), 94-96, figs. 33, 34.
Zeidler, 2009: 82 (key), 85-86, fig. 31.

***Southern Ocean distribution*:**
Atlantic Sector: Near the South Sandwich Islands, *Eltanin* stn. 578 (57°17'-57°22'S 27°22'-27°03'W), 1464-1867 m; (Zeidler 2009).
Pacific Sector: West of the Drake Passage, *Eltanin* stn. 868 (57°06'-56°57'S 78°56'-78°37'W), 997-1230 m; (Zeidler 2009).
***Worldwide distribution*:**
A relatively rare species, known from just eight specimens. In the Atlantic, known only from the above record just south of 57°S. In the Indian Ocean, recorded only from the tropical waters near Sumatra. In the Pacific, recorded from just north of 44°N and in the south to 57°S, as above. Recorded from catches ranging in depths from 0 to 5300 m and 3500-5000 m.
***Type locality*:** Two specimens from the north-western Pacific Ocean, 39°58'N 164°55'E, 0-5300 m and 44°31'N 170°06'E, 0-1000 m, collected by the *Vityaz*.
***Type material location*:** The syntypes are in the MUG, Moscow (Mb-1054).

Chuneola paradoxa Woltereck, 1909

(Colour plate 1c)

Woltereck, 1909: 152-153, pl. 3, fig. 9.
Pirlot, 1930: 3-7, figs. 1-5.
Bulycheva, 1955: 1048 (table).
Vinogradov, 1956: 196-199, fig. 1, (*Chuneola parasitica*).
Vinogradov, 1957: 201 (key).
Vinogradov, 1957: 210, (*Chuneola parasitica*).
Vinogradov, 1960a: 211-212, (*Chuneola parasitica*).
Vinogradov, 1960b: 249 (map), 253 (key), (*Chuneola parasitica* & *C. paradoxa*).
Vinogradov, 1962: 11, fig. 6, (*Chuneola parasitica*).
Hurley, 1969: 33, pl. 19 (map 8), (*Chuneola parasitica*).
Vinogradov, 1970: 384 (table), (*Chuneola parasitica* & *C. paradoxa*).
Yoo, 1971b: 44, (*Chuneola parasitica*).
Vinogradov *et al*., 1982: 92 (key), 92-94, figs. 31-32.
Vinogradov, 1992: 325.
De Broyer & Jazdzewski, 1993: 109 (list).
Zeidler, 2009: 82 (key), 82-85, figs. 29, 30.

***Southern Ocean distribution*:**
Indian Sector: Off the Shackleton Ice Shelf, *Ob* stn. 285 (59°29'S 97°08'E), 0-4500 m; (Vinogradov 1962).
Pacific Sector: West of the Drake Passage, *Eltanin* stn. 877 (55º23'S 78º16'W), 1940 m and west of Macquarie Island, *Southern Surveyor* stn. (54°50'S 157°54'E), 1122 m; (Zeidler 2009).

***Worldwide distribution*:**
In the Indian Ocean, known from the central part and near the Antarctic Continent, as above. Widespread in the Pacific, recorded from the Bering Sea and tropical parts including the Arafura/Banda Sea, East China Sea and Tasman Sea and also the Southern Ocean, as above. There are no records from the Atlantic Ocean. Recorded from catches from 0-1000 m and 550-1100 m.
***Type locality*:** Indian Ocean, near the Chagos Archipelago, *Valdivia* stn. 225 (06°38.5'S 70°58.1'E).
***Type material location*:** Not found in the USNM, Washington DC or in the ZMB, Berlin; considered lost.

Family LANCEOLIDAE Bovallius, 1887

Lanceola clausi clausi Bovallius, 1885

(Colour plate 1d)

Bovallius, 1885a: 8, (*Lanceola Clausii*).
Bovalius, 1887a: 6, (*Lanceola Clausi*).
Bovallius, 1887b: 553, pl. 41, figs. 11-14, (*Lanceola Clausi*).
Bovallius, 1887c: 28 (key), 40-42, pl. 6, figs. 14-23, (*Lanceola Clausi*).
Hansen, 1888: 55.
Sars, 1900: 15-19, pl. 1, (*Lanceola Clausi*).
Stephensen, 1913: 93, (*Lanceola Clausii*).
Chevreux, 1920: 3-4, (*Lanceola Clausi*).
Stephensen, 1923a: 4, (*Lanceola Clausii*).
Schellenberg, 1927: 596, fig. 4.
Woltereck, 1927: 65, (*Lanceola Clausi*).
Pirlot, 1929: 43, (*Lanceola Clausi*).
K.H. Barnard, 1930: 397-398.
Stephensen, 1932a: 376 (list).
Stephensen, 1933: 67.
Chevreux, 1935: 136-137.
Shoemaker, 1945b: 209-212, figs. 17, 18.
Bulycheva, 1955: 1048 (table).
Vinogradov, 1956: 195.
Vinogradov, 1957: 193, (*Lanceola clausi*).
Vinogradov, 1960a: 207, (*Lanceola clausi*).
Vinogradov, 1962: 6, fig. 5b, (*Lanceola clausi*).
Vinogradov, 1964: 111-112.
Hurley, 1969: 33, pl. 18 (map 1), (*Lanceola clausi*).
Dick, 1970: 29 (key).
Vinogradov, 1970: 384 (table).
Vinogradov *et al*., 1982: 51 (key), 67-68.
Vinogradov, *et al*., 1982: 70, fig. 16, (*Lanceola clausi clausi*).
Vinogradov, 1990a: 50-51.
Vinogradov, 1991: 261 (table).
Vinogradov, 1992: 325.
De Broyer & Jazdzewski, 1993: 109 (list).
Vinogradov, 1999: 1146 (table), 1170, fig. 4.35.
Zeidler, 2009: 12 (key), 31-36, figs. 7-9.

***Southern Ocean distribution*:**
Indian Sector: Off the West Ice Shelf, *Gauss* winter stn. (65°03'S 85°04'E); (Woltereck 1927). Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m; stn. 413 (58°58'S 109°21'E), 0-2180 m; stn. 415 (55°18'S 109°20'E), 0-1200 m & stn. 417 (51°22'S 109°26'E), 0-1200 m; (Vinogradov 1962). Dumont D'Urville Sea, *Ob* stn. 48 (63°18'S 135° 14'E), 1100-2200 m; (Vinogradov 1962). Prydz Bay, *Aurora Australis* stns. (55°52'S 71°05'E), 211-248 m and (68°32.5'S 73°E), 445-461 m; (Zeidler 2009).
Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 276 (71°41'S 166°47'W), 0-1750 m; (K.H. Barnard 1930). Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-2000 & 0-3000 m & stn. 367 (63°46'S 165°43'E), 550-1100 m; (Vinogradov 1962).
***Worldwide distribution*:**
A widespread species known from many records from the tropical and cold-water regions of all the world's oceans, except the Mediterranean Sea. It is the only species of *Lanceola* found in the Arctic Basin, and in Antarctic waters it has been found right up to the coast of Antarctica. It inhabits a wide range of depths, from 200-500 m to 5500 m or more, but is found more often at depths of 1000-3000 m.
***Type locality*:** North Atlantic, Davis Strait.
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Lanceola clausi gracilis Vinogradov, 1956

Vinogradov, 1956: 196, (*Lanceola clausi* var. *gracilis*).
Vinogradov, 1957: 195-196, fig. 5, (*Lanceola clausi var. gracilis*).
Vinogradov, 1962: 6-7, fig. 5a.
Vinogradov, 1964: 112.
Hurley, 1969: 33, pl. 18 (map 1).
Vinogradov, 1970: 384 (table).
Vinogradov *et al*., 1982: 71-72, fig. 18.
De Broyer & Jazdzewski, 1993: 109 (list).
Zeidler, 2009: 37.

***Southern Ocean distribution*:**
Indian Sector: Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known mainly from colder waters having been recorded from the north-western Pacific, north of 40°N and Antarctic waters as above. Vinogradov (1964) also recorded two specimens from the mid-Indian Ocean. Vinogradov *et* al. (1982) regard it as one of the deepest water hyperiideans, possibly inhabiting only the abyssopelagic zone (deeper than 2500-3000 m).
***Type locality*:** North Pacific, West Bering Sea, 2000-0 & 3700-0 m.
***Type material location*:** Syntypes are in the MUG, Moscow (Mb-1042 & 1043).

Lanceola loveni antarctica Vinogradov, 1962

(Fig. 5, Colour plate 1f)

Vinogradov, 1962: 6-10, figs. 1-4.
Hurley, 1969: 33, pl. 18 (map 1).
Vinogradov *et al*., 1982: 51 (key), 64, fig. 13.
De Broyer & Jazdzewski, 1993: 109 (list).
Zeidler, 2009: 16-17.

***Southern Ocean distribution*:**
Indian Sector: Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m and near the Davis Sea, *Ob* stn. 105 (55°40'S 106°13'E), 240-600 m; stn. 111 (64°25'S 92°52'E), 0-2700 m & stn. 285 (59°29'S 97°08'E), 0-4500 m; (Vinogradov 1962).
Pacific Sector: Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-2000 m & 0-3000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Known only from the type localities.
***Type locality*:** From the Indian and Pacific Sectors of the Southern Ocean, as detailed above.
***Type material location*:** The syntypes from *Ob* stns. 36 & 57 are in the MUG, Moscow (Mb-1049 & 1050).

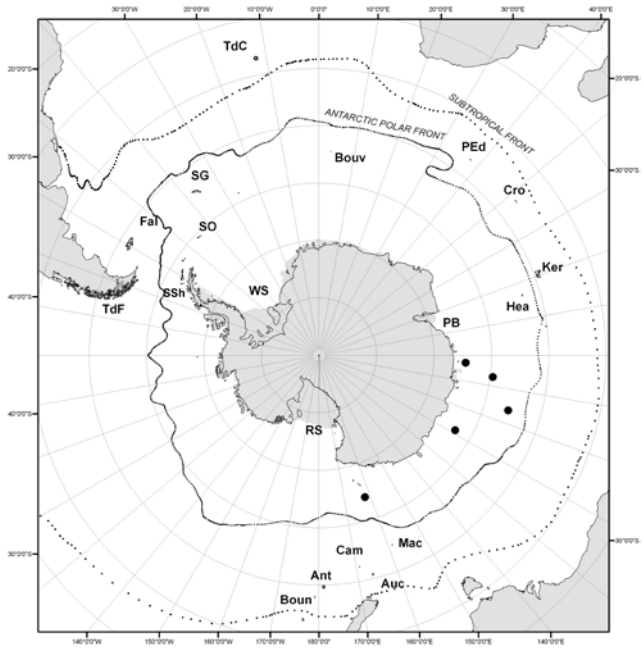

Figure 5. Distribution records of *Lanceola loveni antarctica*.

Lanceola sayana Bovallius, 1885

Bovallius, 1885a: 7, fig. 1a,1b, (*Lanceola Sayana*).
Bovallius, 1887a: 6, (*Lanceola Sayana*).
Bovallius, 1887c: 28 (key), 30-33, pl. 4, figs. 1-19; pl. 5, fig 1, (*Lanceola Sayana*).
Chevreux, 1900: 134-135, pl. 14, fig. 10.
Norman, 1900: 135, (*Lanceola Sayana*).
Vosseler, 1901: 127, (*Lanceola Sayana*).
Tattersall, 1906: 16.
Walker, 1909: 50 (list), 53.
Woltereck, 1909: 158-159, pl. 6, figs 16, 18b, (*Lanceola Sayana* var. *longipes*).
Woltereck, 1909: 158-159, pl. 6, figs. 17, 18a, 19, (*Lanceola Sayana* var. *typica*).
Stephensen, 1913: 94-95, (*Lanceola Sayana*).
Stephensen, 1918: 8-14, figs. 1-3, (*Lanceola Sayana* var. *typica*).
Chevreux, 1920: 1-2.
Stephensen, 1923a: 3, (*Lanceola Sayana*).
Schellenberg, 1927: 596-597, fig. 5.
Woltereck, 1927: 60-63, figs. 1a, 1b, 2, 3, 4a, 4c, (*Lanceola Sayana* var. *typica*).
Woltereck, 1927: 63-64, (*Lanceola Sayana* var. *longipes*).
Pirlot, 1929: 42-43, (*Lanceola Sayana*).
K.H. Barnard, 1932: 254.
Stephensen, 1932a: 376 (list).
Chevreux, 1935: 134-135.
K.H. Barnard, 1937: 178.
Shoemaker, 1945b: 206, fig. 14, (*Lanceola pelagica*).
Bulycheva, 1955: 1048 (table).
Vinogradov, 1956: 194.
Vinogradov, 1957: 190, fig. 2a.
Vinogradov, 1960a: 200, figs. 1, 3a.
Vinogradov, 1964: 109-110, fig. 2.
Vinogradov, 1970: 384 (table).
Yoo, 1971b: 41 (list), 44.
Sanger, 1974: 3.
Thurston, 1976: 402.
Laval, 1980: 14, 17 (table).
Vinogradov *et al*., 1982: 51 (key), 52-56, figs. 5, 6a.
Barkhatov & Vinogradov, 1988: 177 (table).
Vinogradov, 1990a: 50.
Vinogradov, 1991: 261 (table).
Vinogradov, 1992: 325.
Zeidler, 1992: 91, fig. 4.
De Broyer & Jazdzewski, 1993: 109 (list).
Vinogradov, 1993: 43 (table).
Shih & Chen, 1995: 28-29, fig. 13.
Vinogradov, 1999: 1146 (table), 1171, fig. 4.39.
Lowry, 2000: 326 (list).
Escobar-Briones *et al*., 2002: 367 (list).
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 118 (table).
Gasca, 2008: 86 (table).
Zeidler, 2009: 12 (key), 17-23, figs. 2, 3.

***Southern Ocean distribution*:**
Indian Sector: Off the West Ice Shelf, *Gauss* stn. (64°35'S 85°25'E), 0-400 m; (Woltereck 1927).
***Worldwide distribution*:**
One of the most common species of *Lanceola*, widespread in all the world's oceans, excluding the Mediterranean Sea and the Arctic Basin, but including Antarctic waters as above. It seems to prefer surface waters but descends to depths

exceeding 3000 m.
***Type locality*:** "The Atlantic".
***Type material location*:** The lectotype female and seven paralectotypes are in the ZMUC, Copenhagen (CRU-9258, 8012, 9250, 9256, 9257, 9259, 9261 & 9262).

Lanceola serrata Bovallius, 1885

Bovallius, 1885a: 7.
Bovallius, 1887a: 6.
Bovallius, 1887b: 554.
Bovallius, 1887c: 28 (key), 34-35, pl. 5, figs. 2-13.
Hansen, 1888: 55.
Stebbing, 1888: 1313-1315, text fig. 28, (*Lanceola suhmi* – re-determined by Zeidler 2009).
Stebbing, 1888: 1315-1316, (*Lanceola australis* – re-determined by Zeidler 2009).
Tattersall, 1906: 17.
Stephensen, 1913: 94.
Stephensen, 1918: 15.
Chevreux, 1920: 2-3.
Stephensen, 1923a: 4.
Schellenberg, 1927: 593-594, fig. 2.
K.H. Barnard, 1932: 254-255.
Stephensen, 1932a: 376 (list).
Stephensen, 1933: 67.
Chevreux, 1935: 136.
Pirlot, 1938: 35.
Shoemaker, 1945b: 209.
Bulycheva, 1955: 1048 (table).
Vinogradov, 1956: 195.
Vinogradov, 1957: 192.
Siegfried, 1963: 6 (list), 12 (table).
Vinogradov, 1964: 111.
Dick, 1970: 29 (key), 47.
Vinogradov, 1970: 384 (table).
Vinogradov *et al*., 1982: 51 (key), 64-66, fig. 14.
De Broyer & Jazdzewski, 1993: 109-110 (list).
Shih & Chen, 1995: 29-31, fig. 14.
Vinogradov, 1999: 1146 (table), 1171, fig. 4.40.
Lowry, 2000: 326 (list).
Zeidler, 2009: 12 (key), 28-31, fig. 6.

***Southern Ocean distribution*:**
Atlantic Sector: Mid-South Atlantic, *Discovery* stn. 9 (46°11'S 22°27'W), 0-3500 m & stn. 107 (45°03'S 17°03W), 850-950 m; Argentine Basin, stn. 71 (43°20'S 46°02'W), 2000-0 m; near Bouvet Island, stn. 114 (52°25'S 09°50'E), 1310-1410 m and north-east of the Falkland Islands, stn. 239 (46°56'S 46°03'W), 1050-1350 m; (K.H. Barnard 1932).
Indian Sector: South of Australia, *Challenger* stn. 158 (50°01'S 123°04'E), 1800 fathoms; (Stebbing 1888). South-west of Tasmania, *BANZARE* stn. 111 (44°11'S 143°36'E), 1710-0 m; (Zeidler 2009). Prydz Bay, *Aurora Australis* stn. (67°30'S 75°01'E), 288-220 m; (Zeidler 2009).
***Worldwide distribution*:**
A widespread but relatively uncommon species occurring in all the world's oceans, excluding the Mediterranean Sea, tending to be less common in tropical regions. In the Atlantic it ranges from 65°N to 53°S. In the Pacific it is common in the Sea of Okhotsk and the Bering Sea, and it has also been found in the South China Sea and as far south as 38°S, and in the Southern Ocean, as above. In the Indian Ocean it is known only from a few records from the central part. It inhabits a wide range of depths, from 300-400 m to 2000 m but is more commonly found at depths of 750-1500 m and sometimes near the surface.
***Type locality*:** "The Atlantic"
***Type material location*:** A lectotype female is in the ZMUC, Copenhagen (CRU-2076), from the mouth of the Davis Strait.

Scypholanceola aestiva (Stebbing, 1888)

(Colour plate 1e)

Stebbing, 1888: 1309-1313, pl. 153, (*Lanceola aestiva* – part; see Thurston 1973).
Woltereck, 1909: 161, 167, pl. 7, fig. 24a, 24b, (*Scypholanceola Vanhoeffeni*).
Woltereck, 1909: 162, 167, pl. 7, fig. 23, (*Scypholanceola chuni*).
K.H. Barnard, 1916: 290-291 (*Scypholanceola vanhoeffeni*).
Chevreux, 1920: 8-11, figs. 4-6, (*Scypholanceola Richardi*).
Woltereck, 1927: 65-68, figs. 5a, 5b, 9, (*Scypholanceola Vanhoeffeni*).
Woltereck, 1927: 65-68, fig. 6, (*Scypholanceola Chuni*).
Woltereck, 1927: 65-68, fig. 8, (*Scypholanceola Richardi*).
Pirlot, 1929: 45, (*Scypholanceola Richardi*).
K.H. Barnard, 1932: 257, (*Scypholanceola vanhoeffeni*).
Chevreux, 1935: 139-141, pl. 14, figs. 11, 12; pl. 15, fig. 12, (*Scypholanceola Richardi*).
Pirlot, 1939a: 8, (*Scypholanceola Vanhoeffeni*).
K.H. Barnard, 1940: 520 (list), (*Scypholanceola vanheoffeni*).
Shoemaker, 1945b: 215, 218, fig. 22, (*Scypholanceola vanhoeffeni*).
Vinogradov, 1956: 196, (*Scypholanceola vanhoeffeni*).
Vinogradov, 1957: 196, (*Scypholanceola vanhoeffeni*).
Vinogradov, 1960a: 207-208, fig. 4a, (*Scypholanceola vanhoeffeni*).
Vinogradov, 1962: 7, (*Scypholanceola vanhoeffeni*).
Seigfried, 1963: 6 (list), 12 (table), (*Scypholanceola vanhoeffeni*).
Vinogradov, 1964: 117, (*Scypholanceola vanhoeffeni*).
Hurley, 1969: 33, pl. 18 (map 1), (*Lanceola aestiva, Scypholanceola vanhoeffeni*).
Dick, 1970: 29 (key), 47, fig. 2 (part), (*Scypholanceola vanhoeffeni*).
Vinogradov, 1970: 384 (table), (*Scypholanceola vanhoeffeni*).
Sanger, 1973: 16-17, (*Scypholanceola vanhoeffeni*).
Thurston, 1973: 334-336, fig. 1.
Vinogradov *et al*., 1982: 78 (key), 78-81, figs. 22a, 23, 24a.
De Broyer & Jazdzewski, 1993: 110 (list).
Vinogradov, 1990a: 51.
Vinogradov, 1991: 261 (table).

Vinogradov, 1993: 42, 43 (table).
Lavaniegos & Ohman, 1999: 493 (table).
Vinogradov, 1999: 1148 (table), 1171, fig. 4.42.
Escobar-Briones *et al*., 2002: 367 (list).
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree).
Gasca, 2008: 86 (table).
Zeidler, 2009: 60 (key), 60-64, figs. 21, 22.

***Southern Ocean distribution*:**
Indian Sector: Off Wilkes Land, *Ob* stn. 29 (65°06'S 111°24'E), 0-2000 m; (Vinogradov 1962).
Pacific Sector: South of Tasmania, *Ob* stn. 397 (52°59'S 142°06'E), 0-3126 m and near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-2000 m; (Vinogradov 1962). Near Macquarie Island, *Southern Surveyor* stns. (53°54'S 159°08'E), 770 m and (53°23.5'S 159°33.7'E), 1003 m; (Zeidler 2009).
***Worldwide distribution*:**
Widely distributed in all the world's oceans, except the Mediterranean Sea, although relatively uncommon. In the Atlantic it ranges from about 63°N to 35°S. In the Indian Ocean it has been recorded mainly from tropical regions but occurs off South Africa as far south as 35°S and has also been recorded from the Southern Ocean as above. In the Pacific it is relatively common from the Sea of Okhotsk and Bering Sea to the Southern Ocean, including the South China Sea, tropical Indo-Pacific and Tasman Sea. It inhabits a wide range of depths from 500 m to 3500 m but seems to be most common in the 1000-1500 m layer.
***Type locality*:** Mid-Atlantic, off Brazil, *Challenger* stn. 120 (08°37'S 34°28'W), 675 fathoms.
***Type material location*:** The lectotype is in the NHM, London (89.5.15.188); on six microscope slides.

Family MEGALANCEOLIDAE Zeidler, 2009

Megalanceola stephenseni (Chevreux, 1920)

Stebbing, 1888: 1308, fig. 27, (*Lanceola sp.*).
Chevreux, 1920: 4-7, figs 1-3, (*Lanceola stephenseni*).
Chevreux, 1935: 137-139, pl. 14, figs. 9, 10, 15, (*Lanceola stephenseni*).
Pirlot, 1935: 2-8, figs. 1-4, (*Megalanceola terrae-novae*).
Pirlot, 1939a: 9-12, pl. 1, figs. 1-4.
Shoemaker, 1945b: 212, 215, fig. 21.
Herring, 1981: 169,172-175, (*Megalanceola terranovae*).
Vinogradov, *et al*., 1982: 82, fig. 25.
Zeidler, 1991: 128, fig. 1.
Zeidler, 1992: 91-92, fig. 5.
De Broyer & Jazdzewski, 1993: 110 (list).
Zeidler, 2009: 76-78, fig. 27.

***Southern Ocean distribution*:**
Pacific Sector: Near Macquarie Island, *Southern Surveyer* stn. (54°53'S 157°56.9'E), 1646 m; (Zeidler 2009).
***Worldwide distribution*:**
A relatively uncommon species. In the Atlantic it is known only from the northern parts, from near the Azores, Nova Scotia and Bermuda. In the Pacific it has been recorded from the east and west equatorial regions and also from the Indo-Pacific and South China Sea as well as the Tasman Sea and the Southern Ocean, as above. It remains to be recorded from the Indian Ocean. Most records come from catches around 1000 m depth.
***Type locality*:** North Atlantic, near the Azores, *Princesse Alice* II stn. 1849 (36°17'N 28°53'W), 0-3000 m.
***Type material location*:** The unique holotype male is in the MOM, Monaco (371081).

Family MICROPHASMIDAE Stephensen & Pirlot, 1931

Microphasma agassizi Woltereck, 1909

Woltereck, 1909: 153-154, pl. 4, fig. 11, (*Microphasma Agassizi*).
Pirlot, 1929: 52, (*Micophasma Agassizi*).
Stephensen & Pirlot, 1931: 539-543, figs. 15, 16.
Pirlot, 1939a: 17, (*Microphasma Agassizi*).
Shoemaker, 1945b: 218-219, fig. 23.
Vinogradov, 1957: 205.
Vinogradov, 1960a: 217-218.
Vinogradov, 1964: 126.
Vinogradov, 1970: 385 (table).
Vinogradov *et al*., 1982: 105-107, fig. 41.
Vinogradov, 1990a: 51.
Vinogradov & Semenova, 1996: 617.
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Zeidler, 2009: 90-93, figs. 33, 34.

***Southern Ocean distribution*:**
Pacific Sector: Drake Passage, *Eltanin* stn. 247 (59°29'-59°39'S 68°01'-68°31'W), 1830 m and west of the Drake Passage, *Eltanin* stn. 782 (60°00'-60°18'S 82°04'-82°41'W), 3074 m; (Zeidler 2009).
***Worldwide distribution*:**
A relatively rare species. In the Atlantic it has been recorded from the Bay of Biscay and near the Azores, Madeira, Bermuda and the Cape Verde Islands, with only one record from the south, off Gabon. In the Indian Ocean it has only been recorded from the north-western part, including the Arabian Sea. In the Pacific, records are from the Kuril-Kamchatka region, from near the Kermadec Islands and the tropical eastern part, from off Mexico to Chile and also the Southern Ocean, as above. It has been found in catches from depths of 970-1920 m and 1900-3750 m and also from catches from depths of more than 2000 m to the surface.
***Type locality*:** The eastern tropical Pacific, off Peru, *Albatross* stn. 4663.
***Type material location*:** Not found in any major European or North American museum; considered lost.

Family MIMONECTEOLIDAE Zeidler, 2009

Mimonecteola beebei Shoemaker, 1945

Shoemaker, 1945b: 224-228, figs. 29, 30.
Vinogradov, 1956: 199.
Vinogradov, 1957: 204, fig. 11.
Vinogradov, 1962: 12, fig. 7.
Vinogradov, 1964: 119-120, fig. 6.
Hurley, 1969: 33, pl. 19 (map 8).
Vinogradov, 1970: 385 (table).
Yoo, 1971b: 44-45.
Vinogradov *et al*., 1982: 100 (key), 100-102, fig. 37.
De Broyer & Jazdzewski, 1993: 109 (list).
Zeidler, 2009: 98 (key), 103-106, figs. 40, 41.
non Vinogradov, 1960a: 212-213, fig. 8, (= *Mimonecteola diomedeae* Woltereck, 1909; according to Vinogradov *et al*. 1982).

***Southern Ocean distribution*:**
Pacific Sector: Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-300 m; (Vinogradov 1962). Off the Antarctic Peninsula, *Eltanin* stn. 280 (67°28'-67°11'S 74°39'-75°06'W), 2577 m; (Zeidler 2009).
***Worldwide distribution*:**
A relatively rare species. In the Atlantic it has been recorded only from the type locality. In the Indian Ocean it is known only from the western tropical region. In the Pacific it has been recorded from the Sea of Okhotsk and the Bering Sea, tropical regions including the Sea of Japan, and the Southern Ocean, as above. Most catch records are from 500-3000 m.
***Type locality*:** North Atlantic, east of Bermuda (32°12'N 54°36'W), 1000 fathoms.
***Type material location*:** The holotype male and paratype female are in the USNM, Washington DC (109470 & 109471).

Infraorder PHYSOCEPHALATA Bowman & Gruner, 1973

Superfamily VIBILIOIDEA Bowman & Gruner, 1973

Family CYLLOPODIDAE Bovallius, 1887

Cyllopus lucasii Bate, 1862

(Fig. 6, Colour plates 2a, 2b)

Bate, 1862: 306-307, pl. 50, fig. 2, (*Cyllopus Lucasii*).
Bovallius, 1887a: 12.
Bovallius, 1887b: 547 (list), 556.
Bovallius, 1889: 5 (key), 16-18, text fig., (*Cyllopus Lucasi*).
Spandl, 1927: 148 (list), (*Cyllopus lukasi*).
Spandl, 1927: 149 (list), 175-176, fig. 12a-h, (*Cyllopus antarcticus*).
K.H. Barnard, 1930: 409.
K.H. Barnard, 1932: 266-267.
Hardy & Gunther, 1935: 200.
Bary, 1959: passim.
Hurley, 1960a: 111.
Vinogradov, 1962: 18.
Hurley, 1969: 33, pl. 18 (map 4).
Jazdzewski, 1981: passim.
Vinogradov *et al*., 1982: 239 (key), 242-243, fig. 120.
Hempel *et al*., 1983: 9-10, fig.5 (distribution).
Weigmann-Haass, 1983: 7-9, figs. 4-6, 7B, 8 & 9 (distribution).
Nagata, 1986: 259 (list), 270.
Jazdzewski & Presler, 1988: 63 (table), 67-69, figs. 3-4 (distribution).
Andres, 1990: 141, fig. 280.
Jazdzewski *et al*., 1992: 466 (table).
De Broyer & Jazdzewski, 1993: 110 (list).
Vinogradov, 1999: 1145 (table), 1177, fig. 4.77.
Zeidler, 2003: 86, fig. 36.

***Southern Ocean distribution*:**
Atlantic Sector: Near the South Orkney Islands [The Powell Islands] (Bate 1862); *Discovery* stn. 169 (60°48'S 92°52'E) (K.H. Barnard 1932). Near South Georgia, *Discovery* stns. 25, 26, 32, 36, 37, 38, 44 (K.H. Barnard 1932; Hardy & Gunther 1935); (Jazdzewski 1981; Weigmann-Haass 1983). Near the South Shetland Islands, *Discovery* stn. 208, off Livingston Island [62°36'S 60°30'W], (K.H. Barnard 1932);

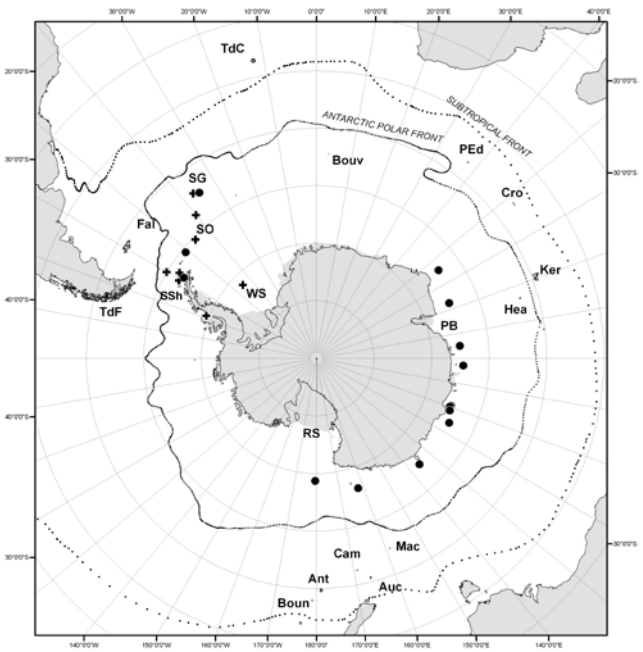

Figure 6. Distribution records of *Cyllopus lucasii*.
+ : approximate coordinates.

(Jazdzewski 1981; Jazdzewski & Presler 1988). Weddell Sea (Hempel *et al*. 1983; Weigmann-Haass 1983). Scotia Sea & Drake Passage (Jazdzewski 1981). Off South Georgia, around South Shetland and South Orkney Islands, *PAMRE I 1975-1976,* (54°48'S 35°15'W); *FIBEX 1981,* (63°06'S 58°41'W), (Jazdzewski & Presler 1988)

Indian Sector: Near Enderby Land, *BANZARE* stn. 45 (63°51'S 54°16'E), 200 mw; near Prydz Bay, *BANZARE* stn. 101 (65°00'S 85°08'E), 128-0 m; off Wilkes Land, *BANZARE* stn. 93 (64°21'S 116°02'E), 1500 mw & stn. 96 (65°10'S 109°32'E), 2200 mw; (Hurley 1960a) and also *Ob* stn. 27 (65°19S 109°56'E), 220-550 m; stn. 29 (65°09'S 111°24'E), 0-2000 m; stn. 34 (64°21'S 115°55'E), 0-1980 m & stn. 111 (64°25'S 92°52'E), 0-2700 m; (Vinogradov 1962). Off Adelie Land (64°17.6'S 135°48.3'E); (Nagata 1986). Prydz Bay, *Aurora Australis*, 32 stns. (range 65°-68°S 67°30'-77°53'E; 36-1200 m); (specimens in SAMA).

Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 181 (68°41'S 179°28'W) & stn. 285 (71°49'S 167°32'W); (K.H. Barnard 1930). Near the Balleny Islands, *Ob* stn. 53 (66°16'S 162°09'E), 0-250 m; (Vinogradov 1962).

***Worldwide distribution*:**

A circum-Antarctic species, restricted to south of the Antarctic Convergence. Found in catches from the surface down to almost 3000 m, but seems to be more common in shallower waters.

***Type locality*:** South Orkney Islands [The Powell Islands].

***Type material location*:** Unknown; considered lost.

Cyllopus magellanicus Dana, 1853

(Fig. 7, Colour plate 2c)

Dana, 1853: 990-991, pl. 68, fig. 1a-g.
Bate, 1862: 305-306, pl. 50, fig. 1.
Bate, 1862: 308, pl. 50, fig. 3, (*Cyllopus Danae*).
Bovallius, 1887a: 11, (*Cyllopus macropis*).
Bovallius, 1887a: 11, (*Cyllopus Batei*).
Bovallius, 1887a: 11-12, (*Cyllopus armatus*).
Bovallius, 1887a: 12, (*Cyllopus Levis*).
Bovallius, 1887a: 12, (*Cyllopus Danae*).
Bovallius, 1887b: 547 (list), 555-556.
Bovallius, 1887b: 547 (list), 556, (*Vibilia Danae*).
Bovallius, 1887b: 556-557, pl. 41, figs. 15-25, (*Cyllopus armatus*).
Bovallius, 1887c: 51-52, pl. 8, figs. 1-8, (*Vibilia macropis*).
Stebbing, 1888: 1296-1300, (*Cyllopus hookeri*).
Bovallius, 1889: 4 (key), 5-6, text fig.
Bovallius, 1889: 5 (key), 7-8, text fig., (*Cyllopus Danae*).
Bovallius, 1889: 5 (key), 8-10, pl. 1, figs. 36-41, (*Cyllopus Levis*).
Bovallius, 1889: 5 (key), 10-14, pl. 1, figs. 1-35, (*Cyllopus armatus*).
Bovallius, 1889: 5 (key), 14-16, text fig., (*Cyllopus Batei*).
Bovallius, 1889: 5 (key), 18-19, (*Cyllopus hookeri*).
Walker, 1907: 7.
Behning, 1913b: 214-215.
Stewart, 1913: 248-250, pl. 4, pl. 5, figs. 1-6, (*Vibilia serrata*).
Behning, 1925: 480-481, figs. 3-11, (*Vibilia macropis*).
Spandl, 1927: 148 (list).
Spandl, 1927: 174 (*Cyllopus armatus*).
K.H. Barnard, 1930: 408-409, 447.
K.H. Barnard, 1932: 266.
Hardy & Gunther, 1935: 200.
Stephensen, 1949: 57, 60 (table).
Hurley, 1955a: 129-133, figs. 23-50.
Hurley, 1955a: 133-136, figs 51-69, (*Cyllopus macropis*).
Bary, 1959: passim.
Hurley, 1960a: 111.
Hurley, 1960b: 598.
Kane, 1962: 299.
Vinogradov, 1962: 17.
Vinogradov, 1962: 17, (*Cyllopus macropis*).
Siegfried, 1963: 6 (list), 12 (table).
Hurley, 1969: 33, pl. 18 (map 4), (*Cyllopus magellanicus, Cyllopus macropis*).
Dick, 1970: 34 (key), 53, fig. 4 (part).
Semenova, 1976: 140-145, figs. 3, 5, 6.
Vinogradov *et al*., 1982: 239 (key), 239-241, fig. 119.
Hempel *et al*., 1983: 9-10, fig. 5 (distribution).
Weigmann-Haass, 1983: 2-6, 8-9, figs. 1-3, 7A, figs 8 & 9 (distribution).
Ramirez & Vinas, 1985: 28 (list), 30 (key), 30-31, fig. 2, fig. 3 (distribution).
Nagata, 1986: 259 (list), 270.
Barkhatov & Vinogradov, 1988: passim.
Jazdzewski & Presler, 1988: 63 (table), 67-69, figs. 3-4 (distribution).
De Broyer & Jazdzewski, 1993: 110-111 (list).

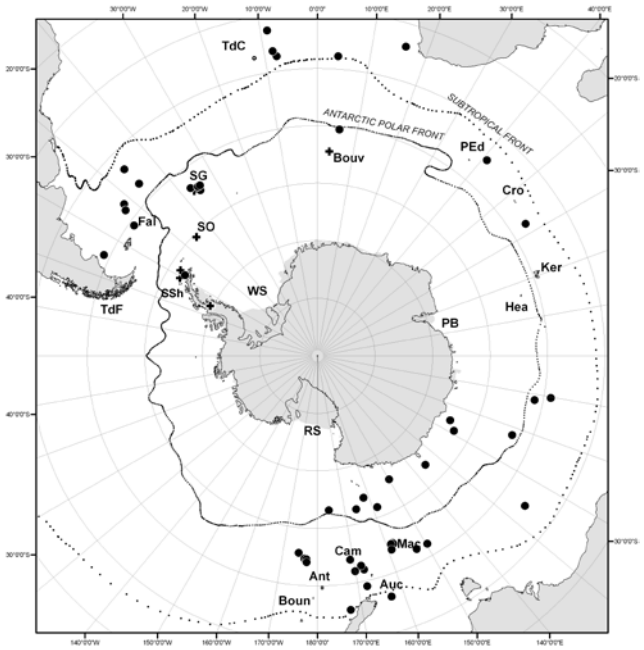

Figure 7. Distribution records of *Cyllopus magellanicus*.
+ : approximate coordinates.

Zeidler, 1998: 33.
Barkhatov *et al*., 1999: passim.
Vinogradov, 1999: 1145 (table), 1178, fig. 4.78.
Gates *et al*., 2003: 366.
Zeidler, 2003b: 83-85, fig. 36.

***Southern Ocean distribution*:**
Atlantic Sector: Orange Bay, Tierra del Fuego, on *Fucus* (brown algae) (Dana 1853, Bate 1862). Near South Georgia (37°26'S 7°44'W), (Bate 1862); *Discovery* stn. 32, 35, 36, 37, NE of Jason Light; *William Scoresby* stn. WS38 (54°01'S 35°14'W) (K.H. Barnard 1932); (60°40'S 22°59'W), (Hardy & Gunther 1935); (60°40'S 22°59'W), (Hempel *et al*. 1983); (54°03'S 34°35'W) (Stewart 1913; Weigmann-Haass 1983). Near the South Shetland Islands *Discovery* stn. 208, off Livingston Island, (K.H. Barnard 1932); (Jazdzewski & Presler 1988). Near Bouvet Island, *Discovery* stn. 116 (50°30'S 05°34°'E), (K.H. Barnard 1932). Antarctic Peninsula (Ramirez & Vinas 1985). Tristan da Cunha, *Discovery* stn. 4 (from stomach of Blue Fish "*Perca Antarctica*"). South Atlantic, *Discovery* stn. 81 (35°42'S 08°47'W); (36°27.5'S 8°20'W) (Stewart 1913). South-east Atlantic, *Discovery* stn. 89 (34°05'S 16°00'E). South-west Atlantic, *Discovery* stn. 66 (48°09'S 52°50'W), 0-5 m; stn. 67 (47°18'S 51°52'W), 45 m; stn. 71 (43°20'S 46°02'W), 2000 m; stn. 239 (46°56'S 46°03'W), 1050-1350 m; (K.H. Barnard 1932). Falkland Islands, *Discovery* stn. 47 (50°55'S 54°38'W), 0-5 m; *William Scoresby* stn. WS95 (48°58'S 64°45'W) (K.H. Barnard 1932).
Indian Sector: Near the Crozet Islands, *Gauss* stn. (47°07'S 57°40'E), surface; (Spandl 1927). North-east of Prince Edward Islands, *Discovery* stn. (45°S 40°57'E) and mid-Indian, *Discovery* stn. (46°38.5'S 93°27'E); (K.H. Barnard 1930). Off South-Western Australia, *BANZARE* stn. 109 (51°26'S 101°34'E), 750-500 m, 500-250 m, 250-100 m & 350-0 m and stn. 93 (64°21'S 116°02'E), 1500 mw; (Hurley 1960a); also *Ob* stn. 34 (64°21'S 115°55'E), 0-1980 m; stn. 36 (62°55'S 118°'E), 0-3700 m; stn. 97 (45°26'S 125°52'E), 0-800 m & stn. 103 (53°26'S 112°11'E), 0-600 m; (Vinogradov 1962) and *Discovery* stn. (48°44.5'S 100°16.5'E); (K.H. Barnard 1930).
Pacific Sector: South of New Zealand, *Terra Nova* stn. 206 (45°25'S 172°28'E), surface; stn. 235 (52°41'S 168°15'E), 10 m; stn. 240 (51°57'S 167°38'E), 4 m; stn. 250 (54°02'S 177°00'W), surface; stn. 251 (54°02'S 177°00'W), surface; stn. 252 (54°33'S 176°55'W), surface; stn. 256 (54°38'S 176°24'W), 20 m & stn. 259 (55°34'S 174°35'W), 20 m; and *Discovery* stns. (51°56'S 170°03'E; 54°04.25'S 170°49'E & 63°04'S 175°43'E); (K.H. Barnard 1930); also *Ob* stn. 76 (48°59'S 167°45'E), 0-220 m & stn. 352 (46°10'S 162°51'E) 0-1000 m; (Vinogradov 1962) and *Discovery* stns. (51°58'S 170°03'E "to past Cape Adare"); (Walker 1907). Near Macquarie Island, *BANZARE* stn. 79 (52°14'S 152°46'E), 500-250 m; (Hurley 1960a). South of Macquarie Island, *Magga Dan* stn. 76 (61°42'S 158°25'E), 100-0 m; (Hurley 1961); also *Ob* stn. 366 (62°28'S 165°45'E), 0-530 m; (Vinogradov 1962). Near Macquarie Island, *Southern Surveyor* stns. (54°45'S 158°E), 670 m; (53°54'S 159°03'E), 770 m; (54°55'S 157°56.9'E), 1646 m and (54°49.4'S 158°39.8'E), 865 m; (specimens in SAMA). Near Commonwealth Bay, *Ob* stn. 48 (63°18'S 135°14'E), 0-3600 m and off George V Land, *Ob* stn. 52 (65°10'S 149°52'E), 0-200 m & stn. 57 (64°03'S 161°59'E), 0-300 m; (Vinogradov 1962). South of Tasmania, (52°08.6'S 149°40.3'E); (Nagata 1986).
***Worldwide distribution*:**
A relatively common species, restricted to the cool-temperate and polar regions of the Southern Hemisphere, tending to be less common near the Antarctic Continent. Relatively common near the surface but also found in catches from almost 1000 m.
***Type locality*:** Orange Bay, Tierra del Fuego, on *Fucus* (brown algae).
***Type material location*:** Considered lost (see Evans 1967).

Family VIBILIIDAE Dana, 1852

Vibilia antarctica Stebbing, 1888

(Fig. 8, Colour plate 2d)

Stebbing, 1888: 1290-1293, pl. 150.
Stebbing, 1888: 1293, (*Vibilia* sp.).
Walker, 1907: 6-7, (*Vibilia propinqua*, mis-identification).
Behning & Woltereck, 1912: 9-11, fig. 11.
Chilton, 1912: 514.
Behning, 1913a: 529-530, 533.
Behning, 1913b: 219.
Behning, 1925: 486-488, figs. 26-31.
Behning, 1927: 118-119, 121 (table).
K.H. Barnard, 1930: 404, 447.
K.H. Barnard, 1932: 263-264.
Hardy & Gunther, 1935: 198-199.
Hurley, 1955a: 125-129, figs. 1-22, (*Vibilia stebbingi*, mis-identification).
Hurley, 1960a: 110.
Hurley, 1960a: 111, (*Vibilia stebbingi*, mis-identification).
Hurley, 1960b: 278.
Vinogradov, 1962: 16.
Vinogradov, 1962: 15-16, (*Vibilia stebbingi*, mis-identification).
Siegfried, 1963: 6 (list), 12 (table).
Hurley, 1969: 33, pl. 18 (map 3).
Hurley, 1969: 33, pl. 18 (map 3), (*Vibilia stebbingi*, mis-identification).
Dick, 1970: 51.
Semenova, 1973: 171.
Semenova, 1976: 138, 139 (table), fig. 2 (distribution).
Vinogradov *et al*., 1982: 200 (key), 208-211, fig. 104.
Hempel *et al*., 1983: 10, fig. 4 (distribution), (*Vibilia propinqua*, mis-identification according to Weigmann- Haass 1990).
Nagata, 1986: 268-270, figs. 8-9, (*Vibilia stebbingi*, mis-identification).

Barkhatov & Vinogradov, 1988: passim.
Jazdzewski & Presler, 1988: 63, 66-70, figs. 3-4.
Andres, 1990: 141, fig. 281.
Vinogradov, 1990a: 55.
Weigmann-Haass, 1990: 419-426, figs. 1-23.
De Broyer & Jazdzewski, 1993: 111 (list).
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1178-1179, fig. 4.79.
Escobar-Briones *et al*., 2002: 368 (list).
Shih & Hendrycks, 2003: 255 (table), 256 (table), 293 (key).
Zeidler, 2003b: 47-50, figs. 20, 21.
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree).
Gasca, 2008: 87 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Western King Haakon VII Sea, *Scotia* stn. 422 (68°32'S 12°29'W), 0-800 fathoms; (Chilton 1912). South-west of South Africa, *Valdivia* stn. 135 (56°30'S 14°29'E), 1500 m; (Behning & Woltereck 1912; Behning 1913a; Behning 1925). Near Bouvet Island, *Discovery* stn. 116 (50°30'S 05°34'E), 55 m & stn. 120 (51°44'S 05°19'W), 575-675 m (K.H. Barnard 1932; Hardy & Gunther 1935). Near the Falkland Islands, *Discovery* stn. 46 (51°13'S 49°50'W), 0-5 m; stn. 47 (50°55'S 54°38'W), 0-5 m; stn. 49 (13.5 miles N 51°E of Cape Bougainville), 0-5 m & stn. 62 (49°22'S 54°48'W), 0-45 m (K.H. Barnard 1932; Hardy & Gunther 1935). Near South Georgia, *Discovery* stn. 17, 250-500 m; stn. 24; stn. 26, 0-60 m; stn. 30 (W. Cumberland Bay, 2.8 miles S 24°W of Jason Light), 40-0 m; stn. 36 (53 miles N 40°E of Jason Light), 50-0 m; stn. 37, 0-5 m; stn. 125 (53°28'S 36°20'W), 0-5 m; stn. 128 (53°38'30"S 37°08'W), 0-50 m; stn. 129 (53°28'S 36°20'W), 84-0 m, 0-5 m; stn. 131 (53°59'30"S 36°11'W), 128 m; stn. 132 (53°52'S 35°58'30"W), 0-76 m; stn. 133 (53°45'S 35°21'W); stn. 135 (54°22'S 35°39'W), 75 m; stn. 136 (54°22'S 35°21'W), 0-5 m; stn. 137 (54°19'S 35°21'W), 66 m; stn. 138 (54°17'S 35°47'W), 77 m; stn. 139 (53°30'15"S 35°50'45"S), 0-90 m; stn. 151 (53°25'S 35°15'W), 100-1000 m; stn. 161 (57°21'20"S 46°43'30"W) 0-79 m; East Cumberland Bay, Grytviken, *Marine Biological Station*, stn. MS30, 0-40 m; *William Scoresby* stn. WS 18 (54°07'S 36°23'W), 0-5 m; stn. WS19 (54°00'30"S 36°20'30"W), 164 m; stn. WS20 (53°52'30"S 36°00'W), 250-500 m; stn. WS21 (53°45'30"S 35°48'W), 95-192 m; stn. WS22 (53°38'S 35°35'W), 0-1000 m; stn. WS24 (54°12'07"S 36°28'07"W), 100-250 m; stn. WS28 (53°48'15"S 38°13'W), 80 m; stn. WS29 (53°41'15"S 38°24'45"W), 118 m; stn. WS30 (53°41'15"S 38°24'45"W), 50-500 m; stn. WS31 (54°52'S 35°36'W), 53 m; stn. WS35 (55°13'15"S 34°59'W), 100-150 m; stn. WS36 (55°22'15"S 34°46'30"W), 500-750 m; stn. WS37 (54°45'S 35°11'W), 100-310 m; stn. WS38 (54°01'S 3514), 0-53 m; stn. WS39 (54°08'S 35°43'W), 50-100 m; stn. WS40 (55°09'S 35°58'W), 72 m; stn. WS42 (54°41'45"S 36°47'W), 0-5 m; stn. WS44 (55°06'S 36°57'W), 50-250 m; stn. WS45 (54°38'30"S 37°30'55"W), 0-50 m; stn. WS46 (54°20'15"S 37°32'30"W), 50-100 m; stn. WS47 (54°22'37"S 37°50'W), 0-50 m; stn. WS52 (54°03'30"S 38°35'W), 100 m; stn. WS54 (53°29'S 37°13'45"W), 0-500 m; stn. WS57 (53°37'S 36°51'W), 66-132 m; stn. WS58 (53°06'15"S 37°06'30"W), 56-112 m; stn. WS59 (52°57'S 37°06'30W), 56-113 m; stn. WS60 (52°47'S 37°06'30W), 73-146 m; stn. WS61 (52°37'30"S 37°06'30W), 61-132 m; stn. WS63 (54°36'S 37°13'45"W), 100-500 m; stn. WS67 (53°19'S 45°16'W), 0-133 m; stn. WS69 (52°19'S 37°13'45"W), 0-146 m; stn. WS70 (51°58'S 37°13'45"W); (K.H. Barnard 1932; Hardy & Gunther 1935). Near the South Orkney Islands, *Discovery* stn. 169 (60°48'S 51°00'W), 1000-1100 m (K.H. Barnard 1932; Hardy & Gunther 1935). Near the South Shetland Islands, *Discovery* stn. 208, off Livingstone Island, 0-800 m; (K.H. Barnard 1932; Hardy & Gunther 1935), also (Jazdzewski & Presler 1988). From the Falkland Islands to the Antarctic Peninsula and the northern Weddell Sea (Weigmann-Haass 1990). South-west Atlantic, *Discovery* stn. 71 (43°20'S 42°20'W), 0-2000 m; (K.H. Barnard 1932; Hardy & Gunther 1935). Argentine Basin (44°22'S 58°50'W), surface; (specimens in USNM).

Indian Sector: Near Heard Island, *Challenger* stn. 150 (52°04'S 71°22'E), surface; (Stebbing 1888). South-east of South Africa, *Valdivia* stn. 142 (55°27'S 28°58'E), 1000 m and south of Prince Edward Islands, *Valdivia* stn. 145 (59°16'S 40°13'E), 1500 m; (Behning & Woltereck 1912; Behning 1913a; Behning 1925). North-east of Prince Edward Islands, *Discovery* stns. (45°S 40°57'E & 45°08'S 44°47'E) and mid-Indian, *Discovery* stn. (46°38.5'S 93°27'E); (K.H. Barnard 1930). Between the Prince Edward and Crozet Islands, *Gauss* stn. (44°42'S 43°59'E), surface; (Behning 1927). Near Enderby Land, *BANZARE* stn. 31 (66°11'S 65°10'E), 1000 m; stn. 32 (66°35'S 61°13'E), 750 m; stn. 35 (66°07'S 58°26'E), 2200 mw & stn. 107 (66°45'S 62°03'E),

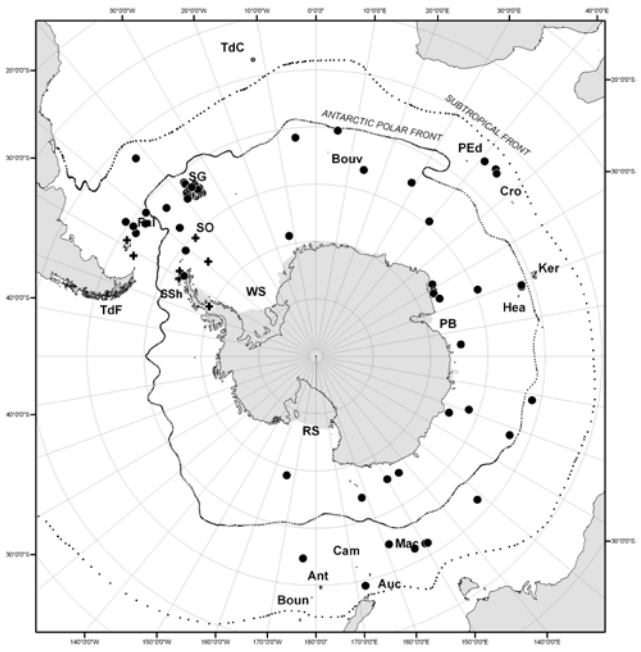

Figure 8. Distribution records of *Vibilia antarctica*.

219 m; (Hurley 1960a). Off Wilkes Land, *BANZARE* stn. 95 (64°43'S 113°03'E); (Hurley 1960a) and *Ob* stn. 411 (61°42'S 109°15'E), 0-1100 m; (Vinogradov 1962). Near King William II Land, *Gauss* stn. (64°35'S 85°25'E), 400 m; (Behning 1927). Near Prydz Bay, *Ob* stn. 455 (59°28'S 67°41' E), 0-1100 m; (Vinogradov 1962). Off South-Western Australia, *BANZARE* stn. 109 (51°26'S 101°34'E), 250-100 m; (Hurley 1960a) and *Ob* stn. 103 (53°26'S 112°11'E), 0-600 m; (Vinogradov 1962). South of Australia, *Discovery* stn. (52°16'S 131°36'E); (K.H. Barnard 1930).
Pacific Sector: South of New Zealand, *Terra Nova* stn. 256 (54°38'S 176°24'W), 20 m; (K.H. Barnard 1930) and *Ob* stn. 76 (48°59'S 167°45'E), 0-220 m; (Vinogradov 1962). Near the Ross Sea, *Terra Nova* stn. 269 (68°37'S 166°14'W), surface; (K.H. Barnard 1930). South of Tasmania (52°08.6'S 149°40.3'E); (Nagata 1986) and *BANZARE* stn. 79 (52°14'S 152°46'E), 500-250 m; (Hurley 1960a). Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 3000-1400 m and near Commonwealth Bay, *Ob* stn. 51 (65°01'S 144°36'E), 200-500 m & stn. 52 (65°10'S 149°52'E), 0-100 m; (Vinogradov 1962). Near Macquarie Island, *Southern Surveyor* stn. (54°46'S 158°41'E), 960 m; (specimens in SAMA).

***Worldwide distribution*:**
Relatively common south of the Subtropical Convergence. Incursions further north are probably as a result of the influx of cold water currents. Relatively more common near the surface but found in catches down to about 1000 m and even 3000-1400 m.
***Type locality*:** Indian Sector, near Heard Island, *Challenger* stn. 150 (52°04'S 71°22'E), surface.
***Type material location*:** The unique holotype is in the NHM, London (89.5.15.182), on two microscope slides.

Vibilia armata Bovallius, 1887

Bovallius, 1887a: 9, (*Vibilia gracilis*).
Bovallius, 1887a: 9-10, (*Vibilia gracilenta*).
Bovallius, 1887a: 10.
Bovallius, 1887c: 45 (key), 65-66, pl. 9, figs. 14-28, (*Vibilia gracilis*).
Bovallius, 1887c: 45 (key), 67-68, pl. 10, figs. 1-14, (*Vibilia gracilenta*).
Bovallius, 1887c: 45 (key), 69-70, pl. 10, figs. 15-22.
Chevreux, 1892: 32-35, figs. 1-3, (*Vibilia erratica*).
Vosseler, 1901: 125.
Vosseler, 1901: 125, (*Vibilia gracilenta*).
Lo Bianco, 1902: 423, 446, 467.
Lo Bianco, 1903: 121, 124, 133, 138, 142, 146, 147, 153, table facing p.278.
Walker, 1903b: 232.
Lo Bianco, 1904: 42, pl. 21, fig. 62.
Stebbing, 1904: 31.
Tattersall, 1906: 15.
Walker, 1909: 50, 53, (*Vibilia gracilenta*).
Sexton, 1911: 222.
Behning & Woltereck, 1912: 5.
Behning, 1913a: 529, 533.
Behning, 1913b: 220.
Stewart, 1913: 250.
Stewart, 1913: 250-251, (*Vibilia gracilenta*).
Stephensen, 1918: 46-52, figs. 15, 16, chart 6.
K.H. Barnard, 1925: 376.
K.H. Barnard, 1925: 376-377, (*Vibilia gracilenta*).
Behning, 1925: 491-494, figs. 52-61.
Chevreux & Fage, 1925: 387-388, fig. 391.
Shoemaker, 1925: 41, (*Vibilia californica*, part).
Behning, 1927: 119, 121 (table).
Schellenberg, 1927: 618, fig. 27.
Pirlot, 1929: 100-101.
K.H. Barnard, 1930: 404, 447.
Pirlot, 1930: 11.
K.H. Barnard, 1931: 126.
K.H. Barnard, 1932: 264-265.
Stephensen, 1933: 64.
Chevreux, 1935: 169-170.
Chevreux, 1935: 170-172, pl. 16, figs. 14, 25, 31, (*Vibilia erratica*).
Chevreux, 1935: 173, (*Vibilia gracilenta*).
K.H. Barnard, 1937: 182.
Stephensen, 1949: 56, 60 (table).
Guiler, 1952: 31.
Reid, 1955: 13.
Hurley, 1956: 10-11.
Irie, 1959: table 4.
Hurley, 1960b: 279.
Evans, 1961: 203.
Kane, 1962: 299.
Vinogradov, 1962: 16.
Laval, 1963: 1389-1392, figs. 1B, 2.
Siegfried, 1963: 6 (list), 8, 12 (table).
Pillai, 1966: 203-207, fig. 1.
Brusca, 1967a: 388-389.
Brusca, 1967b: 453.
Hurley, 1969: 33, pl. 18 (map 3).
Dick, 1970: 51-52.
Yoo, 1971b: 50, fig. 6 (distribution).
Brusca, 1973: 12-13.
Semenova, 1973: 173-174.
Laval, 1974: passim.
Lorz & Pearcy, 1975: 1444.
Théodoridès & Desportes, 1975: 206, 213, 217 (list), (parasites).
Semenova, 1976: 139, fig. 2 (distribution).
Thurston, 1976: 402-404, fig. 5 (graphs).
Shulenberger, 1977a: 378 (table).
Tranter, 1977: 646, 648 (table), 659.
Zeidler, 1978: 5-6, fig. 2.
Brusca, 1981a: 17 (key), 39, figs. 4c, 4e.
Watson & Chaloupka, 1982: 29, fig. 6-3.
Vinogradov *et al*., 1982: 202 (key), 226-228, fig. 112.
Young & Anderson, 1987: 716 (table).

Barkhatov & Vinogradov, 1988: 168 (table), 169-177.
Vinogradov, 1990a: 56.
Zeidler, 1992: 92.
De Broyer & Jazdzewski, 1993: 111 (list).
Vinogradov, 1993: 43 (table).
Lin *et al*., 1995: 120, 122 (table).
Shih & Chen, 1995: 42-44, figs. 20, 21.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 33-34.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1178 (key), 1179, fig. 4.80.
Lowry, 2000: 332 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Lavaniegos & Ohman, 2003: 2485.
Shih & Hendrycks, 2003: 255 (table), 256 (table), 258-269 (table), 270.
Zeidler, 2003b: 32-36, figs. 12, 13.
Vinogradov *et al*., 2004: 10, 24 (table).
Gasca, 2008: 86 (table), 91-92.

***Southern Ocean distribution*:**
Indian Sector: Off south-western Australia, *Ob* stn. 97 (45°26'S 125°52'E), 0-2200 m; stn. 417 (51°22'S 109°26'E), 0-1200 m & stn. 419 (47°36'S 109°20'E), 0-1100 m; (Vinogradov 1962). Mid-Indian, *Discovery* stn. (46°38.5'S 93°27'E); (K.H. Barnard 1930).
Pacific Sector: South of New Zealand, *Terra Nova* stn. 238 (52°11'S 167°25'E), 30 m; (K.H. Barnard 1930) and *Ob* stn. 71 (52°36'S 162°07'E), 0-200 m & stn. 352 (46°10'S 162°51'E), 0-1000 m; (Vinogradov 1962).
***Worldwide distribution*:**
A relatively abundant species in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea; occasionally venturing into the Southern Ocean, as above. More common near the surface but found in catches down to about 1200 m.
***Type locality*:** "South Atlantic".
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Vibilia australis Stebbing, 1888

Stebbing, 1888: 1287-1290, pl. 149.
Vosseler, 1901: 124.
Stebbing, 1910: 654.
Behning & Woltereck, 1912: 5.
Behning & Woltereck, 1912: 9, figs. 9, 10, (*Vibilia australis* var. *pelagica*).
Behning, 1913a: 529, 533.
Behning, 1913b: 219.
Behning, 1913b: 219, (*Vibilia australis* var. *pelagica*).
Spandl, 1924a: 21-22.
Behning, 1925: 488, figs. 32-34.
Behning, 1925: 488-489, figs. 35-41, (*Vibilia australis* var. *pelagica*).
Behning, 1927: 119, 121 (table).
K.H. Barnard, 1932: 264.
Stephensen, 1932b: 498-501, fig. 5, (*Vibilia seriocellatus*).
Behning, 1939: 358-361, pl. 6, (*Vibilia wolterecki*).
Guiler, 1952: 31.
Bulycheva, 1955: 1048 (table).
Bulycheva, 1955: 1048 (table), (*Vibilia wolterecki*).
Reid, 1955: 14.
Hurley, 1956: 11-12.
Sheard, 1965: 244 (list).
Pillai, 1966: 208-209, fig. 3.
Sheard, 1967: 979 (table), 982 (table), 983 (table).
Lorz & Pearcy, 1975: 1444 (table), (*Vibilia wolterecki*).
Thurston, 1976: 404.
Shulenberger, 1977a: 378 (table), (*Vibilia wolterecki*).
Tranter, 1977: 646, 648 (table).
Stuck *et al*., 1980: 361.
Brusca, 1981a: 17 (key), 39, fig. 4b.
Brusca, 1981a: 18 (key), 39, figs. 4j, 4m, (*Vibilia wolterecki*).
Vinogradov *et al*., 1982: 201 (key), 113-224, fig. 110.
De Broyer & Jazdzewski, 1993: 111 (list).
Shih & Chen, 1995: 49-51, fig. 26.
Lin *et al*., 1996: 229 (table).
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1178 (key), 1179, fig. 4.81.
Lowry, 2000: 332 (list).
Lima & Valentin, 2001: 471 (list), 476 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Shih & Hendrycks, 2003: 255 (table), 256 (table), 258-269 (table), 273-275, 293 (key), figs. 3, 4.
Gasca, 2003a: 307 (table).
Zeidler, 2003b: 44-47, figs. 18, 19.
Gasca, 2004: 997 (table), 999 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 87 (table), 91.

***Southern Ocean distribution*:**
Atlantic Sector: Near the Falkland Islands, *Discovery* stn. 67 (47°18'S 51°52'W), 4-5 m; (K.H. Barnard 1932).
Indian/Pacific Sector: South of Australia, between *Challenger* stns. 158 & 159 (48°18'S 130°04'E), surface.
***Worldwide distribution*:**
An uncommon species, widely distributed in the tropical and temperate regions of all the world's oceans, except the Mediterranean Sea, rarely venturing into the Southern Ocean, as above. Found mainly in relatively shallow waters, in catches from the surface down to 250 m.
Type locality: South of Australia as above.
***Type material location*:** The three syntypes are in the NHM, London (89.5.15.181).

Vibilia pyripes Bovallius, 1887

Bovallius, 1887a: 10.
Bovallius, 1887c: 45 (key), 71-72, pl. 10, figs. 23-30.

Chevreux, 1900: 131-134, pl. 16, fig. 2, (*Vibilia grandicornis*).
Vosseler, 1901: 125.
Behning & Woltereck, 1912: 5.
Behning, 1913a: 533.
Behning, 1913b: 221.
Behning, 1913b: 221, (*Vibilia grandicornis*).
Stephensen, 1918: 52-53, fig. 17, chart 5 (part).
Stephensen, 1918: 53, (*Vibilia grandicornis*).
Behning, 1925: 494-495, fig. 62.
Schellenberg, 1927: 617-618, fig. 26.
Pirlot, 1929: 102, (*Vibilia grandicornis*).
K.H. Barnard, 1930: 405.
K.H. Barnard, 1932: 265.
Chevreux, 1935: 175.
K.H. Barnard, 1937: 182.
Reid, 1955: 14.
Irie, 1959: table 4.
Vinogradov, 1962: 16.
Hurley, 1969: 33, pl. 18 (map 3).
Shih *et al*., 1971: 68.
Semenova, 1973: 175.
Semenova, 1976: 139-140, fig. 2 (distribution).
Madin & Harbison, 1977: 453 (table).
Tranter, 1977: 647, 648 (table).
Brusca, 1981a: 18 (key), 39, figs. 4g, 4l.
Vinogradov *et al*., 1982: 202 (key), 232-234, fig. 115.
Young & Anderson, 1987: 712, 716 (table).
Barkhatov & Vinogradov, 1988: 168 (table), 169-177 (part).
De Broyer & Jazdzewski, 1993: 111 (list).
Shih & Chen, 1995: 45-47, figs. 22, 23.
Lin *et al*., 1996: 229 (table).
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1178 (key), 1180, fig. 4.87.
Zeidler, 1999: 34, 37.
Lowry, 2000: 332 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Shih & Hendrycks, 2003: 255 (table), 256 (table), 258-269 (table), 270-272, 292 (key), figs. 1, 2.
Zeidler, 2003b: 36-40, figs. 14, 15.
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932).
Pacific Sector: South of New Zealand, *Ob* stn. 76 (48°59'S 167°45'E), 0-220 m; (Vinogradov 1962).
***Worldwide distribution*:**
A relatively rare species found in both tropical and temperate regions of all the world's oceans, except the Mediterranean Sea, rarely venturing near the Southern Ocean, as above. In the Indian Ocean the most southerly record is 35°S. Most records have been from catches from near the surface down to about 200 m.
***Type locality*:** Tropical parts of the Atlantic.
***Type material location*:** Not found in the NRS, Stockholm ; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Vibilia stebbingi Behning & Woltereck, 1912

Behning & Woltereck, 1912: 5-6, figs. 1-3.
Behning, 1913a: 529, 533.
Behning, 1913b: 217-218.
Stephensen, 1918: 40-41, fig. 12.
Behning, 1925: 482-484, figs. 13-22.
Behning, 1927: 118, 121 (table).
Pirlot, 1929: 96-97.
K.H. Barnard, 1930: 403-404.
Chevreux, 1935: 175.
Hurley, 1960b: 279.
Grice & Hart, 1962: 300.
Kane, 1962: 298-299.
Hurley, 1969: 33, pl. 18 (map. 3 - in part).
Dick, 1970: 34 (key), 53.
Semenova, 1973: 172.
Semenova, 1976: 138, 139 (table), fig. 2 (distribution).
Thurston, 1976: 404-405.
Madin & Harbison, 1977: 453 (table), 454.
Shulenberger, 1977a: 378 (table).
Tranter, 1977: 647, 648 (table).
Brusca, 1981a: 18 (key), 39.
Vinogradov *et al*., 1982: 201 (key), 206-20.8, fig. 103.
Barkhatov & Vinogradov, 1988: 168 (table), 169-177 (part).
Vinogradov, 1990a: 55, 93 (table).
Zeidler, 1992: 96.
De Broyer & Jazdzewski, 1993: 112 (list).
Lin *et al*., 1995: 120, 122 (table).
Shih & Chen, 1995: 52-53, figs. 28, 29.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 37, 41.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999:1149 (table), 1178 (key), 1180, fig. 4.89.
Lowry, 2000: 332 (list).
Gasca & Shih, 2001: 496 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 307 (table).
Gasca, 2003b: 118 (table), 119 (table).
Shih & Hendrycks, 2003: 255 (table), 256 (table), 258-269 (table), 278-280, 293 (key), figs. 8, 9.
Zeidler, 2003b: 54-57, figs. 24, 25.
Gasca, 2004: 997 (table), 999 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 87 (table).
non Hurley, 1955: 125-129, figs. 1-22 (= *Vibilia antarctica*).
non Hurley, 1960a: 111 (= *Vibilia antarctica*).
non Vinogradov, 1962: 15-16 (= *Vibilia antarctica*).
non Nagata, 1986: 268-270, figs. 8-9 (= *Vibilia antarctica*).
non Young & Anderson, 1987: 712, 716 (table), fig. 2 (= *Vibilia propinqua*).

***Southern Ocean distribution*:**
Pacific Sector: Near Macquarie Island, stn. B114 (59°39'S 171°02'E), 500-0 m & stn. B119 (54°31'S 170°20'E), 500-0 m; (Kane 1962). **Note:** It is likely that following Hurley (1960a) these specimens have been mis-identified and represent *Vibilia antarctica*.
***Worldwide distribution*:**
Relatively uncommon, but widely distributed in the tropical and subtropical regions of the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from 35°N to 30°S. In the Indian Ocean it is known mainly from the western part, from the Red Sea and from off the coast of South Africa. In the Pacific it is recorded from the South China Sea to the coast off California and south to the Tasman Sea. Records from the Southern Ocean are probably erroneous and represent a mis-identification of *Vibilia antarctica*. More common in shallow waters (0-250 m), but also known from catches from 1000 m, and even from 3000 m, to the surface.
***Type locality*:** Central eastern Atlantic, near Gulf of Guinea, *Valdivia* stn. 48b (00°09'S 08°29'W), 200 m; stn. 49 (00°20'N 06°45'W), 200 m; stn. 54 (01°51'N 00°31'E), 200 m & stn. 55 (02°36'N 03°27'E), 200 m.
***Type material location*:** Most syntypes are in the ZMB, Berlin. The specimen from stn. 54 is the one figured by Behning & Woltereck (1912).

Vibilia viatrix Bovallius, 1887

Bovallius, 1887a: 8.
Bovallius, 1887c: 44 (key), 63-64, pl. 9, figs. 1-13.
Stebbing, 1888: 1286-1287, pl. 148B, fig. E, (*Vibilia viator*).
Chevreux, 1900: 126-129, pl. 15, fig. 4, (*Vibilia Hirondellei*).
Chevreux, 1900: 129-131, pl. 16, fig. 1, (*Vibilia dentata*).
Vosseler, 1901: 124.
Holmes, 1908: 490-492, figs. 1, 2, (*Vibilia californica*).
Walker, 1909: 50 (list), 53.
Stebbing, 1910: 654 (*Vibilia viator*).
Behning & Woltereck, 1912: 5.
Behning, 1913a: 529, 533.
Behning, 1913b: 217.
Behning, 1913b: 218, (*Vibilia dentata*).
Stewart, 1913: 247.
Stephensen, 1918: 41-43, fig. 13.
Spandl, 1924a: 22.
Behning, 1925: 482, fig. 12.
Chevreux & Fage, 1925: 385-386.
Shoemaker, 1925: 41.
Behning, 1927: 117-118.
Chevreux, 1927: 138.
Pirlot, 1929: 95.
K.H. Barnard, 1930: 403
Pirlot, 1930: 10-11.
K.H. Barnard, 1931: 126.
K.H. Barnard, 1932: 262-263.
Chevreux, 1935: 175-176.
Shoemaker, 1945b: 234, fig. 34.
Reid, 1955: 13-14.
Hurley, 1956: 11.
Irie, 1959: table 4.
Hurley, 1960b: 279.
Evans, 1961: 204.
Siegfried, 1963: 6 (list), 8.
Pillai, 1966: 207, fig. 2.
Brusca, 1967a: 389, 390 (table).
Brusca, 1967b: 453-454.
Hurley, 1969: 33, pl. 18 (map 3).
Dick, 1970: 34 (key), 53 (fig. 4- part).
Yoo, 1971b: 49 (key), 49-50.
Yoo, 1972b: 167-169, fig. 2.
Brusca, 1973: 9 (table), 13.
Semenova, 1973: 173.
Semenova, 1976: 139, fig. 2 (distribution).
Thurston, 1976: 405.
Madin & Harbison, 1977: 453 (table).
Shulenberger, 1977a: 378 (table).
Tranter, 1977: 647, 648 (table).
Brusca, 1981a: 18 (key), 39, fig. 4n.
Watson & Chaloupka, 1982: 29, fig. 6-5, 54 (key).
Vinogradov *et al*., 1982: 201 (key), 203-206, fig. 102.
Young & Anderson, 1987: 716 (table).
Barkhatov & Vinogradov, 1988: 167, 168 (table), 169-177 (part).
Vinogradov, 1990a: 55, 93 (table).
De Broyer & Jazdzewski, 1993: 112 (list).
Vinogradov, 1993: 43 (table).
Shih & Chen, 1995: 40-42, fig. 19.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 41.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1178 (key), 1180-1181, fig. 4.90.
Lowry, 2000: 332 (list).
Gasca & Shih, 2001: 496 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 307 (table).
Gasca & Shih, 2003: 95 (table).
Shih & Hendrycks, 2003: 255 (table), 256 (table), 257, 270, 258-269 (table), 293 (key).
Zeidler, 2003b: 28-32, figs. 10, 11.
Gasca, 2004: 997 (table), 999 (table).
Vinogradov *et al*., 2004: 10, 25 (table).
Gasca *et al*., 2006: 239 (table), fig. 3c.
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 120 (table).
Gasca, 2008: 86 (table), 92.

***Southern Ocean distribution*:**
Atlantic Sector: North of the Falkland Islands, *Discovery* stn. 69 (45°06'S 49°00'W), 0-90 m; (K.H. Barnard 1932).
Pacific Sector: Central part to 50°S (Barkhatov & Vinogradov 1988).

***Worldwide distribution*:**
Relatively common and widely distributed in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from 45°N to 45°S. In the Indian Ocean it is known mainly from the western part, from the Red Sea and off the coast of South Africa. In the Pacific it is recorded from the South China Sea to off the coast of California and south to 50°S. It is more common in shallow waters (0-250 m), but is known from catches from 1000 m to the surface and even 1682-1591 m.
***Type locality*:** "Atlantic".
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Family PARAPHRONIMIDAE Bovallius, 1887

Paraphronima crassipes Claus, 1879

Guérin-Méneville, 1836a: pl. 25, fig. 6, (*Hyperia pedestris*).
Guérin-Méneville, 1836b: 13, (*Hyperia pedestris*).
Guérin-Méneville, 1844: 22, 46 (list), (*Hyperia pedestris*).
Guérin-Méneville, 1844-46: 111, (*Hyperia pedestris*).
Claus, 1879a: 7 (65)-8 (66), pl. 1, figs 6-9; pl. 2, fig. 10.
Bovallius, 1885a: 11.
Bovallius, 1885a: 11, fig. 2, (*Paraphronima clypeata*).
Carus, 1885: 424.
Gerstaecker, 1886: pl. 34, fig. 5.
Bovallius, 1887a: 13.
Bovallius, 1887a: 13, (*Paraphronima clypeata*).
Bovallius, 1887a: 13-14, (*Paraphronima pectinata*).
Bovallius, 1889: 25 (key), 25-26, text fig., (*Paraphronima pedestris*).
Bovallius, 1889: 25 (key), 30-32, pl. 2, figs. 11-15.
Bovallius, 1889: 25 (key), 33-36; pl. 2, figs. 16-40, (*Paraphronima clypeata*).
Stebbing, 1888: 1337-1342, pl. 157, (*Paraphronima cuivis*).
Chevreux, 1900: 136, (*Paraphronima clypeata*).
Vosseler, 1901: 97-100, pl. 8, figs. 22-26.
Lo Bianco, 1903: 120, 122, 128, 131, 133, 135, 140, 146, 148, 149, 154, 156, 198, table facing p.278.
Lo Bianco, 1909: 595.
Stewart, 1913: 253-254.
Stephensen, 1924: 77-78, chart 10.
Chevreux & Fage, 1925: 390-391, figs. 393, 394.
Spandl, 1927: 166.
Pirlot, 1929: 105-106.
K.H. Barnard, 1930: 409-410.
K.H. Barnard, 1931: 127.
K.H. Barnard, 1932: 267-268.
Chevreux, 1935: 179.
Chevreux, 1935: 179, (*Paraphronima clypeata*).
K.H. Barnard, 1937: 183.
Shoemaker, 1945b: 234.
Irie, 1948: 347, fig. 4.
Guiler, 1952: 31.
Bulycheva, 1955: 1048 (table).
Hurley, 1955: 136.
Reid, 1955: 15.
Hurley, 1956: 13.
Vinogradov, 1956: 209.
Irie, 1959: table 4.
Hurley, 1960a: 113.
Hurley, 1960b: 280.
Vinogradov, 1962: 18.
Siegfried, 1963: 8.
Sheard, 1965: 244 (appendix/list).
Pillai, 1966: 210-211, fig. 4.
Brusca, 1967a: 391, table 14.
Brusca, 1967b: 455, table 12.
Hurley, 1969: 33, pl. 19 (map 7).
Dick, 1970: 34 (key), 54, fig. 5 (part).
Yoo, 1971b: 51-52, fig. 9 (distribution).
Brusca, 1973: 16.
Lorz & Pearcy, 1975: 1444, table 1.
Thurston, 1976: 407, fig. 6B (graph).
Harbison *et al*., 1977: 468.
Nair, 1977: 158-166, figs. 2, 5, 6, 7c, 7d.
Shulenberger, 1977a: 378 (table).
Laval, 1980: 15, table 2.
Stuck *et al*., 1980: 361.
Brusca, 1981a: 19 (key), 20, 40, figs. 6a, 6c.
Vinogradov *et al*., 1982: 256 (key), 258-259, fig. 127.
Young & Anderson, 1987: 712, fig. 3, 716 (table).
Barkhatov & Vinogradov, 1988: passim.
Young, 1989: 715 (table).
Vinogradov, 1990a: 59.
Spamer & Bogan, 1992: 140-141, (*Hyperia pedestris*).
Zeidler, 1992: 97.
De Broyer & Jazdzewski, 1993: 112 (list).
Vinogradov, 1993: 43 (table), 47 (table).
Spamer & Bogan, 1994: 42, (*Hyperia pedestris*).
Shih & Chen, 1995: 61-62, fig. 35.
Zeidler, 1995b: 310-311.
Lin *et al*., 1996: 229 (table).
Zeidler, 1998: 41-42.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1147 (table), 1177, fig. 4.75.
Lowry, 2000: 328 (list).
Gasca & Shih, 2001: 496 (table).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003a: 307 (table).
Gasca, 2003b: 118 (table).
Zeidler, 2003b: 91-94, figs. 37, 38.
Gasca, 2004: 997 (table), 998 (table).
Gasca & Suárez-Morales, 2004: 26 (table).
Vinogradov *et al*., 2004: 10, 24 (table).
Gasca, 2007: 119 (table).
Gasca, 2008: 87 (table).

***Southern Ocean distribution*:**
Atlantic Sector: North-east of the Falkland Islands, *Discovery* stn. 69 (45°06'S 49°00'W), 0-90 m; (K.H.

Barnard 1932).
Indian Sector: North-east of Heard Island, *BANZARE* stn. 67 (45°53'S 84°33'E), 2000 mw; (Hurley 1960a). South of Australia, *Ob* stn. 97 (45°26'S 125°52'E), 0-800 m; (Vinogradov 1962).
Pacific Sector: Near Campbell Island, *Terra Nova* stn. 240 (51°57'S 167°38'E), 14 m; (K.H. Barnard 1930). South of New Zealand, *Ob* stn. 352 (46°10'S 162°51'E), 0-1000 m; (Vinogradov 1962). Central region to 53°50'S (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
Widely distributed in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Southern Hemisphere it rarely penetrates up to the Antarctic Convergence. In the Atlantic it is found up to 42°N. In the Pacific up to 52°N. In the Indian Ocean it is recorded mainly from the central part, including the Arabian Sea. Records are from a wide range of depths, from the surface to1600 m, but more often from the 50-500 m layer.
***Type locality*:** Mediterranean Sea.
***Type material location*:** Not found in any major European museum; considered lost.

Superfamily CYSTISOMATOIDEA Zeidler, 2003

Family CYSTISOMATIDAE Willemöes-Suhm, 1875

Cystisoma fabricii Stebbing, 1888

Bovallius, 1886: 10-13, figs. 1-14, (*Thaumatops Loveni*).
Bovallius, 1887a: 15, (*Thaumatops Loveni*).
Stebbing, 1888: 1330-1331, pl. 156 (spec. D), (*Cystisoma spinosum* – mis-identification).
Stebbing, 1888: 1333-1334.
Bovallius, 1889: 42 (key), 52-58, pl. 4, figs. 1-25, (*Thaumatops Loveni*).
Woltereck, 1903: 457, (*Thaumatops Fabricii*).
Woltereck, 1903: 458, fig. 4, (*Thaumatops coalita*, in fig. 4 as *Thaumatops oblita*, sic).
Stephensen, 1918: 59, (*Thaumatops Loveni*).
Stephensen, 1918: 63-64, figs. 22, 23, (*Thaumatops Fabricii*).
Schellenberg, 1927: 623, figs. 32, 33, (*Thaumatops fabricii*).
Pirlot, 1929: 89, (*Thaumatops Fabricii*).
K.H. Barnard, 1932: 272-273.
Hurley, 1956: 10.
Siegfried, 1963: 6 (list), (*Cystisoma coalitum*).
Brusca, 1967a: 387.
Brusca, 1967b: 451.
Dick, 1970: 55, (*Cystisoma coalitum*).
Shih *et al*., 1971: 164.
Brusca, 1973: 9 (table), 13.
Lorz & Pearcy, 1975: 1444 (table).
Brusca, 1981a: 19 (key), 39, figs. 5c, 5e.
Brusca, 1981b: passim, figs. 2-15.
Vinogradov *et al*., 1982: 246 (key), 251-253, fig. 123.
Vinogradov, 1990a: 57.
De Broyer & Jazdzewski, 1993: 112 (list).
Vinogradov, 1999: 1145 (table), 1176, fig. 4.71.
Lowry, 2000: 325 list).
Escobar-Briones *et al*., 2002: 367 (list).
Zeidler, 2003a: 19-23, figs. 7, 8.
Gasca, 2008: 87 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°19'S 46°02'W), 2000-0 m and the Drake Passage, *Discovery* stn. 216 (58°53'S 67°55'W), 750-500 m & stn. 219 (57°32'S 67°04'W), 750-500 m; (K.H. Barnard 1932).
***Worldwide distribution*:**
Except for the above records, it is found mainly in the tropical and temperate regions of all the world's oceans, except the Mediterranean Sea. Common in shallow waters down to about 1000 m or more.
***Type locality*:** "Off the Meangis Islands, north of Papua", *Challenger* stn. 214 (04°33'N 127°06'E), 500 fathoms.
***Type material location*:** The unique holotype female is in the NHM, London (1889.5.15.199); in spirit.

Cystisoma longipes (Bovallius, 1886)

Bovallius, 1886: 13-16, figs. 15-23, (*Thaumatops longipes*).
Bovallius, 1887a: 15, (*Thaumatops longipes*).
Bovallius, 1889: 47-52, pl. 3, fig. 1-6 (spec. A, *non* B), (*Thaumatops longipes*).
Woltereck, 1903: 457, (*Thaumatops Bovallii*).
Walker, 1909: 50 (list), 52, (*Thaumatops longipes*).
K.H. Barnard, 1916: 287-289, (*Cystisoma africanum*).
Stephensen, 1918: 59-62, fig. 20, (*Thaumatops Bovallii*).
Schellenberg, 1927: 621-622, fig. 30, (*Thaumatops bovallii*).
Chevreux, 1935: 169.
Shoemaker, 1945: 233-234, (*Cystisoma magna* – mis-identification).
Dick, 1970: 54, (*Cystisoma africanum*).
Vinogradov *et al*., 1982: 246 (key), 253-254, fig. 124.
Vinogradov, 1993: 42, 43 (table).
Vinogradov, 1999: 1145 (table), 1176, fig. 4.72.
Zeidler, 2003a: 14-19, figs. 4-6.

***Southern Ocean distribution*:**
Indian Sector: Off south-western Australia, *BANZARE* stn. 69 (43°19'S 93°56'E), 1000 mw; (specimen in SAMA).
***Worldwide distribution*:**
Known from widely separated records, mainly from the tropical and temperate regions of all the world's oceans, except the Mediterranean Sea. Common in shallow waters down to about 1000 m or more.
***Type locality*:** "Off the west coast of Australia, 30°S, 90°E".
***Type material location*:** The unique holotype female is in the ZMUC, Copenhagen (CRU-2829).

Superfamily PHRONIMOIDEA Bowman & Gruner, 1973

Family HYPERIIDAE Dana, 1852

Hyperia gaudichaudii Milne Edwards, 1840

(Colour plate 2e)

Milne Edwards, 1840: 77, (*Hyperia Gaudichaudii*).
Nicolet, 1849: 245, (*Hyperia Gaudichaudii*).
Bate, 1862: 289, pl. 48, fig. 3, (*Lestrigonus Gaudichaudii*).
Bovallius, 1887a: 16, (*Hyperia Gaudichaudii*).
Stebbing, 1888: 1394-1398, pl. 169.
Bovallius, 1889: 145 (key), 159-163, pl. 9, figs. 22-30, (*Hyperia hystrix*).
Bovallius, 1889: 145 (key), 175-179, pl. 10, figs. 18-24, (*Hyperia Gaudichaudii*).
Chilton, 1912: 513, (*non* stn. 541 = *Hyperia galba* – re-determined by Thurston 1977).
Stebbing, 1914: 374.
K.H. Barnard, 1916: 285-286.
K.H. Barnard, 1930: 411-412, (*Hyperia galba* – re-determined by Thurston 1977).
K.H. Barnard, 1932: 273, (*Hyperia galba* stn. WS Hoetjes Bay – re-determined by Thurston 1977).
Hurley, 1960a: 111, (*Hyperia galba* – stn. 69 only ; re-determined by Thurston 1977).
Seigfried, 1963: 8, (*Hyperia galba* – mis-identification).
Hurley, 1969: 33, pl. 19 (map 5), (*Hyperia galba* – mis-identification).
Dick, 1971: 36 (key), 55-56.
Bowman, 1973: 5 (key), 6, figs. 2-6.
Thurston, 1977: 535, (table C).
Vinogradov *et al*., 1982: 262 (key), 264-266, fig. 131, (*Hyperia medusarum*).
De Broyer & Jazdzewski, 1993: 113 (list).
Zeidler, 1998: 46.
Zeidler & Gowlett-Holmes, 1998: 117-118.
Vinogradov, 1999: 1148 (table), 1183, fig. 4.96, (*Hyperia medusarum* – part).
Gates *et al*., 2003: 309.
non Walker, 1903a: 40, (= *Hyperia macrocephala* – re-determined by Thurston 1977).
non Walker, 1907: 7, (= *Hyperia macrocephala* – re-determined by Thurston 1977).

***Southern Ocean distribution*:**
Atlantic Sector: Strait of Magellan (Bovallius 1889). Off Port Famine, Tierra del Fuego, *Challenger* stn. 312 (53°37'30"S 70°56'W), 10-15 fathoms; (Stebbing 1888). Near the Falkland Islands (Stebbing 1914) and *Scotia* stn. 112 (46°03'S 56°30'W), surface; stn. 118 (on scyphozoan *Desmonema chierchiana*); stn. 541 (46°03'S 56°30'W); (Chilton 1912). West of the Falkland Islands, *Terra Nova* stn. 38, 229 m; (K.H. Barnard 1930).
***Worldwide distribution*:**
Restricted to the colder waters of the Southern Hemisphere, along the southern coasts of South Africa, South America and Australia. There are no reliable records south of the Antarctic Polar Front. The most southerly records are from the Atlantic, as above. Most records are from near-surface waters.
***Type locality*:** "mers du Chili".
***Type material location*:** Not found in any major European or North American museum; considered lost.

Hyperia macrocephala (Dana, 1853)

(Fig. 9, Colour plates 3a, 3b, 3c)

Dana, 1853: 988-989, pl. 68, fig. 2, (*Tauria macrocephala*).
Dana, 1855 (1853): pl. 68, fig. 2, (*Taura macrocephala* – typographical error).
Bate, 1862: 296, pl. 49, fig. 2.
Bovallius, 1885a: 16-17, (*Tauria macrocephala*).
Bovallius, 1887a: 19, (*Tauria macrocephala*).
Bovallius, 1887b: 565, (*Tauria macrocephala*).
Bovallius, 1889: 81-82, (*Tauria macrocephala*).
Walker, 1903a: 40, (*Hyperia Gaudichaudii* – re-determined by Thurston 1977).
Walker, 1907: 7, (*Hyperia gaudichaudii* – re-determined by Thurston 1977).
Chevreux, 1913: 86 (list), (*Tauria macrocephala*).
Shoemaker, 1914: 76, (*Tauria macrocephala*).
Spandl, 1927: 156-158, fig. 3a-g, (*Tauria macrocephala*).
Shoemaker, 1945a: 291-293, fig. 2.
Hurley, 1960a: 111, (*Hyperia galba* – large specimen from

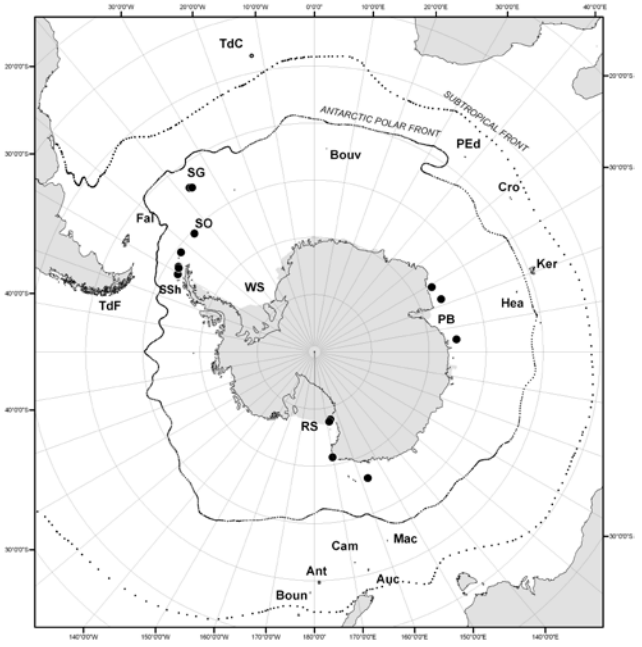

Figure 9. Distribution records of *Hyperia macrocephala*.

stn. 32; re-determined by Thurston 1977).
Emison, 1968: 202, fig. 11.
White & Bone, 1972: passim, (*Hyperia galba* – re-determined by Thurston 1977).
Bowman, 1973: 5 (key), 13-18, figs. 11-12.
Thurston, 1977: 535 (Table D).
Laval, 1980: 15.
Jazdzewski, 1981: 135-136, 139.
Vinogradov *et al.*, 1982: 262 (key), 266-267, fig. 132.
Jazdzewski & Presler, 1988: 63 (table), 64, figs. 1-2 (distribution).
Jazdzewski *et al.*, 1992: 466 (table).
De Broyer & Jazdzewski, 1993: 113 (list).
Vinogradov, 1999: 1146 (table), 1183, fig. 4.95.
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).

***Southern Ocean distribution*:**
Atlantic Sector: Near South Georgia, *South Georgia Expedition - Daisy* (Shoemaker 1914), the South Shetland Islands (Jazdzewski 1981, Jazdzewski & Presler 1988 and Jazdzewski *et al*. 1992) and the South Orkney Islands (60°43'S 45°38'W); (White & Bone 1972). Weddell Sea (60°56'S 52°81'W); (Browne *et al.* 2007). Off South Georgia, around South Shetland and South Orkney Islands, *SIBEX 1983/84*; *PAMRE I 1975/76* (54°48'S 35°15'W); *FIBEX 1981* (63°06'S 58°41'W); (Jazdzewski & Presler 1988).
Indian Sector: Off the West Ice Shelf, *Gauss* (65°03'S 85°04'E), from stomach of Adelie penguin; (Spandl 1927). Near Enderby Land, *BANZARE* stn. 32 (66º35'S 61º13'E), 750 m; (Hurley 1960a). Prydz Bay, *Aurora Australis*, 38 stns. (range 66°-69°S 67°30'- 78°31'E; 12-800 m); (specimens in SAMA).
Pacific Sector: Off Oates Land (about 66°S 157°E); (Dana 1853). Ross Sea, off Cape Adare, *Southern Cross*, surface, (Walker 1903a); *Discovery* Winter Quarters, McMurdo Sound, 6-15 fms (Walker 1907) and Ross Island, from Adelie penguin stomach, (Emison 1968).
***Worldwide distribution*:**
Restricted to the region between the Antarctic Polar Front and the Antarctic Continent. It seems to be more common close to the Continent. The most northerly records are from South Georgia, as above. Found mainly in near-surface waters down to about 800 m.
***Type locality*:** Pacific Sector, off Oates Coast, as above; "from cavity of medusa".
***Type material location*:** Considered lost (see Evans 1967).

Hyperia spinigera Bovallius, 1889

(Colour plate 3e)

Bovallius, 1889: 146 (key), 191-194, pl. 10, figs. 33-39.
Norman, 1900: 128, (*Hyperia galba* – part).
Vosseler, 1901: 58.
Tattersall, 1906: 22.
Stephensen, 1924: 81-83, (*Hyperia galba* – part).
Schellenberg, 1927: 633, fig. 39.
Spandl, 1927: 153-156, fig. 2a-g, (*Hyperia antarctica*).
K.H. Barnard, 1932: 273-274, fig. 160 (in part (a), b = fem. of *Hyperia crassa*).
Dunbar, 1942: 37, (*Hyperia spingera* – lapsus).
Stephensen, 1942: 460-462
Shoemaker, 1945b: 238, fig. 35.
Hurley, 1955: 140-143, figs. 83-95.
Reid, 1955: 18, (*Hyperia galba* – re-determined by Thurston 1977).
Ealey & Chittleborough, 1956: 22.
Hurley, 1956: 15.
Bary, 1959: 324, 326 (table), 333, figs. 2, 5.
Hurley, 1960a: 111-112, (*Hyperia galba*).
Vinogradov, 1962: 21, (*Hyperia antarctica*).
Dunbar, 1963: 3.
Brusca, 1967a: 388.
Brusca, 1967b: 452.
Hurley, 1969: 33, pl. 19 (map 5), (*Hyperia spinigera, Hyperia galba, Hyperia antarctica*).
Bowman, 1973: 5 (key), 20-23, figs. 15,16.
Bowman, 1973: 18-20, fig. 13, (*Hyperia antarctica*).
Thurston, 1977: 502, pl. 1, figs. 1-2.
Laval, 1980: 24, 33, 49.
Brusca, 1981a: 9 (list), 21 (key), 23-24, 40, fig. 9g-i.
Vinogradov *et al*., 1982: 262 (key), 268-269, fig. 133.
Jazdzewski & Presler, 1988: 63 (table), 65, fig. 2 (distribution).
Vinogradov, 1990b: 107-108, fig. 2.
Zeidler, 1992: 98, fig. 11.
De Broyer & Jazdzewski, 1993: 113 (list).
Vinogradov, 1993: 44 (table).
Vinogradov, 1999: 1146 (table), 1183, fig. 4.97.
Gates *et al*., 2003: 309.
Gasca, 2008: 87 (table).
non Thorsteinson, 1941: 87-88, pl. 8, figs. 79-82, (= *Hyperia medusarum* – re-determined by Thurston 1977).
non Oldevig, 1959: 125, (= *Hyperia medusarum* – re-determined by Thurston 1977).

***Southern Ocean distribution*:**
Atlantic Sector: South Georgia, *Discovery* stn. 36, 5-0 m, (K.H. Barnard 1932); South Shetland Islands and Antarctic Peninsula (Jazdzewski & Presler 1988).
Indian Sector: Off the West Ice Shelf, *Gauss* stn. (65º18'S 80º27'E), 200-0 m; (Spandl 1927). Near Enderby Land, *BANZARE* stn. 32 (66°35'S 61°13'E), 750 m, (Hurley 1960a) and further east, *Ob* stn. 455 (59°22'S 67°41'E), 0-1100 m; (Vinogradov 1962). Off Wilkes Land, *Ob* stn. 104 (54°42'S 109°12'E), 0-550 m; stn. 105 (55°40'S 106°13'E), 240-600 m; stn. 411 (61°42'S 109°15'E), 0-1100 m; stn. 415 (55°18'S 109°20'E), 0-1200 m & stn. 417 (51°22'S 109°26'E), 0-1200 m; (Vinogradov 1962). Near Heard Island (Ealey & Chittleborough 1956).
Pacific Sector: Near Macquarie Island, *Ob* stn. 70 (53°23'S 160°50'E), 224-250 m and *Southern Surveyor* stns. (54°48'S 158°10'E), 670 m; (54°49.4'S 158°39.8'E), 865 m; (53°23.5'S 159°42'E), 420 m and (53°23.5'S 159°33.7'E), 1003 m; (specimens in SAMA).

***Worldwide distribution*:**
Widely distributed in the temperate and cold-water regions of all the world's oceans, except the Mediterranean Sea. In the Atlantic it is more abundant at 50°-60°N but ranges from Spitsbergen (78°N) to the Southern Ocean, as above. In the Indian Ocean it has been recorded from the temperate waters off South Africa and from the Southern Ocean, as above. In the Pacific most records are from the northern part, from the Bering Sea, the Gulf of Alaska and off the Californian coast, with recent records from the Tasman Sea and south of New Zealand. Catch records vary from 25 to 2000 m but in the North Atlantic it seems to be more abundant in the 600-900 m layer.
***Type locality*:** "Spitzbergen, off the Northern coast of Norway" and "off the South coast of England".
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or Uppsala, Sweden; considered lost. However, Stephensen (1924: 82) notes some possible type specimens in the ZMUC, although none match the type locality data.

Hyperiella antarctica Bovallius, 1887

(Fig. 10)

Bovallius, 1887a: 20.
Bovallius, 1887b: 566, pl. 45, figs. 72-80.
Bovallius, 1889: 242 (key), 242-246, text fig., pl. 11, figs. 42-51.
Stewart, 1913: 256.
K.H. Barnard, 1930: 414.
K.H. Barnard, 1932: 275, fig. 161 (distribution).
Kane, 1962: 301-302.
Vinogradov, 1962: 21.

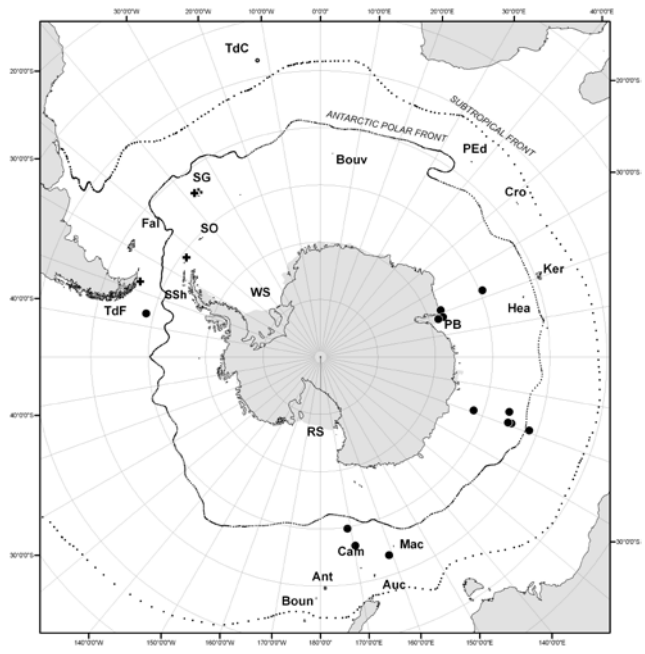

Figure 10. Distribution records of *Hyperiella antarctica*.

Hurley, 1969: 33, pl. 19 (map 5).
Bowman, 1973: 26 (key), 27, figs. 20n, 21g-i.
Vinogradov *et al*., 1982: 273 (key), 273-275, fig. 137.
Hempel *et al*., 1983: 9, 10, (*H. antarctica*); 13 (fig. 6 – distribution of *Hyperiella dilatata* – re-determined by Weigmann-Haass 1989).
Ramirez & Vinas, 1985: passim.
Nagata, 1986: 259 (list), 271-274, figs. 10-12.
Barkhatov & Vinogradov, 1988: 168 (table), 169-170, 177, fig. 111.27.
Weigmann-Haass, 1989: 181 (key),184-185, figs. 23-43, map 2.
De Broyer & Jazdzewski, 1993: 113 (list).
Lin *et al*., 1996: 229 (table).
Barkhatov *et al*., 1999: 808 (table), 809.
Vinogradov, 1999: 1146 (table), 1184, fig. 4.98.

***Southern Ocean distribution*:**
Atlantic Sector: Drake Passage (58°43'S 76°W); (Bovallius 1889). Argentine shelf south of 52°S (Ramirez & Vinas 1985). South Georgia, Grytviken, *Marine Biological Station s*tn. MS2, 15 m; stn. MS22, 0-40 m; stn. MS25, 10 m; stn. MS6, 10 m; stn. MS40, 0 m (K.H. Barnard 1932). Weddell Sea (Hempel *et al*. 1983); *Walther Herwig* stn. 397 (53°S 6°E). Scotia Sea, *John Biscoe* stn. 1091 (63°22'S 66°09'W). Bransfield Strait, *John Biscoe* stn. 1084 (63°01'S 66°29'W) (Weigmann-Haass 1989).
Indian Sector: Off Wilkes Land (60°03'S 116°04'E), (Nagata 1986); *Ob* stn. 104 (54°42'S 109°12'E), 0-550 m; stn. 105 (55°40'S 106°13'E), 240-600 m; stn. 411 (61°42'S 109°15'E), 0-1100 m; stn. 415 (55°18'S 109°26'E), 0-1200 m & stn. 417 (51°22'S 109°26'E), 0-1200 m and south of Heard Island, *Ob* stn. 455 (59°28'S 67°41'E), 0-1100 m; (Vinogradov 1962). Prydz Bay, *Aurora Australis* stns. (67°30.2'S 72°E), 0-200 m; (67°30'S 68°51'E), 115-134 m and (68°24.4'S 72°15.5'E), 460-508 m; (specimens in SAMA).
Pacific Sector: Near Macquarie Island, stn. B114 (59°39'S 171°02'E), 500-0 m; (Kane 1962) and *Discovery* stn. (56°30'S 169°30'E), surface; (Stewart 1913) also *Ob* stn. 70 (53°23'S 160°50'E), 224-550 m; (Vinogradov 1962). Central part south of 45°S (Barkhatov & Vinogradov 1988; Barkhatov *et al*. 1999).
***Worldwide distribution*:**
Restricted to the region between the Subtropical Convergence and the edge of the pack ice. Catch records range from 1200 m to the surface.
***Type locality*:** "Antarctic Seas, around Cape Horn". Drake Passage (58°43'S 76°W) according to Bovallius (1889).
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Hyperiella dilatata Stebbing, 1888

(Fig. 11, Colour plate 3e)

Stebbing, 1888: 1403-1407, pl. 171.

Bovallius, 1889: 242 (key), 247.
Walker, 1903a: 40.
Walker, 1907: 8.
Spandl, 1927: 162-164, fig. 5a-h.
K.H. Barnard, 1930: 413-414, 447.
K.H. Barnard, 1932: 274-275, fig. 161 (distribution).
K.H. Barnard, 1937: 4.
Stephensen, 1947: 76.
Hurley, 1961: 600.
Vinogradov, 1962: 21.
Sheard, 1965: 244 (list).
Emison, 1968: passim.
Hurley, 1969: 33, pl. 19 (map 5).
Bowman, 1973: 26 (key), 27-30, figs. 20a-m, 21a-f.
Dinofrio, 1977: passim.
Jazdzewski *et al*., 1982: 222 (table), 233 (table).
Vinogradov *et al*., 1982: 273 (key), 275, fig. 138.
Watson & Chaloupka, 1982: 28, fig. 6-6.
Jazdzewski & Presler, 1988: 63 (table), 66, figs. 1-2 (distribution).
Weigmann-Haass, 1989: 181-183, figs. 1-22, map 1.
Andres, 1990: 142, fig. 283.
McClintock & Janssen, 1990: passim.
De Broyer & Jazdzewski, 1993: 113-114 (list).
Libertini & Lazzaretto, 1993: passim.
Dinofrio, 1997: 4,7.
McClintock & Baker, 1998: 257-261.
Vinogradov, 1999: 1146 (table), 1184, fig. 4.99.
non Hempel *et al*., 1983: 9, 10, fig. 6, (= *Hyperiella antarctica*).

***Southern Ocean distribution*:**
Atlantic Sector: Near Bouvet Island, *Discovery* stn. 116 (50°30'S 05°34'E), 55 m; (K.H. Barnard 1932). Drake Passage , Antarctic Peninsula, Palmer Archipelago and South Shetlands Islands (60°S 66°W to 65°S 56°W) (Jazdzewski *et al*. 1982); Scotia Sea, Bransfield Strait, Weddell Sea, between 55°35'S and 69°50'S, and 64°50'W and 15°30'W (Dinofrio 1977); *PAMRE I 1975/76* stns (53°30'S 37°05'W); *FIBEX 1981* (63°06'S 58°41'W); (60°33'S 58°57'W); (61°01'S 55°06'W), (Jazdzewski & Presler 1988). Scotia Sea *Walther Herwig* stn. 69 (60°58'S 50°01'W); Weddell Sea *Polarstern 1983* stn. 230 (67°39'S 33°42'W) (Weigmann-Haass 1989). Bellingshausen Sea, *Irizar 1985* stn. 18 (64°59'54''S 65°21'03"W) (Dinofrio 1997). Generally south of 55°S (Vinogradov 1999).
Indian Sector: Near Davis Sea, *Challenger* stn. (63°30'S 88°57'E), surface (Stebbing 1888); also *Gauss* stns. (58°29'S 89°58'E), 0-2700 m; (66°02'S 89°38'E), 330-385, 350 & 0-100 m; (65°31'S 85°20'E), 0-400 m; (Spandl 1927) and *Ob* stn. 13 (66°16'S 94°26'E), 0-120 m; (Vinogradov 1962). Off Wilkes Land, *Ob* stn. 36 (62°55'S 118°52'E), 0-3700 m; (Vinogradov 1962). Prydz Bay, *Aurora Australis* stns. (67°30.2'S 72°E), 0-200 m; (67°55'S 71°05'E), 211-249 m; (68°24.4'S 72°32'E), 460-508 m; (68°26.5'S 72°05'E), 265-250 m; (68°59'S 74°16'E), 4-202 m and (68°23.7'S 72°11'E), 12-200 m; (specimens in SAMA).
Pacific Sector: Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E), 0-3000 m; (Vinogradov 1962). Ross Sea, *Terra Nova* stn. 267 (66°30'S 166°08'W), surface; stn. 269 (68°37'S 166°14'W), surface; stns. 281 & 282 (71°41'S 166°47'W), 80 & 0-1000 m; stn. 284 (71°49'S 167°32'W), 80 m; stn. 285 (71°49'S 167°32'W), 0-600 m & stns. 289 & 290 (72°S 168°17'W), 24 & 60 m; (K.H. Barnard 1930); also generally (Libertini & Lazzaretto 1993); off Cape Adare (Walker 1903a – *Southern Cross* stn.) and McMurdo Sound (Walker 1907 & K.H. Barnard 1930 – *Discovery* stns.) and *Terra Nova* stn. 326 (4-40 m), stn. 342 (0-350 m) & stn. 350 (250 m); (K.H. Barnard 1930).

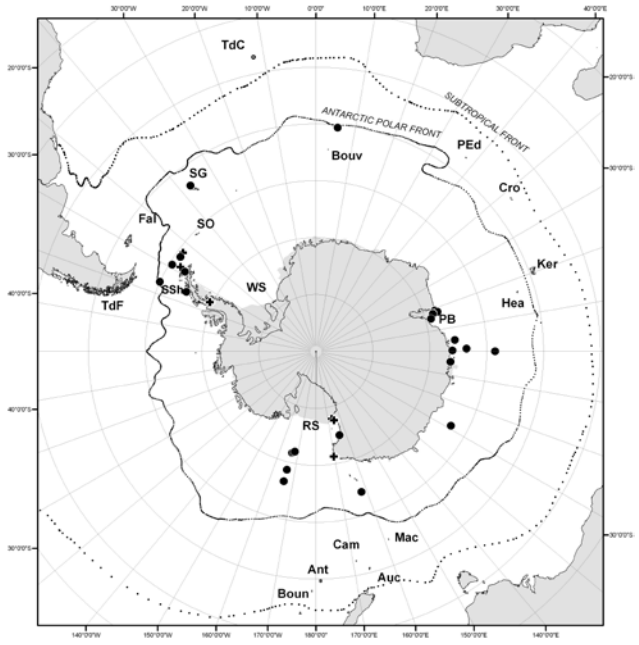

Figure 11. Distribution records of *Hyperiella dilatata*.

***Worldwide distribution*:**
Restricted to the region betweeen the Subtropical Convergence and the Antarctic Continent. Catch records range from 3700 m to the surface but it seems to be most common in the shallower waters (0-300 m).
***Type locality*:** Indian Sector, off Wilhelm II Coast, near the Davis Sea, *Challenger* stn. (63°30'S 88°57'E), surface.
***Type material location*:** Several syntypes are in the NHM, London (89.5.15.225); in spirit and on three micoscope slides.

Hyperiella macronyx (Walker, 1906)

(Fig. 12)

Walker, 1906: 452-453, (*Hyperia macronyx*).
Walker, 1907: 7-8, pl. 1, fig. 1, (*Hyperia macronyx*).
K.H. Barnard, 1930: 412-413, (*Hyperia macronyx*).
Emison, 1968: 203-206, (*Hyperia macronyx*).
Hurley, 1969: 33, pl. 19 (map. 5), (*Hyperia macronyx*).
Bowman, 1973: 26 (key), 30, figs. 22-23.

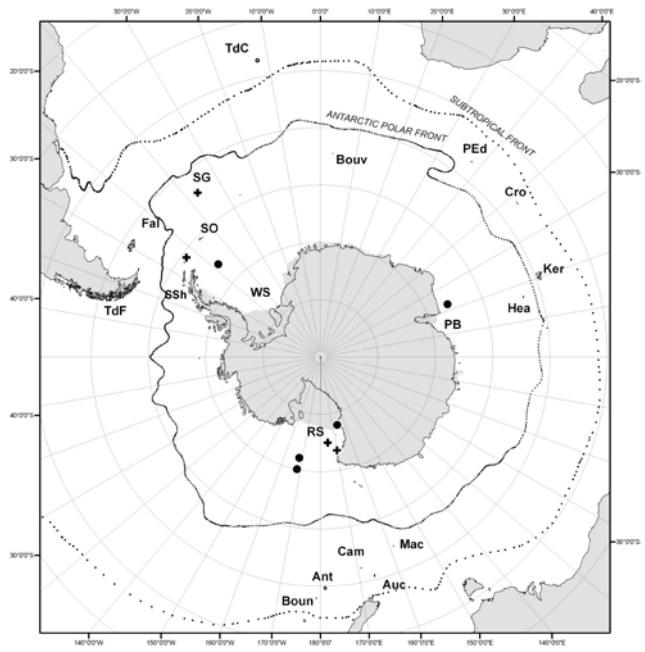

Figure 12. Distribution records of *Hyperiella macronyx.*

Dinofrio, 1977: passim.
Vinogradov *et al*., 1982: 273 (key), 275, fig. 139.
Hempel *et al*., 1983: 9, 10, fig. 6 (distribution).
Weigmann-Haass, 1989: 181 (key), 186-190, figs. 44-63, map 3.
De Broyer & Jazdzewski, 1993: 114 (list).
Dinofrio, 1997: 4, 7.
Vinogradov, 1999: 1146 (table), 1148, fig. 4.100

***Southern Ocean distribution*:**
Atlantic Sector: Bransfield Strait (Dinofrio 1977). Around South Georgia (Vinogradov 1999). Weddell Sea (Dinofrio 1977), (Hempel *et al*. 1983); *Polarsirkel* stn.103 (77°28'S 43°38W); stn.111 (77°45'S 43°31'W) (Weigmann-Haass 1989); *Ibizar 1985* stn. 16 (65°59'S 47°47'W); (Dinofrio, 1997).
Indian Sector: Prydz Bay, *Aurora Australis*, 20 stns. (range 66°-69°S 67°30'-78°30'E; 4-595 m); (specimens in SAMA).
Pacific Sector: Ross Sea, *Discovery* Winter Quarters and other stns. (Walker 1906; 1907) and *Terra Nova* stn. 289 (72°S 168°17'W), 24 m; stn. 343 (McMurdo Sound), 0-600 m & stn. 354 (77°46'S 166°08'E), 12 m; (K.H. Barnard 1930).
***Worldwide distribution*:**
Restricted, known from relatively few records from the Subtropical Convergence to the Antarctic Continent. The above record from the Indian Sector is a new record for that region. Known from waters near the surface and from 0-600 m.
***Type locality*:** Ross Sea, *Discovery* Winter Quarters, Cape Armitage, McMurdo Sound and south-east of Coulman Island.
***Type material location*:** Several syntypes are in the NHM, London (1907.6.6.23.32); in spirit.

Hyperoche capucinus K.H. Barnard, 1930

(Fig. 13, Colour plate 4a, 4b)

Monod, 1926: 49-50, figs. 47, 48, (*Hyperoche luetkenides* – mis-identification)
K.H. Barnard, 1930: 416-417, fig. 54.
Vinogradov *et al.*, 1982: 282 (key), 288-289, fig. 147.
Weigmann-Haass, 1991: 173-176, 178 (map), figs. 28-46.
De Broyer & Jazdzewski, 1993: 114 (list).
Vinogradov & Semenova, 1996: 618.
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).

***Southern Ocean distribution*:**
Atlantic Sector: Weddell Sea, (60°56'S 52°81'W), 0-328 m; (Browne *et al*. 2007) and generally (Weigmann-Haass 1991). Scotia Sea, stn. 77 (63°58'S 48°41'W) & stn. 332 (62°02'S 32°01'W) (Weigmann-Haass 1991).
Indian Sector: Prydz Bay, *Aurora Australis*, 17 stns. (range 66°58'-68°59'S 68°50'-78°31'E; 0-530 m); (specimens in SAMA).
Pacific Sector: Bellingshausen Sea, *Belgica* stn. Plancton IX (70°33'S 89°22'W); (Monod 1926). Off Cape Adare, *Terra Nova* stn. 224 (70°33'S 89°22'W), near surface; (K.H. Barnard 1930).

***Worldwide distribution*:**
Restricted to the region between the Antarctic Polar Front and the Antarctic Continent. A relatively uncommon species found mainly near the Continent. The above record from the Indian Ocean Sector is the first record from that region. Most records are from near-surface waters down to about 500 m.
***Type locality*:** Off Cape Adare, as above.

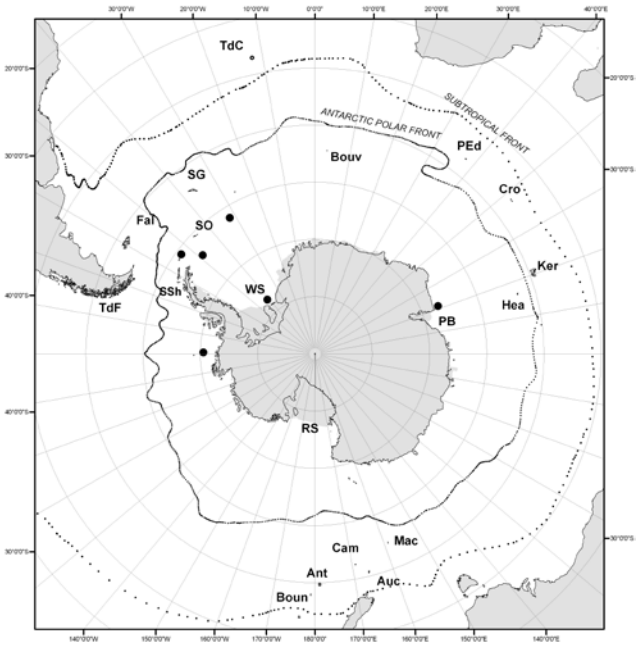

Figure 13. Distribution records of *Hyperiella capucinus*.

***Type material location*:** The unique holotype male is in the NHM, London (1930.8.1.595), in spirit.

Hyperoche luetkenides Walker, 1906

(Fig. 14)

Walker, 1906: 453, (*Hyperoche Luetkenides*).
Walker, 1907: 8, pl. 1, fig. 2.
K.H. Barnard, 1930: 415 (key).
Hurley, 1960a: 112, (*Hyperoche medusarum* – mis-identification).
Hurley, 1969: 33, pl. 19 (map 5).
Vinogradov *et al*., 1982: 282 (key), 289.
Barkhatov & Vinogradov, 1988: 167, 168 (table).
Weigmann-Haass, 1991: 170-176, figs. 1-27.
De Broyer & Jazdzewski, 1993: 114 (list).
Vinogradov & Semenova, 1996: 618.
Barkhatov *et al*., 1999: 808 (table), 809-810.
Vinogradov, 1999: 1146 (table), 1186.
non Monod, 1926: 49-50, figs. 47, 48, (= *Hyperoche capucinus* K.H. Barnard, 1930).

***Southern Ocean distribution*:**
Atlantic Sector: Weddell Sea, *Polarstern ANT I 1983* stn. 172 (77°28'S 41°19'W) and Scotia Sea, *Walther Herwig* stn. 77 (53°56'S 37°58'W) & stn. 86 (53°59'S 36°51'W) (Weigmann-Haass 1991).
Indian Sector: Off Wilkes Land, *BANZARE* stn. 96 (65°10'S 109°32'E), 2200 mw; (Hurley 1960a). Prydz Bay, *Aurora Australis* stns. (66°32'S 74°53'E), 800 m; (67°30'S 68°51'E), 115-134 m; (67°55'S 71°05'E), 211-249 m & (68°30'S 74°57'E), 48 m; (specimens in SAMA).

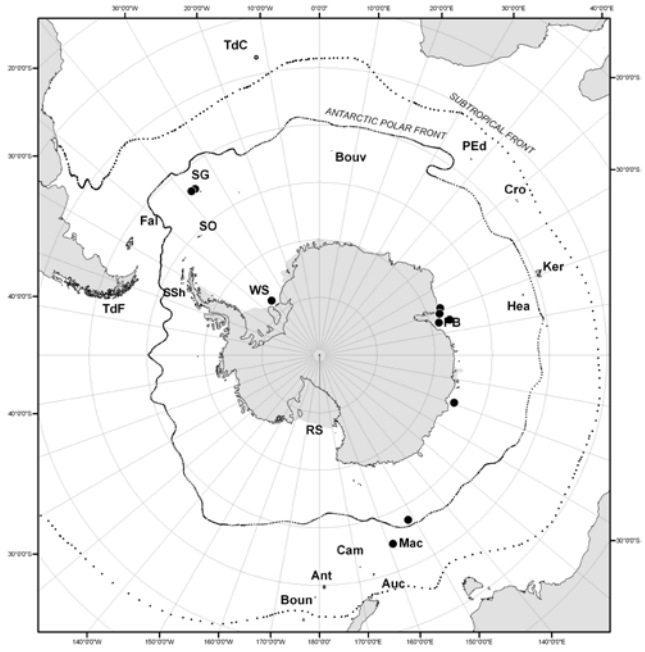

Figure 14. Distribution records of *Hyperoche luetkenides*.

Pacific Sector: South of Macquarie Island, *Discovery* stn. (57°25'30"S 151°43'E); (Walker 1906). Near Macquarie Island, *Southern Surveyor* stn. (54°46'S 158°41'E), 959 m; (specimens in SAMA). Central part, south of 57°S (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
A rare species retricted mainly to the region between the Antarctic Polar Front and the Antarctic Continent. The most northerly record is from near Macquarie Island, as above. The few available catch records suggest that it inhabits near-surface waters.
***Type locality*:** South of Macquarie Island, as above.
***Type material location*:** The unique holotype male is in the NHM, London (1907.6.13.4 & 5); on two microscope slides.

Pegohyperia princeps K.H. Barnard, 1931

(Colour plate 4c)

K.H. Barnard, 1931: 430.
K.H. Barnard, 1932: 277-280, figs. 162-164, pl. 1, figs. 5, 5a.
Hurley, 1960a: 112, figs. 1, 2.
Hurley, 1969: 33, pl. 19 (map 5).
Bowman & Gruner, 1973: 34-35, fig. 44.
Shulenberger, 1977a: 378 (table).
Vinogradov *et al*., 1982: 303-304, fig. 158.
Vinogradov, 1990a: 61, fig. 12.
Vinogradov, 1991: 264.
De Broyer & Jazdzewski, 1993: 115 (list).
Vinogradov & Semenova, 1996: 618.
Vinogradov, 1999: 1147 (table), 1188, fig. 4.115.

***Southern Ocean distribution*:**
Indian Sector: Off Enderby Land, *BANZARE* stn. 45 (63°51'S 54°16'E), 200 mw; (Hurley 1960a).
Pacific Sector: Near Macquarie Island, *Southern Surveyor* stns. (53°23'S 159°34'E), 1003 m; (53°54'S 159°03'E), 1012 m; (54°48'S 158°E), 670 m & (54°50'S 157°55'E), 1122 m; (specimens in SAMA).
***Worldwide distribution*:**
Known from a few scattered records. In addition to the above, and the type locality, it has been recorded from the central North Pacific and the eastern Equatorial Pacific (13°33'N 101°45'W), 0-1000 m.
***Type locality*:** South-east Atlantic, *Discovery* stn. 85 (33°07'S 04°30'E), 2000-0 m.
***Type material location*:** The unique holotype female is in the NHM, London (1936.11.2.2873); in spirit.

Themisto gaudichaudii Guérin, 1825

(Fig. 15, Colour plates 4e, 4f)

Guérin, 1825: 744, (*Themisto Gaudichaudii*).
Guérin, 1828: 385-386, pl. 23, fig. C, (*Themisto Gaudichaudii*).

Milne Edwards, 1830: 393, (*Themisto Gaudichaudii*).
Guérin-Méneville, 1836a: pl. 25, fig. 7, (*Themisto Gaudichaudii*).
Milne Edwards, 1838: 305-306, (*Themisto Gaudichaudii*).
Lucas, 1839: 397, pl. 699, fig. 2, (*Themisto Gaudichaudii*).
Lucas, 1840: 235-237, pl. 18, fig. 5, (*Themisto Gaudichaudii*).
Milne Edwards, 1840: 84-85, (*Themisto Gaudichaudii*).
Guérin-Méneville, 1844: 22, 47 (list), (*Themisto Gaudichaudii*).
Dana, 1853: 987-988, pl. 67, fig. 12, (*Hyperia trigona*).
Dana, 1853: 1005-1006, pl. 69, fig. 1, (*Themisto antarctica*).
Bate, 1862: 297, pl. 49, fig. 4, (*Hyperia trigona*).
Bate, 1862: 312-313, pl. 50, fig. 8, (*Themisto antarctica*).
Bate, 1862: 313-314, pl. 50, fig. 9, (*Themisto Guerinii*).
Bate, 1862: 314-315, pl. 50, fig. 10, (*Themisto Gaudichaudii*).
Thomson & Chilton, 1886: 151, (*Themisto antarctica*).
Bovallius, 1887a: 21, (*Parathemisto trigona*).
Bovallius, 1887a: 21, (*Euthemisto Gaudichaudi*).
Bovallius, 1887a: 22, (*Euthemisto antarctica*).
Bovallius, 1887a: 22, (*Euthemisto Guerini*).
Bovallius, 1887a: 22, (*Euthemisto Nordenskiöldi*).
Bovallius, 1887b: 568, (*Euthemisto Gaudichaudii*).
Stebbing, 1888: 1410-1414, pl. 172, 173, (*Euthemisto gaudichaudii*).
Stebbing, 1888: 1414-1416, pl. 174, 175, (*Euthemisto thomsoni*).
Bovallius, 1889: 250 (key), 264-265, text fig., (*Parathemisto trigona*),
Bovallius, 1889: 250 (key), 266-267, text-fig., (*Parathemisto Batei*),
Bovallius, 1889: 280 (key), 294-298, text-fig., (*Euthemisto antarctica*),
Bovallius, 1889: 280 (key), 299-304, pl. 13 (figs. 44-46), (*Euthemisto Gaudichaudii*).
Walker, 1907: 9, (*Euthemisto gaudichaudii*).
Chilton, 1912: 514, (*Euthemisto thomsoni*).
K.H. Barnard, 1925: 374, (*Euthemisto gaudichaudii*).
Chilton, 1925: 180, (*Euthemisto gaudichaudii*).
Chilton, 1926: 512-513, (*Euthemisto gaudichaudii*).
K.H. Barnard, 1930: 420, (*Parathemisto (Euthemisto) gaudichaudii*).
K.H. Barnard, 1932: 280-282, (*Parathemisto (Euthemisto) gaudichaudii*).
Mackintosh, 1934: passim, fig. 4a, (*Parathemisto gaudichaudii*).
Hardy & Gunther, 1935: 194-195, (*Parathemisto* (*Euthemisto*) *gaudichaudi*).
Guiler, 1952: 31 (list), (*Euthemisto gaudichaudii*).
Hurley, 1955: 151-153, 161-164, figs. 159-174, (*Parathemisto (Euthemisto) gaudichaudii*).
Hurley, 1955: 151-161, figs. 133, 158, 176, 178, (*Parathemisto (Euthemisto) gracilipes*).
Bary, 1959: 317-333, figs. 3, 5-9, (*Parathemisto gaudichaudii*).
Bowman, 1960: 379-382, figs. 16a, 17 (distribution), (*Parathemisto (Euthemisto) gaudichaudii*, part).
Hurley, 1960a: 112, (*Parathemisto gaudichaudi*).
Kane, 1962: 302-303, (*Parathemisto (Euthemisto) gracilipes*).
Kane, 1962; 303-305, (*Parathemisto (Euthemisto) gaudichaudii*).
Vinogradov, 1962: 22, (*Parathemisto gaudichaudi*).
Vinogradov, 1962: 22, (*Parathemisto gracilipes*, part ?).
Kane, 1963a: 35-44, figs. 1-7, (*Parathemisto gaudichaudii*).
Kane, 1963b: 129-132, fig. 1, (*Parathemisto gracilipes*).
Siegfried, 1963: 6 (list), 8, (*Parathemisto (Euthemisto) gaudichaudii*).
Sheard, 1965: 244 (list), (*Euthemisto gaudichaudii*).
Sheard, 1965: 244 (list), (*Euthemisto thomsoni*).
Siegfried, 1965: passim, (*Parathemisto gaudichaudii*).
Kane, 1966: 165-197, (*Parathemisto gaudichaudii*).
Evans, 1968a: 105-106, (*Parathemisto gaudichaudii*).
Evans, 1968b: 101, (*Parathemisto gaudichaudii*).
Hurley, 1969: 33, pl. 19 (map 6), (*Parathemisto gaudichaudii, Parathemisto gracilipes*).
Dick, 1970: 36 (key), 58, fig. 6 (part), (*Parathemisto gaudichaudii*).
Mauchline & Ballantyne, 1975: 346, 349-354, figs. 1v, 3, (*Parathemisto gaudichaudii*).
Dinofrio, 1977: 6 (list), 7 (key), 9-10, 28 (table), map 1, pl. 1, fig. 7; pl. 2, fig. 6, (*Parathemisto (Euthemisto) gaudichaudii*).
Madin & Harbison, 1977: 457-459, 461, (*Parathemisto gaudichaudii*).
Tranter, 1977: 647, passim, (*Parathemisto gaudichaudii*).
Laval, 1980: passim, (*Parathemisto gaudichaudii*).
Lipskaya, 1980: passim, (*Parathemisto gaudichaudii*).
Jazdzewski, 1981: 134-136, 139, (*Parathemisto gaudichaudii*).
Bowman & McGuinness, 1982: 50, 77 (distribution), fig. 3 (key).
Bowman *et al.*, 1982: passim.
Jazdzewski *et al*., 1982: 218, 222 (table), 233 (table), 239 (table), 240 (table), (*Parathemisto gaudichaudii*).
Vinogradov *et al*., 1982: 292 (key), 299-302, figs. 155-156, (*Parathemisto* (*Euthemisto*) *gaudichaudii*).
Hempel *et al*., 1983: 9. 10, fig. 7 (distribution).
Ramirez & Vinas, 1985: 28 (list), 33, 36, fig. 7, 8 (distribution).
Nagata, 1986: 259 (list), 274, (*Parathemisto* (*Euthemisto*) *gaudichaudii*).
Schneppenheim & Weigmann-Haass, 1986: 219, 222 (key), 223-225, figs. 1-1a.
Barkhatov & Vinogradov, 1988: 168 (table), 169-171, 173-177, (*Parathemisto gaudichaudii f. compressa* & *f. bispinosa*).
Jazdzewski & Presler, 1988: 62, 63 (table), 66, 68, 69 (table), figs. 1-2 (distribution).
Wakabara *et al*., 1990: 4, 6.
Andres, 1990: 141-142, fig. 282.
Jazdzewski *et al.*, 1992: 466 (table).
Spamer & Bogan, 1992: 136.
De Broyer & Jazdzewski, 1993: 115-116 (list).
Colombo & Vinas, 1994: passim.

Spamer & Bogan, 1994: 41.
Lin *et al*., 1995: 122 (list), (*Parathemisto gaudichaudii*).
Lima, 1996: 147, 156.
Lin *et al*., 1996: 229 (table), (*Parathemisto gaudichaudii*).
Zeidler, 1997a: 126-129, fig. 4.
Zeidler, 1998: 64-65.
Barkhatov *et al*., 1999: 808 (table), 809-810.
Vinogradov, 1999: 1148 (table), 1189, fig. 4.118.
Olaso *et al*., 2000: 149 (table), 153 (table).
Gates *et al*., 2003: 315-316.
non Sheader & Evans, 1974 : 915-924, fig. 1, (*Parathemisto gaudichaudi = Themisto compressa*).
non Sheader, 1975: passim, (*Parathemisto gaudichaudi = Themisto compressa*).
non Sheader & Evans, 1975: passim, (*Parathemisto Gaudichaudi = Themisto compressa*).
non Sheader, 1977: passim, (*Parathemisto gaudichuadi = Themisto compressa*).
non Sheader, 1981: passim, (*Parathemisto gaudichaudi = Themisto compressa*).
non Williams & Robins, 1981: passim, (*Parathemisto gaudichaudi = Themisto compressa*).
non Corey, 1990: 294 (table), 299-304, figs. 2-5 (distribution maps), (*Parathemisto gaudichaudii = Themisto compressa*).

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932). Near the Falkland Islands, (62°25'S 58°W); (Bate 1862); *Discovery* stn. 49 (13.5 miles N 51ºE of Cape Bougainville), 0-5 m; stn. 51 (off Eddystone Rock), 105-115 m; *William Scoresby,* stn. WS95 (48°58'S 64°45'W), 0-30 m; stn. WS99 (49°42'S 59°14'W), 251-225 m; stn. WS69 (52°19'S 52°11'W); stn. WS72 (50°07'S 57°34'W). Tierra del Fuego, *William Scoresby,* stn. WS89, 21-23 m. South Atlantic, *Discovery* stn. 8 (42°36'S 18°19'W), 0-10 m; stn. 9 (46°11'S 22°27W), 0-1250 m; stn. 78 (35°18'S 19°01'W), 0-1000 m; stn. 120 (51°44'S 5°19'W), 575-675 m. South-west Atlantic, *Discovery* stn. 72 (41°43'S 42°20'W), 0-2000 m; stn. 239 (46°56'S 46°03'W), 1050-1350 m. South-east Atlantic, *Discovery* stn. 101 (33°50'S 16°04'E to 34°13'S 15°49'E), 1310-1410 m. Around South Georgia, *Discovery* stn. 9 (46°11'30"S 22°27'30"W), 50-250 m; stn. 10 (46°35'S 24°15'30W) 0-50 m; stn. 11 (50°26'S 30°27'W), 0-50 m; stn. 12 (51°55'S 32°27'30"W), 100-500 m; stn. 13 (5.7 miles N 49.5°E of Jason Light), 100-135 m; stn. 14 (15.4 miles N 44.5°E of Jason Light), 50-250 m; stn. 15 (25 miles N 45.5°E of Jason Light), 0-190 m; stn. 16 (36.5 miles N 46°E of Jason Light), 0-250 m; stn. 17 (46 miles N 46°E of Jason Light), 0-50 m; stn. 18 (4.8 miles N 34°E of Cape Saunders), 50-100 m; stn. 19 (10 miles N 39°E of Cape Saunders), 0-190 m; stn. 20 (14.6 miles N 41°E of Cape Saunders), 0-200 m; stn. 21 (20.5 miles N 44°E of Cape Saunders), 0-50 m; stn. 23 (5.3 miles N 44°E of Merton Rock), 0-190 m; stn. 24 (10 miles N 72 °E of Jason Light), 0-60 m; stn. 26 (26.5 miles N 54°E of Jason Light), 0-60 m; stn. 30 (W. Cumberland Bay, 2.8 miles S 24°W of), 50-100 m; stn. 31 (13.5 miles N 89°E of Jason Light), 0-220 m; stn. 32 (22.8 miles N 70.5°E of Jason Light), 0-90 m; stn. 33 (33 miles N 37 °E of Jason Light), 0-50 m; stn. 25 (18 miles N 60 °E of Jason Light), 0-5 m; stn. 34 (43 miles N 39°E of Jason Light), 0-90 m; stn. 35 (53 miles N 40°E of Jason Light), 0-90 m; stn. 36 (38 miles N 39°E of Jason Light), 0-90 m; stn. 37 (28 miles N 36°E of Jason Light), 0-90 m; stn. 38 (18.5 miles N 33°E of Jason Light), 0-90 m; stn. 40 (7 miles N 39°E of Barff Point), 0-90 m; stn. 41 (16.5 miles N 39 °E of Barff Point), 0-210 m; stn. 43 (15 miles N 58°E of Jason Light), 0-150 m; stn. 44 (32 miles N 51°E of Jason Light), 0-170 m; stn. 46 (51°13'S 49°50'W), 0-5 m; stn. 47 (50°55'S 54°38'W), 0-5 m; stn. 125 (53°28'S 36°20'W), 0-5 m; stn. 128 (53°38'S 37°08'W), 0-100 m; stn. 132 (53°52'S 35°58'W), 0-76 m; stn. 136 (54°22'S 35°21'W), 0-5 m; stn. 137 (54°19'S 35°03'W), 0-132 m; stn. 151 (53°25'S 35°15'W), 56-625 m; *William Scoresby* stn. WS38 (54°01'S 35°14'W), 0-106 m; *Marine Biological Station*, Grytviken, stn. MS36 (King Haakon Bay), 0 m; stn. MS39 (King Haakon Bay), 0 m. Between South Georgia and Falkland Islands, *Discovery* stn. 124 (53°45'30"S 36°32'30"W), 0-210 m; stn. 127 (53°48'30"S 37°08'W), 50-100 m; stn. 126 (53°58'30"S 37°08'W), 0-47 m; stn. 129 (53°28'30"S 37°08'W), 0-84 m; stn. 130 (54°06'S 36°23'W), 0-77 m; stn. 131 (53°59'30"S 36°11'W), 0-128 m; stn. 133 (53°45'30"S 35°46'30"W), 0-100 m; stn. 134 (54°22'S 35°56'W), 0-123 m; stn. 135 (54°22'S 35°39'W), 0-150 m; stn. 138 (54°17'S 34°47'W), 0-250 m; stn. 139 (53°30'15"S 35°50'45"W), 0-250 m; stn. 160 (53°43'40"S 40°57'W), 0-80 m; stn. 161 (57°21'20"S 46°43'30"W), 0-1000 m; *William Scoresby* stn. WS18 (54°07'S 36°23'W), 0-100 m; stn. WS19 (54°00'30"S 36°20'30"W), 164 m; stn. WS20 (53°52'30"S 36°00'W), 0-50 m; stn. WS21 (53°45'30"S 35°48'W), 0-750 m; stn. WS22 (53°38'S 35°35'W), 0-185 m; stn. WS24 (54°12'07"S 36°28'07"W), 0-250 m; stn. WS26 (53°33'15"S 37°45'15"W), 0-750 m; stn. WS27 (53°55'S 38°01'W), 0-50 m; stn. WS28 (53°48'15"S 38°13'W), 0-80 m; stn. WS29 (53°41'15"S 38°24'45"W), 118 m; stn. WS30 (53°41'15"S 38°24'45"W), 100-250 m; stn. WS31 (54°52'S 35°36'W), 0-75 m; stn. WS33 (54°59'S 35°24'W), 0-65 m; stn. WS 34 (55°06'S 35°11'W), 0-100 m; stn. WS 35 (55°13'15"S 34°59'W), 0-150 m; stn. WS36 (55°22'15"S 34°46'30"W), 0-500 m; stn. WS37 (54°45'S 35°11'W), 50-250 m;; stn. WS39 (54°08'S 35°43'W), 50-232 m; stn. WS40 (55°09'S 35°58'W), 0-144 m; stn. WS41 (54°32'45"S 36°47'W), 0-146 m; stn. WS42 (54°41'45"S 36°47'W), 0-100 m; stn. WS43 (54°54'S 36°50'W), 0-141 m; stn. WS44 (55°06'S 36°57'W), 50-128 m; stn. WS45 (54°38'30"S 37°30'55"W), 0-102 m; stn. WS46 (54°20'15"S 37°32'30"W), 0-37 m; stn. WS47 (54°22'37"S 37°50'W), 0-126 m; stn. WS48 (54°24'S 38°09'W), 0-192 m; stn. WS49 (54°28'S 38°22'15"W), 0-137 m; stn. WS50 (54°30'30"S 38°40'30"W); stn. WS51 (54°34'S 38°57'W), 0-64 m; stn. WS52 (54°03'30"S 38°35'W), 0-100 m; stn. WS54 (53°29'S 37°13'45"W), 100-500 m; stn. WS55 (53°15'30"S 37°13'45"W), 164 m; stn. WS57 (53°37'S 36°51'W), 0-157 m; stn. WS58 (53°06'15S 37°06'30 W), 0-56 m; stn. WS59 (52°57'S 37°06'30"), 56-113 m; stn.

WS60 (52°47'S 37°06'30"W); stn. WS61 (52°37'30"S 37°06'30"W), 0-132 m; stn. WS63 (54°36'S 39°14'W), 0-157 m; stn. WS66 (53°31'15"S 42°03'30"W), 88 m; stn. WS67 (53°19'S 45°16'W), 0-500 m; stn. WS68 (52°53'S 48°48'W), 0-161 m; stn. WS69 (52°19'S 52°11'W), 0-1000 m; stn. WS70 (51°58'S 55°42'W), 0-750 m; stn. WS110 (53°46'S 35°47'W), 0-102 m; stn. WS112 (53°54'30"S 36°06'W), 73-146 m; stn. WS113 (54°07'S 36°24'W), 55 m; stn. WS114 (54°00'S 36°12'W), 0-116 m. Palmer Archipelago, *Discovery* stn. 180, Off Gand Island, Schollaert Channel ([64°30'S 62°50'W]). South Shetland Islands, *Discovery* stn. 208, off Livingston Island. Bouvet Island, *Discovery* stn. 116 (50°30'S 5°34'E), 55 m; (K.H. Barnard 1932; Hardy & Gunther 1935); (Jazdzewski 1981; Hempel *et al*. 1983). South Orkney Islands (Chilton 1925). Western Weddell Sea (Dinofrio 1977). Eastern Weddell Sea (Olaso *et al*. 2000; Schneppenheim & Weigmann-Haass 1986).

Indian Sector: Near the Crozet Islands, *Challenger* stns. (46°46'S 45°31'E & 46°45'S 50°42'E) and south of Australia, *Challenger* stns. (50°01'S 123°04'E & 48°18'S 130°04'E); (Stebbing 1888). Near Mawson Base, *BANZARE* stn. 32 (66°35'S 61°13'E), 750 m; in vicinity of Kerguelen and Heard Island, stn. 46 (55°11'S 55°51'E), 100-50 m; stn. 58 (49°30'S 70°04'E); stn. 64 (49°28'S 70°33'E), 91 m; stn. 67 (45°53'S 84°33'E) and near the Banzare Coast, stn. 91 (64°49'S 124°58'E), 100-0 m; stn. 93 (64°21'S 116°02'E), 1500 mw & stn. 96 (65°10'S 109°32'E), 2200 mw; (Hurley 1960a). Prydz Bay, *Aurora Australis* 10 stns. (range 65°-69°S 70°30'-76°28'E; surface-800 m) and near Heard Island, *Aurora Australis* stns. (52°34'S 76°34'E), 740 m; (52°55'S 74°14'E), 165 m & (52°55'S 74°05'E), 200 m; (specimens in SAMA). Generally, the following *Ob* stns., stn. 17 (63º57'S 94º26'E); stn. 19 (64º13'S 100º57'E); stn. 22 (64º38'S 107º11'E); stn. 27 (65º19'S 109º56'E), 220-250 m; stn. 29 (65º06'S 111º24'E), 0-2000 m; stn. 33 (64º53'S 115º01'E), 210-540 m; stn. 34 (64º21'S 115º55'E), 0-1980 m; stn. 36 (62º55'S 118º52'E), 0-3700 m; stn. 37 (64º16'S 120º00'E); stn. 38 (65º23'S 121º01'E); stn. 44 (66º08'S 128º25'E), 210-550 m; stn. 46 (64º52'S 132º30'E); stn. 96 (43º55'S 127º47'E); stn. 104 (54º42'S 109º12'E), 0-550 m; stn. 110 (62º56'S 90º00'E); stn. 112 (61º41'S 87º40'E); stn. 113 (60º52'S 85º32'E), 0-2700 m; stn. 118 (55º00'S 76º16'E); stn. 119 (53º44'S 74º56'E); stn. 123 (46º57'S 70º12'E); stn. 410 (62º39'S 109º16'E); stn. 411 (61º42'S 109º15'E), 0-1100 m; stn. 413 (58º58'S 109º21'E), 0-2180 m; stn. 415 (55º18'S 109º20'E), 0-1200 m; stn. 416 (53º15'S 109º30'E); stn. 417 (51º22'S 109º26'E), 0-1200 m; stn. 419 (47º36'S 109º20'E), 0-1100 m; stn. 455 (59º28'S 67º41'E), 0-1100 m; stn. 464 (58º10'S 61º00'E) & stn. 468 (55º19'S 64º44'E); (Vinogradov 1962).

Pacific Sector: Near the Ross Sea, *Terra Nova* stn. 167 (61°22'S 179°56'W), surface; stn. 217 (66°46'S 177°48'W), 10 m and stns. 229 & 230 (64°03'S 160°12'E), 80 m; (K.H. Barnard 1930); also (63°04'S 175°43'E) and south of Campbell Island, *Discovery* (54°01'S 170°49'E); (Walker 1909). Bellingshausen Sea (68°S 94°W); (Dana 1853). South of Tasmania (52°08'S 149°40'E); (Nagata 1986).

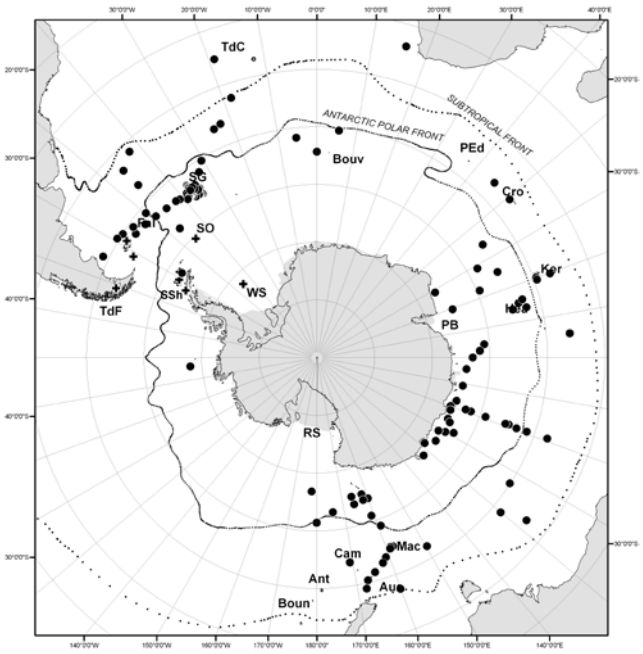

Figure 15. Distribution records of *Themisto gaudichaudii*.

Near Macquarie Island, *Southern Surveyor* stns. (54°30.3'S 158°58.7'E), surface; (54°46'S 158°01'E), 671 m; (54°45'S 158°41'E), 936 m; (54°49.4'S 158°39.8'E), 865 m & (54°46'S 158°41'E), 960 m; (specimens in SAMA). Generally the following *Ob* stns., stn. 57 (64º03'S 161º59'E), 0-3000 m; stn. 58 (65º05'S 161º53'E); stn. 60 (61°22'S 160°57'E), 240-600 m; stn. 63 (58º48'S 159º08'E); stn. 70 (53º23'S 160º50'E), 224-550 m; stn. 71 (52º36'S 162º07'E), 0-200 m; stn. 73 (51º26'S 164º48'E), 0-220 m; stn. 75 (50º 22'S 167º01'E), 0-150 m; stn. 76 (48º59'S 167º45'E), 0-220 m; stn. 367 (63º46'S 165º43'E), 550-1100 m; stn. 368 (65º09'S 165º59'E), 500-1000 m; stn. 384 (64º02'S 160º04'E), 0-1100 m and stn. 394 (47º21'S 160º05'E), 0-2000 m; (Vinogradov 1962).

***Worldwide distribution*:**
Very common and sometimes very abundant in the entire Southern Ocean, ranging mainly between the Subtropical Convergence and the Antarctic Continent. Records further north are most likely due to the incursion of subantarctic currents. It can be very abundant at the surface at night but descends to about 25-50 m during the day, and sometimes deeper, to the 100-200 m and 200-500 m layer.

***Type locality*:** The Falkland Islands

***Type material location*:** The holotype female is in the ANSP, Philadelphia (CA2681 – Guérin-Méneville Coll. no. 438); once alcohol preserved, now dry.

Family LESTRIGONIDAE Zeidler, 2004

Hyperietta luzoni (Stebbing, 1888)

Stebbing, 1888: 1382-1384, pl. 166A, (*Hyperia luzoni*).

Bovallius, 1889: 146 (key), 212-214, (*Hyperia luzoni*).
Lo Bianco, 1902: 425, 446, 467, (*Hyperia Luzonii*).
Lo Bianco, 1903: table facing p.278, (*Hyperia Luzonii*).
Lo Bianco, 1904: 42, (*Hyperia Luzonii*).
Stewart, 1913: 255, (*Hyperia luzoni*).
Stephensen, 1924: 84-86, fig. 34, chart 12, (*Hyperia Luzoni*).
Pirlot, 1929: 122-123, (*Hyperia luzoni*).
K.H. Barnard, 1930: 410, (*Hyperia luzoni*).
Pirlot, 1939a: 35, (*Hyperia luzoni*).
Hurley, 1960b: 279, (*Hyperia luzoni*).
Kane, 1962: 301, (*Hyperia luzoni*).
Hurley, 1969: pl. 19 (map 5), (*Hyperia luzoni*).
Bowman, 1973: 55-58, fig. 39.
Brusca, 1973: 18 (*Hyperia luzoni*).
Shulenberger, 1977a: passim, 378 (table).
Brusca, 1981a: 9 (list), 22 (key), 40, figs. 10i, 10j, 10l
Bowman & McGuinness, 1982: fig. 2 (key), figs. 4-8 & 84 (distribution), 49-50.
Vinogradov *et al*.,1982: 319 (key), 320-321, fig. 168.
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 114 (list).
Lin & Chen, 1994: 118 (list).
Lin *et al*., 1995: 122 (list).
Shih & Chen, 1995: 97-98, fig. 59.
Lin *et al*., 1996: 230 (table).
Lima, 1996: 156.
Zeidler, 1998: 46, figs. 30, 31.
Barkhatov *et al*., 1999: 808 (table).
Lowry, 2000: 325 (list).
Escobar-Briones *et al.,* 2002: 367 (list).
Gasca, 2003a: 307 (table).
Gasca, 2003b: 118 (table).
Gates *et al*., 2003: 309, text fig.
Vinogradov *et al*., 2004: 10, 25 (table).
Zelickman, 2005: xvi (list), figs. 17a, 17b (pp. 102-105).
Gasca, 2007: 118 (table).
Gasca, 2008: 88 (table).
non Vosseler, 1901: 64-66, pl. 5, figs. 16-28, (= *Hyperietta stebbingi* Bowman, 1973).
non Stebbing, 1904: 33-34, (= *Hyperietta stebbingi* or *H. stephenseni* Bowman, 1973).

***Southern Ocean distribution*:**
Pacific Sector: South of New Zealand, stn. B106 (55°42.4'S 165°23'E); stn. B110 (61°55'S 170°39'E) & stn. B119 (54°31'S 170°20'E); (Kane 1962) and *Discovery* stn. (56º30'S 169º30'E); (Stewart 1913).
***Worldwide distribution*:**
The only reliable records are from the Pacific Ocean ranging in the west from the Californian coast to off Chile (38°06'S 88°02'W) and in the east from the Indo-Pacific region to the Tasman Sea and south of New Zealand, as above. Records from the Atlantic and Mediterranean Sea by Stephensen (1924) are suspect and there are no records from the Indian Ocean. It seems to inhabit waters near the surface, judging by the few reliable records.
***Type locality*:** South China Sea, west of Luzon, Philippines, *Challenger* stn. 218 (16°35'N 117°47'E), surface and stn. 218a, Zebu Harbour, Philippines, surface.
***Type material location*:** The syntypes are in the NHM, London; on two microscope slides and in spirit.

Hyperioides longipes Chevreux, 1900

Chevreux, 1900: 143-145, pl. 17, fig. 2.
Vosseler, 1901: 63, (*Hyperia longipes*).
Vosseler, 1901: 60-64, pl. 7, figs. 6-20, (*Hyperia sibaginis* var. *longipes*).
Lo Bianco, 1902: 422, 425, 426, 447, 467.
Lo Bianco, 1903: 120, 121, 127, 145, table facing p.278.
Walker, 1903b: 229-230, pl. 19, figs. 7-13.
Fowler, 1904: 49, 53 (table).
Lo Bianco, 1904: 43, pl. 22, fig. 66.
Stebbing, 1904: 34-36.
Tattersall, 1906: 23.
Chevreux, 1913: 6.
Stewart, 1913: 256.
Stephensen, 1924: 93-94.
Chevreux & Fage, 1925: 407-408, fig. 405.
Schellenberg, 1927: 637, fig. 42.
Spandl, 1927: 164.
Pirlot, 1929: 124-126.
K.H. Barnard, 1930: 414-415.
Pirlot, 1930: 19-20.
K.H. Barnard, 1932: 276.
Chevreux, 1935: 189-191.
K.H. Barnard, 1937: 184.
Ruffo, 1938: 148.
Pirlot, 1939a: 37.
Shoemaker, 1945b: 238.
Bulycheva, 1955: 1048 (table).
Hure, 1955 : 48.
Ried, 1955: 10 (list), 18, (*Hyperia longipes*- lapsus on p. 18).
Hurley, 1956: 15.
Trégouboff & Rose, 1957: 460, pl. 132.
Hurley, 1960b: 280.
Kane, 1962: 302.
Vinogradov, 1962: 22.
Siefried, 1963: 6 (list), 8.
Pillai, 1966: 211-212, fig. 5.
Vives, 1966: 96, table 19.
Vives, 1968: 460, table 1.
Hurley, 1969: 33, pl. 19 (map 5).
Lewis & Fish, 1969: 9.
Dick, 1970: 36 (key), 57, fig. 6 (part).
Hure *et al*., 1971: passim.
Yoo, 1971b: 57.
Repelin, 1972a: 50 (table), 51-52.
Bowman, 1973: 33, figs. 24-25.
Thurston, 1976: 386 (table), 387, 389, 410-415, figs. 9-11 (distribution).
Shulenberger, 1977a: 378 (table), 383.

Shulenberger, 1977b: 75 (table).
Tranter, 1977: passim.
Shulenberger, 1978: 613, fig. 8 (distribution).
Shulenberger, 1979: passim.
Laval, 1980: 16, 23 (table).
Brusca, 1981a: 10 (list), 21 (key), figs. 8e-g.
Bowman & Mc.Guinness, 1982: fig. 3 (key), figs. 28-33 (distribution), 50-51.
Vinogradov *et al*., 1982: 307 (key), 308-309, fig. 160.
Barkhatov & Vinogradov, 1988: 168 (table), 173.
Vinogradov, 1990a: 61-62.
Vinogradov, 1991: 261 (table), 263 (table).
Zeidler, 1992: 99.
De Broyer & Jazdzewski, 1993: 114 (list).
Vinogradov, 1993: 44 (table).
Lin & Chen, 1994: 114, 118 (list).
Lin *et al*., 1995: 122 (list).
Shih & Chen, 1995: 91-93, figs. 55, 56.
Lima, 1996: 156.
Lin *et al*., 1996: 129 (table).
Zeidler, 1998: 53.
Vinogradov, 1999: 1146 (table), 1185, fig. 4.104.
Lowry, 2000: 325 (list).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003a: 306, 307 (table), 313, 316.
Gasca, 2003b: 117, 118 (table).
Gates *et al*., 2003: 310.
Gasca, 2004: 996, 997 (table).
Gasca & Suárez-Morales, 2004: 26 (table), 28.
Vinogradov *et al.*, 2004: 11, 25 (table).
Zelickman, 2005: xvi (list), figs. 11a, 11c (pp. 64-69).
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 116-117, 118 (table), 121-122.
Gasca, 2008: 88 (table).

***Southern Ocean distribution*:**
Indian Sector: Eastern part to 46°S (Tranter 1977).
Pacific Sector: South of New Zealand, *Terra Nova* stn. 238 (52°11'S 167°25'E), 10 m; (K.H. Barnard 1930) and *Ob* stn. 352 (46°20'S 162°51'E), 0-1000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Relatively common in the tropical and subtropical waters of all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from Ireland to about 38°S. In the Indian Ocean it occurs mainly in tropical regions to about 46°S in the eastern part. In the Pacific it ranges from about 40°N to 52°S. Most catch records are from the surface to 200-300 m, occasionally found as deep as 500-600 m.
***Type locality*:** Eastern Atlantic, west of Bay of Biscay, *Hirondelle* stn. 169 (44°42'30"N 06°56' 15"W), 494 m; stn. 253 (47°38'13"N, 19°53'25"W), 1300 m; stn. 256 (48°24'48"N 18°18'15"W), 2200 m & stn. 258 (47°42'41"N 17°10'W), 781 m.
***Type material location*:** The syntype female from stn. 258 is in the MOM, Monaco.

Lestrigonus schizogeneios (Stebbing, 1888)

Stebbing, 1888: 1391-1394, pl. 168, (*Hyperia schizogeneios*).
Stebbing, 1888: 1385-1387, pl. 166B, (*Hyperia promontorii*).
Stebbing, 1888: 1394, (*Hyperia zebui*).
Bovallius, 1889: 214-218, pl. 11, figs. 3-13, (*Hyperia promontorii*).
Bovallius, 1889: 221-224, (*Hyperia schizogeneios*).
Chevreux, 1892: 233-237, figs. 1-3, (*Hyperia schizogeneios*).
Chevreux, 1900: 139-143, pl. 17, fig. 1a-m, (*Hyperia schizogeneios*).
Vosseler, 1901: 64, (*Hyperia promontorii*).
Vosseler, 1901: 66-67, (*Hyperia schizogeneios*).
Lo Bianco, 1902: 419, 421, 426, 446, 467, (*Hyperia schizogeneios*).
Lo Bianco, 1902: 424, 446, (*Hyperia promontorii*).
Lo Bianco, 1903: 128, 131, table facing p. 278, (*Hyperia schizogeneios*).
Lo Bianco, 1903: table facing p. 278, (*Hyperia promontorii*).
Stebbing, 1910: 475-476, (*Hyperia promontorii*).
Spandl, 1924b: 265, (*Hyperia schizogeneios*).
Stewart, 1913: 255-256, (*Hyperia schizogeneios*).
Stephensen, 1924: 86-90, chart 13, (*Hyperia schizogeneios*).
Chevreux & Fage, 1925: 402-404, fig. 402, (*Hyperia schizogeneios*).
Pirlot, 1929: 120-122, (*Hyperia schizogeneios*).
K.H. Barnard, 1930: 411, (*Hyperia promontorii*).
Pirlot, 1930: 16-18, (*Hyperia schizogeneios*).
Candeias, 1934: 4, (*Hyperia schizogeneios*).
Chevreux, 1935: 188-189, (*Hyperia schizogeneios*).
K.H. Barnard, 1937: 183-184, (*Hyperia promontorii*).
Pirlot, 1939a: 35-36, (*Hyperia bengalensis*).
Dakin & Colefax, 1940: 121, fig. 207, (*Hyperia promontorii*).
Irie, 1948: 36 (table), (*Hyperia schizogeneios*).
Alvarado, 1955: 219, (*Hyperia schizogeneios*).
Bulycheva, 1955: 1048 (list), (*Hyperia schizogeneios*).
Hure, 1955: 47-48, figs. 57a, 57b, (*Hyperia schizogeneios*).
Hurley, 1955: 137-140, figs. 70-82, (*Hyperia bengalensis*).
Reid, 1955: 17, fig. 4, (*Hyperia bengalensis*).
Hurley, 1956: 14-15, (*Hyperia bengalensis*).
Irie, 1957a: 351, fig. 12, (*Hyperia schizogeneios*).
Irie, 1957b: passim, (*Hyperia schizogeneios*).
Trégouboff & Rose, 1957: 456, pl. 132, (*Hyperia schizogeneios*).
Irie, 1958: 107 (table), (*Hyperia schizogeneios*).
Irie, 1959: passim, (*Hyperia schizogeneios*).
Hurley, 1960b: 279, (*Hyperia bengalensis*).
Yang, 1960: 15-19, figs. 1-3, (*Hyperia Parahyperia schizogeneios*).
Evans, 1961: 201, (*Hyperia schizogeneios*).
Hure, 1961: 33, (*Hyperia schizogeneios*).
Kane, 1962: 299-300, (*Hyperia bengalensis*).

Vinogradov, 1962: 24-25, (*Hyperia bengalensis*).
Siegfried, 1963: 8, (*Hyperia promontorii*).
Laval, 1965: 6197-6198, fig. 4, (*Hyperia schizogeneios*).
Vives, 1966: 96, table 19, (*Hyperia schizogeneios*).
Brusca, 1967a: 388, (*Hyperia bengalensis*).
Brusca, 1967b: 452, (*Hyperia bengalensis*).
Laval, 1968: 25-65, figs. 1-12, (*Hyperia schizogeneios*).
Vives, 1968: 460, table 1, (*Hyperia schizogeneios*).
Hurley, 1969: 19, (*Hyperia bengalensis*).
Dick, 1970: 36 (key), 56-57, fig. 6 (part), (*Hyperia schizogeneios*).
Hure *et al*., 1971: passim, (*Hyperia schizogeneios*).
Yoo, 1971b: 56, fig. 14 (distribution), (*Hyperia schizogeneios*).
Laval, 1972: 49-73, figs. 1-8, (*Hyperia schizogeneios*).
Bowman, 1973: 38 (key), 39-42, figs. 28-29.
Thurston, 1976: 386 (table), 387, 390, 417.
Harbison *et al*., 1977: 467 (table), 468.
Shulenberger, 1977a: 378 (table).
Tranter, 1977: 647, passim.
Laval, 1980: passim.
Brusca, 1981a: 10 (list), 22 (key), 41, fig. 11c, 11d.
Bowman & McGuinness, 1982: 50, 51, fig. 2 (key), figs. 59-64 (distribution).
Vinogradov *et al*., 1982: 310-311 (key), 311-313, fig. 162.
Barkhatov & Vinogradov, 1988: 168 (table), 170.
Vinogradov, 1990a: 63.
Vinogradov, 1991: 261 (table).
Zeidler, 1992: 103.
De Broyer & Jazdzewski, 1993: 115 (list).
Vinogradov, 1993b: 44 (table).
Lin & Chen, 1994: 118 (list).
Lin *et al*., 1995: 119, 122 (list).
Shih & Chen, 1995: 68-71, figs. 38, 39.
Lima, 1996: 150, 154 (table), 157-158, figs. 2 & 3 (distribution).
Lin *et al*., 1996: 129 (table).
Lavaniegos & Ohman, 1998: 495 (table), 500, 502 (table), fig. 4 (seasonal abundance).
Zeidler, 1998: 59-60.
Barkhatov *et al*., 1999: 808 (table), 809.
Vinogradov, 1999: 1146 (table), 1188, fig. 4.114.
Lowry, 2000: 326 (list).
Gasca & Shih, 2001: 496 (table), 498.
Lima & Valentin, 2001: 473 (list), 474 (table).
Escobar-Briones *et al.*, 2002: 367 (list).
Gasca, 2003a: 306, 307 (table), 313.
Gasca, 2003b: 118 (table), 120-121.
Gates *et al*., 2003: 313-314.
Gasca, 2004: 997 (table), 1001.
Gasca & Suárez-Morales, 2004: 26 (table).
Vinogradov *et al*., 2004: 12, 24 (table).
Zelickman, 2005: xvi (list), 76-83 (fig. 13a-d).
Gasca *et al*., 2006: 240 (table).
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 118 (table), 122.
Gasca, 2008: 88 (table).
Gasca & Franco-Gordo, 2008: 569 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Generally to about 45°S (Vinogradov 1999).
Indian Sector: Eastern part to 46°S (Tranter 1977).
Pacific Sector: South of New Zealand, stn. B116 (58º20'S 171º14'E), 125-0 m & stn. B119 (54º31'S 170º20'E), 500-0 m; (Kane 1962). Central part to 48°S (Barkhatov *et al*. 1999).
***Worldwide distribution*:**
Very common in the tropical and subtropical regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from 47°N to 45°S. In the Indian Ocean it occurs mainly in tropical regions to about 46°S in the eastern part. In the Pacific it ranges from the Indo-Pacific region and off the Californian coast down south to the Tasman Sea and south of New Zealand, as above. Most catch records are from the surface to 200 m.
***Type locality*:** Off St. Vincent, Cape Verde Islands, *Challenger* stn. (16°49'S 25°14'W), surface.
***Type material location*:** Syntype material is in the NHM, London (89.5.15.222); in spirit and on two microscope slides.

Family DAIRELLIDAE Bovallius, 1887

Dairella californica (Bovallius, 1885)

Bovallius, 1885a: 11-12, (*Paraphronima californica*).
Bovallius, 1887a: 24.
Bovallius, 1887a: 24, (*Dairella latissima*).
Stebbing, 1888: 1343-1346, pl. 158, (*Dairella bovalli*).
Bovallius, 1889: 333-336, pl. 15, figs. 21-33.
Bovallius, 1889: 336-340, pl. 15, figs. 1-20, (*Dairella latissima*).
Vosseler, 1901: 51, (*Dairella latissima*).
Tattersall, 1906: 18, (*Dairella latissima*).
Chevreux, 1913: 16, (*Dairella latissima*).
Stewart, 1913: 254, (*Dairella latissima*).
Stephensen, 1924: 112, (*Dairella latissima*).
Schellenberg, 1927: 638, fig. 43, (*Dairella latissima*).
Spandl, 1927: 169, (*Dairella latissima*).
Pirlot, 1929: 107, (*Dairella latissima*).
K.H. Barnard, 1932: 282, (*Dairella latissima*).
Chevreux, 1935: 184, (*Dairella latissima*).
K.H. Barnard, 1937: 184, (*Dairella latissima*).
Pirlot, 1939a: 41, (*Dairella latissima*).
Reid, 1955: 19, fig. 5, (*Dairella latissima*).
Grice & Hart, 1962: 300, (*Dairella latissima*).
Dick, 1970: 59, fig, 7, (*Dairella latissima*).
Lorz & Pearcy, 1975: 1444 (table).
Stuck *et al*., 1980: 363, (*Dairella latissima*).
Brusca, 1981a: 42, fig. 12.
Vinogradov *et al*., 1982: 331-333, fig. 176.

Vinogradov *et al*., 1982: 333-335, fig. 177, (*Dairella latissima*).
Barkhatov & Vinogradov, 1988: 167, 168 (table).
Vinogradov, 1988: fig. 2E, (*Dairella latissima*).
Vinogradov, 1990a: 65.
Vinogradov, 1990a: 65, (*Dairella latissima*).
Vinogradov, 1991: 261.
Vinogradov & Semenova, 1996: 618, 620, fig. 7.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1145 (table), 1181, fig. 4.92, (*Dairella latissima*).
Gasca & Shih, 2001: 496 (table).
Gasca & Shih, 2001: 496 (table), (*Dairella latissima*).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2004: 997 (table), 998 (table).
Gasca, 2004: 997 (table), 998 (table), (*Dairella latissima*).
Zeidler, 2004: 50-55, figs. 7-10.
Gasca, 2008: 88 (table).

***Southern Ocean distribution*:**
Pacific Sector: Central part (40°-50°S 158°W); (Vinogradov & Semenova 1996).
***Worldwide distribution*:**
Relatively rare but found in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea, but remains to be recorded from the southern Indian Ocean. It seems to more common in the Atlantic and Pacific Oceans. Most records are from near-surface waters (0-200 m).
***Type locality*:** "The Pacific".
***Type material location*:** Not found in the NRS, Stockholm; ZMUC, Copenhagen or in Uppsala, Sweden; considered lost.

Family PHRONIMIDAE Dana, 1852

Phronima atlantica Guérin-Méneville, 1836

Guérin-Méneville, 1836a: pl. 25, fig. 4.
Guérin-Méneville, 1836c: 7-9, pl. 18, fig. 1.
Milne Edwards, 1838: 303.
Milne Edwards, 1840: 93, (*Phronima Atlantica*)..
Guérin-Méneville, 1844: 21-22, 46 (list).
Bate, 1862: 318, pl. 51, fig. 3.
Claus, 1879a: 4.
Streets, 1882: 5-8, pl. 1, figs. 1, 1a, 2.
Bovallius, 1887a: 25.
Stebbing, 1888: 1351-1352, pl. 160.
Bovallius, 1889: 353 (key), 374-377, pl. 16, figs. 19-26.
Chun, 1889a: 527.
Vosseler, 1900: 399-401 & passim, figs. 3, 4.
Vosseler, 1901: 21-22, pl. 2, figs. 1-10.
Lo Bianco, 1902: 422, 423, 447.
Lo Bianco, 1903: 122,128, 130, 133, 135, 137, 140, 148, 149, 154, 156, 198, table facing p.278.
Lo Bianco, 1904: 43, pl. 22, fig. 69.
Walker, 1909: 50 (list), 51 (part mis-identification of *Phronima pacifica* & *Phronima sedentaria*, re-determined by Shih).
Spandl, 1924a: 24.
Stephensen, 1924: 113 (key), 121-125.
Chevreux & Fage, 1925: 392 (key), 395-396, fig. 397.
Dudich, 1926: 17-1.
Bigelow, 1926: 166 (table).
Mogk, 1927: 126 (table), 131-132, fig. 2 (distribution).
Schellenberg, 1927: 639 (key), 641-643, fig. 45.
Pirlot, 1929: 112-114.
K.H. Barnard, 1930: 422.
Pirlot, 1930: 14.
K.H. Barnard, 1932: 285.
Chevreux, 1935: 184.
K.H. Barnard, 1937: 186 (*Phronima colletti*, mis-identification).
K.H. Barnard, 1940: 484, 541 (key).
Shoemaker, 1945b: 236.
Reid, 1955: 20.
Irie, 1959: passim.
Hurley, 1960a: 113.
Evans, 1961: 202.
Shih & Dunbar, 1963: passim.
Vinogradov, 1962: 20.
Siegfried, 1963: 6 (list), 12 (table).
Pillai, 1966: 214-215, fig. 7.
Hurley, 1969: 33, pl. 19 (map 7).
Lewis & Fish, 1969: 9.
Shih, 1969: 14-16, fig. 2a-k, (key).
Dick, 1970: 38 (key), 59-60, fig. 8 (part).
Repelin, 1970: 71-72 (key), 78-83.
Shih, 1971a: 27 (table), 33, 35 (chart), fig. 1q, 1r.
Yoo, 1971b: 42 (list), 53.
Repelin, 1972b: 193-194.
Laval & Lecher, 1975: passim.
Théodoridès & Desportes, 1975: 211, 217 (list), (parasites).
Thurston, 1976: 387 (table), 418-420, fig. 12 (depth distribution).
Fukuchi, 1977: 441 (list), appendix 2.
Harbison *et al*., 1977: 469, 483 (table).
Tranter, 1977: passim.
Zeidler, 1978: 13-14, figs. 9, 10.
Laval, 1980: 21-22, 23 (table).
Stuck *et al*., 1980: 363-364.
Brusca, 1981a: 10 (list), 25 (key), 27-28, 42, fig. 14g, 14j.
Vinogradov *et al*., 1982: 337 (key), 339-340, fig. 179.
Young & Anderson, 1987: 713, 716 (table), 718 (table), 723.
Barkhatov & Vinogradov, 1988: passim.
Young, 1989: passim.
Vinogradov, 1990a: 66-67.
Shih, 1991a: 334 (key).
Shih, 1991b: 212.
Vinogradov, 1991: passim.
Spamer & Bogan, 1992: 134.
Zeidler, 1992: 105.

De Broyer & Jazdzewski, 1993: 116 (list).
Vinogradov, 1993b: 42, 44 (table), 47.
Lin & Chen, 1994: 118 (table).
Spamer & Bogan, 1994: 41.
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 110 (key), 113-115, figs. 68, 69.
Lin *et al*., 1996: 230 (table).
Zelickman & Por, 1996: passim.
Zeidler, 1997a: 130.
Zeidler, 1998: 65.
Barkhatov *et al*., 1999: passim.
Lavaniegos & Ohman, 1999: 495 (table).
Vinogradov, 1999: 1147 (table), 1189-1190, fig. 4.119.
Lowry, 2000: 328 (list).
Gasca & Shih, 2001: 496 (table).
Lima & Valentin, 2001: 473 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: passim.
Gasca, 2003b: passim.
Gates *et al*., 2003: 339 (text fig.), 340.
Gasca, 2004: passim.
Vinogradov *et al*., 2004: 13 (list), 25 (table).
Zeidler, 2004: 12.
Zelickman, 2005: xvi (list), 130-135 (figs. 21a-c).
Gasca, 2008: 87 (table), 92.

***Southern Ocean distribution*:**
Indian Sector: Near the Davis Sea, *Gauss* (65°57'S 88°58'E), 350 m; (Mogk 1927). North-east of Heard Island, *BANZARE* stn. 67 (45°53'S 84°33'E), 200 & 3000 mw; (Hurley 1960a).
Pacific Sector: South of New Zealand, *Terra Nova* stn. 236 (52°11'S 167°25'E), 80 m; (K.H. Barnard 1930); also *Ob* stn. 352 (46°10'S 162°51'E), 0-1000 m & stn. 68 (54°30'S 158°58'E), 0-28 m; (Vinogradov 1962).
***Worldwide distribution*:**
Common and widespread in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from about 55°N to 40°S. In the Indian Ocean it occurs from the Arabian Sea to almost 66°S, as above. In the Pacific it is common in the tropical eastern and western parts but rare centrally and extends south to the Subtropical Convergence. It is very common in the Mediterranean Sea. Most records are from surface waters (50-100 m), but it may occur down to 1500 m or more.
***Type locality*:** Atlantic Ocean (Guérin-Méneville 1836a).
***Type material location*:** Two syntype females are in the ANSP, Philadelphia (CA2687; Guérin-Méneville Coll. No. 444); once alcohol preserved, now dry.

Phronima sedentaria (Forsskål, 1775)

Forsskål, 1775: 95-96, pl. 41, figs. D,d, (*Cancer sedentarius*).
Schousboe, 1802: 11, pl. 1, figs. 1-6, (*Gammarus sedentarius*).
Latreille, 1803: 291.
Leach, 1815: 355.
Risso, 1816: 121, pl. 2, fig. 3, (*Phronima custos*).
Milne Edwards, 1830: 394.
Milne Edwards, 1838: 303.
Lucas, 1840: 238-239, pl. 18, fig. 6.
Milne Edwards, 1840: 93.
Costa in Hope, 1851: 21 (list), (includes *Phronima custos*).
Pagenstecher, 1861: 15-41, pl. 1-3.
Bate, 1862: 316-317, pl. 51, fig. 1.
Bate, 1862: 318, pl. 51, fig. 3, (*Phronima Borneensis*).
Claus, 1862: 195-196, pl. 19, figs. 1, 4-6.
Claus, 1872a: passim.
Claus, 1872b: 468.
Powell, 1875: 294, pl. 21, figs. 1, 2, (*Phronima novaezealandiae*).
Claus, 1879a: 4, pl. 2, fig. 11.
Claus, 1880: 587.
Thomson & Chilton, 1886: 150, (*Phronima novae-zealandiae*).
Bovallius, 1887a: 25, (*Phronima spinosa*).
Stebbing, 1888: 1354-1356, pl. 161A, (*Phronima tenella*).
Stebbing, 1888: 1356, pl. 161B, (*Phronima novae-zealandiae*).
Stebbing, 1888: 1357-1361, pl. 162B.
Bovallius, 1887a: 25.
Chevreux, 1887: passim.
Bovallius, 1889: 353 (key), 354-369, pl. 16, figs. 1-3, text figs.
Bovallius, 1889: 353 (key), 370-371, pl. 16, figs. 8-18, (*Phronima spinosa*)
Bovallius, 1889: 353 (key), 385, (*Phronima tenella*).
Chun, 1889a: 527-531, pl. 3, fig. 7.
Chun, 1889c: passim.
Norman, 1900: 133.
Vosseler, 1900: 397-399 & passim, figs. 1, 2.
Vosseler, 1901: 14-20, pl.1, figs. 1-11.
Vosseler, 1901: 20-21, pl. 1, figs 12-16, (*Phronima affinis*).
Lo Bianco, 1902: 415, 420, 423, 425, 426, 447.
Lo Bianco, 1903: 126, 129, 130, 133, 140, 144, 145, 198, table facing p.278.
Walker, 1903b: 230 (includes part mis-identification of *Phronima atlantica*).
Lo Bianco, 1904: 43, pl. 22, fig. 68.
Stebbing, 1904: 32.
Lo Bianco, 1909: 596.
Minkiewicz, 1909a: passim.
Minkiewicz, 1909b: passim.
Walker, 1909: 50 (list), 51.
Stebbing, 1910: 654.
Steuer, 1911: 673.
Pearse, 1912: 378.
Stewart, 1913: 254.
Chilton, 1921: 233.
Spandl, 1924b: 264-265.
Stephensen, 1924: 113 (key), 114-121.
Chevreux & Fage, 1925: 392 (key), 393-395, fig. 396.

Bigelow, 1926: 166 (table).
Chevreux, 1927: 139-140.
Mogk, 1927: 126 (table), 127-130, fig. 1 (distribution).
Schellenberg, 1927: 639-641, fig. 44.
Hale, 1929: 229-230, fig. 226.
Pirlot, 1929: 110-112.
Pirlot, 1929: 112, (*Phronima affinis*).
K.H. Barnard, 1930: 422.
Boone, 1930: 209-211, pl. 79.
Pirlot, 1930: 12-14.
K.H. Barnard, 1932: 283-284.
Chevreux, 1935: 185-186.
Haffner, 1935: passim.
K.H. Barnard, 1937: 185.
K.H. Barnard, 1940: 541 (key).
Thorsteinson, 1941: 92.
Shoemaker, 1945b: 236.
Stephensen, 1949: 57, 60 (table).
Guiler, 1952: 31 (list).
Hurley, 1955: 122 (list), 166-170, figs. 188-218.
Hurley, 1956: 16.
Vinogradov, 1956: 210.
Bary, 1959: passim.
Irie, 1959: passim.
Hurley, 1960a: 113.
Hurley, 1960b: 280.
Evans, 1961: 202.
Kane, 1962: 305-307, fig. 4 (distribution).
Vinogradov, 1962: 20.
Shih & Dunbar, 1963: passim, (includes *Phronima affinis*).
Siegfried, 1963: 6 (list), 9.
Pillai, 1966: 212-213, fig. 6.
Brusca, 1967a: 389-390.
Brusca, 1967b: 454.
Hurley, 1969: 33, pl. 19 (map 7).
Shih 1969: passim.
Dick, 1970: 38 (key), 61, fig. 8 (part).
Repelin, 1970: 71-72 (key), 72-78.
Shih, 1971a: 27 (table), 33, 34 (chart), fig. 1o, 1p.
Shih, 1971b: passim.
Yoo, 1971b: 42 (list), 53, fig. 10 (distribution).
Repelin, 1972a: passim.
Repelin, 1972b: 194-195.
Yoo, 1972b: 167 (list), 169, 177 (list).
Sanger, 1973: passim.
Sanger, 1974: 3 (table), 5 (table), 7.
Laval, 1975: passim.
Laval & Lecher, 1975: passim.
Lorz & Pearcy, 1975: 1444 (table).
Mauchline & Ballantyne, 1975: 346, 354, figs. 1p, 4.
Théodoridès & Desportes, 1975: 206, 211, 217 (list), (parasites).
Thurston, 1976: 387 (table), 421-422.
Ball, 1977: passim.
Fukuchi, 1977: 441 (list), appendix 2.
Harbison *et al*., 1977: 469, 483 (table).
Madin & Harbison, 1977: 458.
Shulenberger, 1977a: passim.
Tranter, 1977: passim.
Laval, 1978: passim.
Richter, 1978: passim.
Diebel, 1980: 119.
Laval, 1980: passim.
Brusca, 1981a: 11 (list), 25 (key), 27-28, 42, fig. 13d-l.
Land, 1981: passim.
Vinogradov *et al*., 1982: 337 (key), 337-339, fig. 178.
Ramiraz & Vinas, 1985: 28 (list), 30 (key), 34, fig. 9.
Lowry, 1986: 335 (table), 345.
Young & Anderson, 1987: 712, 716 (table), 718 (table), 723.
Barkhatov & Vinogradov, 1988: passim.
Diebel, 1988: passim.
Young, 1989: passim.
Vinogradov, 1990a: 65-66.
Shih, 1991a: 334 (key).
Shih, 1991b: 212.
Vinogradov, 1991: passim.
Zeidler, 1991: 127 (list), 130, 132.
Diebel, 1992: passim.
Land, 1992: passim.
Zeidler, 1992: 106.
De Broyer & Jazdzewski, 1993: 116 (table).
Vinogradov, 1993b: 44 (table).
Davenport, 1994: passim.
Lin & Chen, 1994: 114, 118 (table).
Montu, 1994: 132 (list).
Land *et al*., 1995: passim.
Lin *et al*., 1995: 120, 122 (table).
Shih & Chen, 1995: 110 (key), 111-113, fig. 67.
Vincencio-Aguiler & Fernández-Alamo, 1995: 4, 5, 22 (list), 30 (list), (*Phronima sedentarius*).
Lin *et al*., 1996: 230 (table).
Zelickman & Por, 1996: passim.
Zeidler, 1997a: 131.
Zeidler, 1998: 66.
Barkhatov *et al*., 1999: passim.
Lavaniegos & Ohman, 1999: passim.
Vinogradov, 1999: 1147 (table), 1189 (key), 1191, fig. 4.123.
Lowry, 2000: 329 (list).
Gasca & Shih, 2001: 496 (table).
Lima & Valentin, 2001: 473 (list), 476 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: passim.
Gasca, 2003b: passim.
Gates *et al*., 2003: 342-343.
Vinogradov *et al*., 2004: 13 (list), 24 (table).
Zeidler, 2004b: 11-12.
Nishikawa *et al*., 2005: passim.
Zelickman, 2005: xvi (list), 114-129 (figs. 20a-h).
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 119 (table).
Gasca, 2008: 87 (table), 92.

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932). Near the Falkland Islands, *Discovery* stn. 62 (49°22'S 54°48'W), 45-0 m; *William Scoresby* stn. 95 (48°58'S 64°45'W), 30-0 m & stn. 30 (48°50'S 64°24'W), 101 m; and the south-west Atlantic, *Discovery* stn. 239 (46°56'S 46°03'W), 1050-1350 m; (K.H. Barnard 1932).
Indian Sector: South of Australia, *Challenger* stn. 158a (50°01'S 123°04'E), 1800 fathoms & stn. 158b (48°18'S 130°04'E), surface; (Stebbing 1888); also *Ob* stn. 97 (45°26'S 125°52'E), 0-800 m; (Vinogradov 1962). North-east of Heard Island, *BANZARE* stn. 67 (45°53'S 84°33'E), 2000 & 3000 mw and stn. 68 (45°10'S 87°13'E), 750-500 m & 250-100 m; (Hurley 1960a).
Pacific Sector: South of New Zealand, near Campbell Island, *Terra Nova* stn. 235 (52°41'S 168°15'E), 10 m & stn. 238 (52°11'S 167°25'E), 30 m; (K.H. Barnard 1930); also *Ob* stn. 73 (51°26'S 164°48'E), 0-220 m; stn. 75 (50°22'S 167°01'E), 0-150 m; stn. 76 (48°59'S 167°45'E), 0-220 m; stn. 352 (46°10'S 162°51'E), 0-1000 m & stn. 394 (47°21'S 160°05'E), 0-2000 m; (Vinogradov 1962); and stn. A313 (46°46'S 164°35'E), 500-0 m & stn. B119 (54°31'S 170°15'E), 500-0 m; (Kane 1962). Near Macquarie Island, *Southern Surveyor* stns. (54°43.5'S 158°43.5'E); (54°45'S 157°59'E), 670 m; (54°46'S 158°42'E), 960 m and (54°49.4'S 158°39.8'E), 865 m; (specimens in SAMA). South of Tasmania, *BANZARE* stn. 78 (48°23.5'S 146°29.5'E), 250-100 m; (Hurley 1960a). Central South Pacific, to Antarctic Convergence (55°18'-60°21'S); (Barkhatov & Vinogradov 1988); *Eltanin* stn. 140 (60°16'-60°21'S 137°32'-137°39'W), 2300-1500 m; (Shih 1971a).
***Worldwide distribution*:**
Common and widely distributed in the tropical and temperate regions of the world's oceans, including the Mediterranean Sea. In the Atlantic it ranges from 45°N to 50°S in the eastern part and from 60°N to 40°S in the western part. In the Indian Ocean it is recorded from the Arabian and Red Seas to about 50°S. In the Pacific it is known from the Bering Sea and the Gulf of Alaska in the north to the Antarctic Convergence in the south, as above. It is very common in the Mediterranean Sea. Most records are from surface waters (0-100 m), but it is also common in deeper waters (300-600 m) and occurs in depths exceeding 1500 m or more.
***Type locality*:** Mediterranean Sea.
***Type material location*:** The holotype female is in the ZMUC, Copenhagen.

Phronima solitaria Guérin-Méneville, 1844

Guérin-Méneville, 1844: 21, 47 (list).
Bate, 1862: 318, pl. 51, fig. 2, (*Phronima custos*).
Stebbing, 1888: 1353-1354, pl. 162A, (*Phronima megalodous*).
Stebbing, 1888: 1348-1350, pl. 159, (*Phronima pacifica*, mis-identification).
Bovallius, 1889: 353 (key), 372-373, pl. 16, figs. 4-7.
Vosseler, 1901: 23-27, pl. 2, figs. 3,5-10, (*Phronima atlantica* var. *solitaria*).
Walker, 1909: 50 (list), 51, (part mis-identification of *Phronima sedentaria*).
Stephensen, 1924: 113 (key), 125-126, (*Phronima atlantica* var. *solitaria*).
Mogk, 1927: 126 (table), 133, fig. 3 (distribution), (*Phronima atlantica* var. *solitaria*).
Pirlot, 1929: 112, (*Phronima atlantica* var. *solitaria*).
K.H. Barnard, 1930: 423, (*Phronima atlantica* var. *solitaria*).
K.H. Barnard, 1932: 283, (*Phronima sedentaria* - part).
K.H. Barnard, 1932: 284, (*Phronima atlantica* - part).
K.H. Barnard, 1937: 187, (*Phronima atlantica* var. *solitaria*).
Shoemaker, 1945b: 236.
Reid, 1955: 21.
Shih & Dunbar, 1963: passim, (*Phronima atlantica* var. *solitaria*).
Siegfried, 1963: 6 (list), 9, 12 (table), (*Phronima atlantica* var. *solitaria*).
Shih, 1969: passim.
Dick, 1970: 38 (key), 61, fig. 8 (part).
Repelin, 1970: 72 (key), 83-86.
Shih, 1971a: 27 (table), 36, 37 (chart), fig. 1a-n.
Repelin, 1972b: 196.
Thurston, 1976: 387 (table), 422.
Harbison *et al*., 1977: 469.
Shulenberger, 1977a: passim.
Tranter, 1977: passim.
Stuck *et al*., 1980: 364.
Vinogradov *et al*., 1982: 337 (key), 340-341, fig. 180.
Young & Anderson, 1987: 716 (table).
Barkhatov & Vinogradov, 1988: passim.
Young, 1989: passim.
Vinogradov, 1990a: 67.
Shih, 1991a: 334 (key).
Vinogradov, 1991: passim.
Spamer & Bogan, 1992: 142.
Zeidler, 1992: 106-107.
Vinogradov, 1993b: 44 (table).
De Broyer & Jazdzewski, 1993: 116 (list).
Lin & Chen, 1994: 118 (table).
Spamer & Bogan, 1994: 42.
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 110 (key), 115-116, fig. 70.
Lin *et al*., 1996: 230 (table).
Zelickman & Por, 1996: passim.
Zeidler, 1997a: 132-133, figs. 10, 11.
Zeidler, 1998: 66-67.
Barkhatov *et al*., 1999: passim.
Vinogradov, 1999: 1147 (table), 1189 (key), 1191, fig. 4.124.
Lowry, 2000: 329 (list).
Lima & Valentin, 2001: 473 (list), 476 (table).
Escobar-Briones *et al*., 2002: 368 (list).

Gates *et al*., 2003: 343.
Zeidler, 2004b: 12-13.
Zelickman, 2005: xvi (list), 136-145 (figs. 22a-e).
Gasca, 2008: 87 (table), 92.

***Southern Ocean distribution*:**
Indian Sector: South of South-Western Australia, (52°15'S 115°39'W); (Shih 1971a).
Pacific Sector: South of New Zealand, (45°51'S 176°18'E); (Shih 1971a). Central South Pacific, up to Antarctic Convergence (55°18'-60°21'S); (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
Relatively uncommon, known from widely separated records from the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea (rare). Usually found within the 40° - latitude range in all oceans, occasionally reaching the limit of the Subtropical Convergence. Most records are from surface waters (0-250 m).
***Type locality*:** Atlantic Ocean, near estuary of River Plata, South America (Guérin-Méneville 1844).
***Type material location*:** The holotype female is in the ANSP, Philadelphia (CA2693; Guérin-Méneville Coll. No. 446); once alcohol preserved, now dry.

Phronima stebbingi Vosseler, 1900

Bovallius, 1889: 382-385, pl. 16, figs. 48-50, (*Phronima pacifica* – female only).
Vosseler, 1900: 402, (*Phronima Stebbingii*)
Vosseler, 1901: 36-39, pl. 4, figs. 4-10, (*Phronima Stebbingii*).
Chevreux, 1913: 5-6, (*Phronima Stebbingi*).
Stewart, 1913: 254-255.
Stephensen, 1924: 113 (key), (*Phronima Stebbingi*).
Chevreux & Fage, 1925: 393 (key), 397-398, fig. 399, (*Phronima Stebbingi*).
Mogk, 1927: 126 (table), 133-137, fig. 4 (distribution), (*Phronima Stebbingii*).
Pirlot, 1929: 115-116, (*Phronima Stebbingi*).
Chevreux, 1935: 186-187, (*Phronima Stebbingi*).
Shoemaker, 1945b: 236.
Reid, 1955: 20-21.
Hurley, 1956: 17.
Irie, 1958: 142, 143 (list).
Irie, 1959: passim.
Hurley, 1960b: 280.
Evans, 1961: 202.
Grice & Hart, 1962: 301.
Vinogradov, 1962: 20.
Shih & Dunbar, 1963: passim.
Siegfried, 1963: 6 (list), 12 (table).
Hurley, 1969: 33, pl. 19 (map 7).
Shih, 1969: passim.
Repelin, 1970: 71-72 (key), 92-95.
Shih, 1971a: 27 (table), 40, 42 (chart), fig. 2b, 2c.
Yoo, 1971b: 42 (list), 54.
Repelin, 1972b: 196.
Sanderson, 1973: 54 (list).
Thurston, 1976: 387 (table), 422-423.
Shulenberger, 1977a: passim.
Zeidler, 1978: 15-16, fig. 13.
Laval, 1980: 19 (table).
Stuck *et al*., 1980: 364.
Vinogradov *et al*., 1982: 337 (key), 342, fig. 181.
Vinogradov, 1990a: 67-68.
Shih, 1991a: 334 (key).
Shih, 1991b: 212.
Vinogradov, 1991: passim.
De Broyer & Jazdzewski, 1993: 116 (list).
Vinogradov, 1993: 44 (table), 46, 47 (table).
Montu, 1994: 132 (list).
Lin *et al*., 1995: 122 (table).
Lin *et al*., 1996: 230 (table).
Zelickman & Por, 1996: passim.
Barkhatov *et al*., 1999: passim.
Lavaniegos & Ohman, 1999: 495 (table).
Vinogradov, 1999: 1147 (table), 1189 (key), 1191, fig. 4.125.
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: passim.
Gasca, 2003b: passim.
Gates *et al*., 2003: 343.
Vinogradov, 2004: 13 (list), 25 (table).
Zeidler, 2004b: 15.
Zelickman, 2005: xvi (list), 146-153 (figs. 23a-d).
Gasca, 2008: 87 (table).
non Vosseler, 1900: 402, eastern Pacific form (= *Phronima dunbari* Shih, 1991a).
non Shih, 1969: 29, figs. 7a, 7b, eastern Pacific form (= *Phronima dunbari* Shih, 1991a).
non Brusca, 1981a: 11 (list), 25 (key), 42, fig. 14a, 14c, 14e,14h, (= *Phronima dunbari* Shih, 1991a).

***Southern Ocean distribution*:**
Indian Sector: Just south of 45°S about 83°E (Hurley 1969).
***Worldwide distribution*:**
Widely distributed in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. It is most common in the Atlantic and in the eastern equatorial Pacific, but seems to be rare in the Indian Ocean. It is usually found within the 40° – latitude range in all oceans. Most records are from surface waters (0-100 m).
***Type locality*:** Holotype not designated. Syntypes (138) were collected from the North Atlantic (from about 40°N to 0°S). A female from the Sargasso Sea (stn. 49) and a male from the North Equatorial Current (stn. 194) were illustrated by Vosseler (1901).
***Type material location*:** Several syntypes are in the ZMB, Berlin (17294).

Phronimella elongata (Claus, 1862)

Claus, 1862: 193-195, pl. 19, figs. 2, 3, 7, (*Phronima elongata*).
Claus, 1871: 149.
Claus, 1872a: 336-337.
Claus, 1872b: 468.
Streets, 1877: 131-132, (*Anchylonyx hamatus*).
Claus, 1878: 269-270.
Claus, 1879a: 4-5, passim.
Claus, 1880: 587.
Carus, 1885: 423 (list).
Bovallius, 1887a: 26.
Bovallius, 1887a: 26, (*Phronimella filiformis*).
Chun, 1887: 29.
Giles, 1887: 217, pl. 3, fig. 3, (*Phronimella hippocephala*).
Stebbing, 1888: 1362-1372, pl. 163.
Bovallius, 1889: 389-395, pl. 16, figs. 51-67.
Chun, 1889a: 530-531.
Chevreux, 1900: 138.
Vosseler, 1901: 40-43, fig. 1.
Lo Bianco, 1903: 120, 122, 130, 146, 198, table facing p.278.
Lo Bianco, 1909: 596.
Walker, 1909: 50 (list), 51.
Steuer, 1911: 673-674.
Pesta, 1920: 30, fig. 4.
Spandl, 1924b: 265.
Stephensen, 1924: 130-134.
Chevreux & Fage, 1925: 398-399, fig. 400.
Bigelow, 1926: 166 (table).
Mogk, 1927: 126 (table), 141-144, fig. 9 (distribution).
Pirlot, 1929: 116-117.
K.H. Barnard, 1930: 423-424.
Pirlot, 1930: 15-16.
K.H. Barnard, 1932: 286.
Chevreux, 1935: 187.
K.H. Barnard, 1937: 186-187.
Pirlot, 1939a: 41.
Pirlot, 1939b: 70.
K.H. Barnard, 1940: 484-485.
Dakin & Colefax, 1940: 122, fig. 209.
Shoemaker, 1945b: 236-238.
Hurley, 1955: 122 (list), 170.
Reid, 1955: 21-22.
Irie, 1959: table 4.
Hurley, 1960b: 280.
Evans, 1961: 192 (table), 202.
Grice & Hart, 1962: appendix table 3.
Shih & Dunbar, 1963: passim.
Siegfried, 1963: 6 (list), 9.
Sheard, 1965: 244 (list).
Pillai, 1966: 215-216, fig. 8.
Hurley, 1969: 33, pl. 19 (map 7).
Shih, 1969: passim.
Dick, 1970: 36 (key), 61-62, fig. 8 (part).
Repelin, 1970: 97-99.
Shih, 1971a: 27 (table), 40, 43 (chart), 44.
Yoo, 1971b: 42 (list), 54, fig. 11 (distribution).
Repelin, 1972b: 196-197.
Yoo, 1972b: 167 (list), 169, 177 (list).
Sanderson, 1973: 54 (list).
Théodoridès & Desportes, 1975: 211, 217 (list), (parasites).
Thurston, 1976: 387 (table), 423.
Harbison *et al*., 1977: 469.
Shulenberger, 1977a: passim.
Zeidler, 1978: 16-17, figs. 14-16.
Laval, 1980: 19 (table), 22, 23 (table).
Stuck *et al*., 1980: 363.
Brusca, 1981a: 10 (list), 24 (key), 42-43, fig. 13a-c.
Vinogradov *et al*., 1982: 347-348, fig. 186.
Zeidler, 1984: 291, 298, 301.
Young & Anderson, 1987: 716 (table).
Barkhatov & Vinogradov, 1988: passim.
Lin & Chen, 1988: 325.
Young, 1989: passim.
Vinogradov, 1990a: 69.
Vinogradov, 1991: passim.
De Broyer & Jazdzewski, 1993: 117 (list).
Vinogradov, 1993b: 42, 44 (table), 47 (table).
Lin & Chen, 1994: 115, 118 (table).
Montu, 1994: 132 (list).
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 126-128, figs. 79, 80.
Vincencio & Alamo, 1995: 23 (list).
Lin *et al*., 1996: 230 (table).
Zelickman & Por, 1996: passim.
Zeidler, 1998: 67.
Barkhatov *et al*., 1999: passim.
Vinogradov, 1999: 1147 (table), 1191, fig. 4.126.
Lowry, 2000: 329 (list).
Gasca & Shih, 2001: 496 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gates *et al*., 2003: 344.
Gasca, 2003b: passim.
Gasca & Shih, 2003: 96 (table).
Gasca, 2004: passim.
Vinogradov *et al*., 2004: 13 (list), 24 (table).
Zeidler, 2004b: 16-17.
Zelickman, 2005: xvi (list), 170-175 (figs. 27a-c).
Browne *et al*., 2007: 819 & 820 (table), 827, fig. 4 (phylogenetic tree).
Gasca, 2007: 119 (table).
Gasca, 2008: 87 (table), 92.

***Southern Ocean distribution*:**
Indian Sector: Near Prydz Bay, *Gauss* (63°42'S 82°E), 400-0 m; (Mogk 1927).
***Worldwide distribution*:**
Relatively common in the tropical regions of all the world's oceans, including the Mediterranean Sea. It is less common in temperate regions and, apart from the above record, is not known from colder waters south of the Antarctic Polar Front. Often found near the surface down to about 100 m, but can

occur at greater depths down to 1000 m.
***Type locality*:** The Mediterranean Sea and the Atlantic Ocean.
***Type material location*:** Not found in any major European museum; considered lost.

Family PHROSINIDAE Dana, 1852

Anchylomera blossevillei Milne Edwards, 1830

Milne Edwards, 1830: 394 (*Anchylomera Blossevillei*).
Milne Edwards, 1830: 394 (*Anchylomera Hunterii*).
Guérin-Méneville, 1836c: 5-6, pl. 17, fig. 2, (*Hieraconyx abbreviatus*).
Milne Edwards, 1838: 306, (*Hieraconyx abbreviatus*).
Milne Edwards, 1838: 307, (*Anchylomera Blossevillii*).
Milne Edwards, 1838: 307, (*Anchylomera Hunteri*).
Lucas, 1840: 237-238, pl. 18, fig. 4, (*Hieraconyx abbreviatus*).
Lucas, 1840: 238, (*Anchylomera Blossevillii*).
Milne Edwards, 1840: 87-88, (*Anchylomera Blossevilleii*).
Milne Edwards, 1840: 88, pl. 30, fig. 4, (*Anchylomera Hunterii*).
Natale, 1850: 8, pl. 1 (fig. 2)(*Cheiropristis messanensis*).
Dana, 1853: 1001-1004, pl. 68, fig. 9a-n, (*Anchylomera purpurea*).
Dana, 1853: 1004-1005, pl.68, fig. 10, (*Anchylomera thyropoda*).
Bate, 1862: 322-323, pl. 51, figs. 9 &10, (*Anchylomera antipodes*).
Claus, 1872b: 467, (*Anchylomera thyropoda*).
Claus, 1872b: 467, (*Anchylomera purpurea*).
Streets, 1877: 132-133, (*Anchylomera thyropoda*).
Claus, 1880: 587, (*Anchylomera thyropoda*).
Claus, 1880: 587, (*Anchylomera purpurea*).
Bovallius, 1887a: 27, (*Anchylomera Blossevillei*).
Bovallius, 1887a: 27, (*Anchylomera Hunteri*).
Bovallius, 1887a: 27, (*Anchylomera purpurea*).
Bovallius, 1887a: 27, (*Anchylomera thyropoda*).
Bovallius, 1887a: 27, (*Anchylomera abbreviata*).
Bovallius, 1887a: 27, (*Anchylomera antipodes*).
Bovallius, 1887b: 547 (list), 550 (list).
Bovallius, 1887b: 547 (list), 550 (list), 571, (*Anchylomera abbreviata*).
Bovallius, 1887b: 547 (list), 550 (list), 572, (*Anchylomera antipodes*).
Stebbing, 1888: 1433-1440, pl. 177.
Bovallius, 1889: 411 (key), 412-419, pl. 17, figs. 1-22.
Bovallius, 1889: 411 (key), 420-421, text fig., (*Anchylomera hunteri*).
Vosseler, 1901: 88-89, fig. 4.
Lo Bianco, 1903: 127, table facing p.278.
Walker, 1909: 50 (list), 52.
Stebbing, 1910: 655.
Stewart, 1913: 258.
Spandl, 1924a: 26, fig. 2.
Spandl, 1924b: 266.
Stephensen, 1924: 134-138.
Chevreux & Fage, 1925: 414-415, fig. 410.
Shoemaker, 1925: 21 (list), 42.
Spandl, 1927: 149 (list), 167-168, fig. 7.
Pirlot, 1929: 131-132.
K.H. Barnard, 1930: 425.
Pirlot, 1930: 21.
K.H. Barnard, 1932: 288.
Chevreux, 1935: 180-181.
K.H. Barnard, 1937: 188.
Pirlot, 1939a: 40.
Pirlot, 1939b: 69.
Dakin & Colefax, 1940: 123, fig. 211.
Shoemaker, 1945b: 234.
Hurley, 1955: 122 (list), 174.
Reid, 1955: 22.
Hurley, 1956: 18.
Irie, 1959: passim.
Hurley, 1960b: 281.
Evans, 1961: 192 (table), 200.
Grice & Hart, 1962: 300.
Kane, 1962: 309.
Vinogradov, 1962: 19.
Siegfried, 1963: 6, 9.
Sheard, 1965: 244 (list).
Pillai, 1966: 218-219, fig. 10.
Hurley, 1969: 33, pl. 19 (map. 7).
Lewis & Fish, 1969: 9.
Dick, 1970: 38 (key), 62, fig. 9 (part).
Yoo, 1971b: 43 (list), 59, fig. 19 (distribution).
Repelin, 1972a: passim.
Sanderson, 1973: 52 (list).
Sanger, 1973: passim.
Thurston, 1976: 387 (table), 423-424.
Harbison *et al*., 1977: 470, 483 (table).
Shulenberger, 1977a: passim.
Shulenberger, 1977b: passim.
Tranter, 1977: passim.
Zeidler, 1978: 19-20, 48, fig. 20.
Shulenberger, 1979: passim.
Laval, 1980: passim.
Stuck *et al*., 1980: 364.
Brusca, 1981a: 11 (list), 29 (key), 43, fig. 15f-h.
Vinogradov *et al*., 1982: 351-352, fig. 188.
Watson & Chaloupka, 1982: 28 (list), fig. 6-11.
Lobel & Randall, 1986: passim.
Lowry, 1986: 335 (table), 345.
Young & Anderson, 1987: 716 (table), 718.
Barkhatov & Vinogrtadov, 1988: passim.
Young, 1989: passim.
Vinogradov, 1990a: 70.
Vinogradov, 1991: passim.
Spamer & Bogan, 1992: 133 (list), (*Hieraconyx abbreviatus*).
Spamer & Bogan, 1992: 133 (list), (*Hieraconyx antennatus*).

Zeidler, 1992: 107.
De Broyer & Jazdzewski, 1993: 117 (list).
Vinogradov, 1993b: 44 (table), 47 (table).
Lin & Chen, 1994: 118 (table).
Montu, 1994: 132 (list).
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 132-133, fig. 83.
Vincencio & Alamo, 1995: 23 (list).
Lin *et al*., 1996: 230 (table).
Zeidler, 1997a: 135 (types of *Hieraconyx abbreviatus* & *H. antennatus*).
Zeidler, 1998: 67-68.
Barkhatov *et al*., 1999: passim.
Vinogradov, 1999: 1145 (table), 1192, fig. 4.127.
Lowry, 2000: 329 (list).
Gasca & Shih, 2001: 496 (table).
Lima & Valentin, 2001: 473 (list), 476 (table).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003a: passim.
Gasca, 2003b: passim.
Gates *et al*., 2003: 346-347.
Gasca & Shih, 2003: 94, 95 (table).
Gasca, 2004: passim.
Gasca & Suárez-Morales, 2004: 26 (table), 28.
Vinogradov *et al*., 2004: 13 (list), 25 (table).
Zeidler, 2004b: 19-20.
Zelickman, 2005: xvi (list), 184-191 (figs. 29a-d).
Gasca, 2007: 116-117, 118 (table).
Gasca, 2008: 87 (table), 91-92.

***Southern Ocean distribution*:**
Pacific Sector: Central part to 57°S (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
A very common cosmopolitan species favouring the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. Often found in large numbers near the surface.
***Type locality*:** "mer des Indes" (Milne Edwards 1830).
***Type material location*:** Not found in any major European or North American museum; considered lost.

Phrosina semilunata Risso, 1822

Risso, 1822: 245, pl. 10-12, fig. 3, (*Phrosina semi-lunata*).
Guérin-Méneville, 1825: 771-772.
Milne Edwards, 1830: 393-394, (*Dactylocera Niceensis*).
Milne Edwards, 1838: 306, (*Dactylocera Niceensis*).
Lucas, 1840: 238, (*Dactylocera Nicoeencis*).
Milne Edwards, 1840: 91, pl. 30, fig. 21, (*Phrosina Nicetensis*).
Costa in Hope, 1851: 21 (list), (*Phrosine semilunata*).
Bate, 1862: 319-320, pl. 51, fig. 5.
Bate, 1862: 320-321, pl. 51, fig. 6, (*Phrosina Nicetensis*).
Bate, 1862: 320-321, pl. 51, fig. 7, (*Phrosina longispina*).
Bovallius, 1887a: 27.
Bovallius, 1887a: 28, (*Phrosina Nicetensis*).
Bovallius, 1887a: 28, (*Phrosina longispina*).
Stebbing, 1888: 1425-1430, pl. 176.
Stebbing, 1888: 1430, (*Phrosina pacifica*).
Stebbing, 1888: 1431, (*Phrosina australis*).
Bovallius, 1889: 426-430, pl. 18, figs. 3-30.
Bovallius, 1889: 430, (*Phrosina pacifica*).
Vosseler, 1901: 89-90, pl. 8, figs. 18-20.
Lo Bianco, 1902: 420, 422, 423, 425, 426, 447, (*Phrosine semilunata* – in text).
Lo Bianco, 1903: 119, 124, 125, 130, 132, 133, 137, 139, 140, 144, 146, 148, 150, 156, 198, table facing p.278.
Lo Bianco, 1904: 44, pl. 23, fig. 71.
Tattersall, 1906: 4 (list), 24.
Walker, 1909: 50 (list), 52.
Steuer, 1911: 682.
Pearse, 1912: 378.
Stewart, 1913: 257-258.
K.H. Barnard, 1916: 292-293.
Pesta, 1920: 29.
Spandl, 1924a: 26-27.
Spandl, 1924b: 266.
Stephensen, 1924: 138-143.
Chevreux & Fage, 1925: 413-414, fig. 409.
Bigelow, 1926: 166 (table).
Schellenberg, 1927: 644-646, fig. 47.
Spandl, 1927: 149 (list), 167.
Pirlot, 1929: 132-134.
K.H. Barnard, 1930: 424.
Pirlot, 1930: 23.
K.H. Barnard, 1932: 287.
Chevreux, 1935: 182-183.
K.H. Barnard, 1937: 187.
Pirlot, 1939a: 41.
Shoemaker, 1945b: 236.
Guiler, 1952: 31 (list).
Hurley, 1955: 122 (list), 174.
Reid, 1955: 22.
Irie, 1959: passim.
Hurley, 1960b: 281.
Evans, 1961: 202.
Grice & Hart, 1962: 300-301.
Kane, 1962: 309.
Vinogradov, 1962: 19.
Siegfried, 1963: 6 (list), 9.
Sheard, 1965: 244 (list).
Pillai, 1966: 219-220, fig. 11.
Hurley, 1969: 33, pl. 19 (map 7).
Lewis & Fish, 1969: 9.
Dick, 1970: 38 (key), 62-63, fig. 9 (part).
Yoo, 1971b: 42 (list), 58, fig. 17 (distribution).
Repelin, 1972a: passim.
Yoo, 1972b: 167 (list), 174, 177 (list).
Sanderson, 1973: 52 (list).
Théodoridès & Desportes, 1975: 207, 217 (list), (parasites).
Thurston, 1976: 387 (table), 424-426, fig. 14 (depth distribution).

Shulenberger, 1977a: passim.
Shulenberger, 1977b: passim.
Tranter, 1977: passim.
Zeidler, 1978: 18, 48, figs. 17-18.
Shulenberger, 1979: passim.
Stuck *et al*., 1980: 364.
Brusca, 1981a: 11 (list), 29 (key), 43, fig. 15e.
Vinogradov *et al*., 1982: 349-350, fig. 187.
Young & Anderson, 1987: 713, 716 (table), 718 (table), 723.
Zeidler, 1987: 18, figs. 17, 18.
Barkhatov & Vinogradov, 1988: passim.
Lin & Chen, 1988: 325.
Young, 1989: passim.
Vinogradov, 1990a: 69-70.
Vinogradov, 1991: passim.
Zeidler, 1991: 127 (list), 132.
Land, 1992: passim.
Zeidler, 1992: 107.
De Broyer & Jazdzewski, 1993: 117 (list).
Vinogradov, 1993b: 44 (table), 47 (table).
Lin & Chen, 1994: 114, 118 (table).
Land *et al*., 1995: passim.
Lin *et al*., 1995: 120, 122 (table).
Shih & Chen, 1995: 128-131, figs. 81, 82.
Vincencio & Alamo, 1995: 23 (list).
Lin *et al*., 1996: 230 (table).
Zeidler, 1997a: 135 (type of *Dactylocera nicaeensis*).
Zeidler, 1998: 68-69.
Barkhatov *et al*., 1999: passim.
Lavaniegos & Ohman, 1999: 496 (table).
Vinogradov, 1999: 1147 (table), 1192, fig. 4.128.
Lowry, 2000: 329 (list).
Huys, 2001: 149-153, figs. 19, 20, (*Megallecto thirioti* Gotto, 1986, a junior subjective synonym).
Lima & Valentin, 2001: 473 (list).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003a: passim.
Gasca, 2003b: passim.
Gates *et al*., 2003: 345 (text fig.), 347-348.
Gasca, 2004: passim.
Gasca & Suárez-Morales, 2004: 26 (table).
Vinogradov *et al*., 2004: 13 (list), 24 (table).
Zeidler, 2004b: 18-19.
Zelickman, 2005: xvi (list), 176-183 (figs. 28a-d).
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree), 827.
Gasca, 2007: 119 (table).
Gasca, 2008: 87 (table), 92.

***Southern Ocean distribution*:**
Indian Sector: Near Prydz Bay (64°-65°S 80°-85°E); (K.H. Barnard 1932).
Pacific Sector: Central part to 65°16'S (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
A very common species favouring the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. Often found in large numbers near the surface but can occur down to 1000 m, rarely deeper.
***Type locality*:** Mediterranean Sea, near Nice, France.
***Type material location*:** Not found in any major European museum; considered lost.

Primno macropa Guérin-Méneville, 1836

(Fig. 16, Colour plate 4d)

Guérin-Méneville, 1836c: 4, pl. 17, figs. 1a-f, (*Primno Macropa*).
Milne Edwards, 1838: 307.
Lucas, 1840: 239, pl. 18, fig. 7.
Milne Edwards, 1840: 81.
Stebbing, 1888: 1447-1448, pl. 179B, (*Primno menevillei*).
Stebbing, 1888: 1448-1451, pl. 209B, (*Primno antarctica*).
Bovallius, 1887a: 28.
Bovallius, 1889: 400-407, pl. 17, figs. 23-40; pl. 18, figs. 1-2, (*Euprimno macropus*, part.).
Lo Bianco, 1902: 419, 422, 423, 425, 426, 447, (*Euprimno macropus*).
Lo Bianco, 1903: 121, 122, 127, 132, 133, 140, 142-145, 149, 151, 153, 156, table facing p.278, (*Euprimno macropus*).
Walker, 1907: 9, (*Euprimno macropa*).
Stewart, 1913: 258.
K.H. Barnard, 1925: 375.
Monod, 1926: 47 (table), 48, 50-51, fig. 49, (*Euprimno macropa* var. *Menevillei*).
Spandl, 1927: 168-169.
K.H. Barnard, 1930: 424-425 (part).
K.H. Barnard, 1932: 287-288 (part).
Mackintosh, 1934: passim, fig. 4e.
Hardy & Gunther, 1935: 197-198.
Stephensen, 1949: 57, 60 (table), (*Euprimno macropus*).
Hurley, 1955: 122 (list), 172-174, figs. 219-235.
Bary, 1959: passim.
Hurley, 1960a: 113.
Kane, 1962: 307-309, fig. 5 (distribution).
Vinogradov, 1962: 19.
Hurley, 1969: 33, pl. 19 (map 7).
Dick, 1970: 38 (key), 63, fig. 9, (part).
Yoo, 1971a: passim.
Yoo, 1972a: passim.
Dinofrio, 1977: 6 (list), 7 (key), 10, 12, 28 (table), map 1, pl. 1, fig. 8; pl. 2, figs. 2, 5.
Bowman, 1978: 3-8, (part; northern hemisphere records & figs. 1-3 refer to *Primno abyssalis*).
Zeidler, 1978: 18-19,48, fig. 19.
Vinogradov *et al*., 1982: 353 (key), 354-355, fig. 189.
Bowman, 1985: 123-124, fig. 1A-K (L-N in error).
Ramirez & Vinas, 1985: 28 (list), 30 (key), 34-36, fig. 10, fig. 11 (distribution).
Nagata, 1986: 274.
Barkhatov & Vinogradov, 1988: passim.
Jazdzewski & Presler, 1988: 62, 63 (table), 66, fig. 4 (map).

Andres, 1990: 142, fig. 284.
Spamer & Bogan, 1992: 138.
Spamer & Bogan, 1993: 95, pl. 6, fig. A.
De Broyer & Jazdzewski, 1993: 117 (list).
Spamer & Bogan, 1994: 41-42.
Vincencio-Aguilar & Fernández-Alamo, 1995: 5.
Dinofrio, 1997: 4,7.
Zeidler, 1997a: 135-136, fig. 13.
Barkhatov *et al*., 1999: passim.
Vinogradov, 1999: 1148 (table), 1192, fig. 4.131.
Escobar-Briones *et al*., 2002: 368 (list).
Zeidler, 2004b: 22.
Gasca, 2008: 87 (table).

***Southern Ocean distribution*:**
Atlantic Sector: Argentine Basin, *Discovery* stn. 71 (43°20'S 46°02'W), 2000-0 m; (K.H. Barnard 1932). South Atlantic, *Discovery* stn. 9 (46°11'S 22°27W), 0-1250 m; stn. 78 (35°18'S 19°01'W), 0-1000 m; stn. 120 (51°44'S 5°19'W), 575-675 m. South-east Atlantic, *Discovery* stn. 89 (34°05'S 16°00'E), 0-1000m; stn. 105 (44°32S 18°17'E), 117 m; stn. 257 (35°01'S 10°18'E), 0-250 m; stn. 266 (29°34'S 14°24'E), 0-200 m (K.H. Barnard 1932). South Georgia, Grytviken, *Marine Biological Station* stn. MS32, 0-5 m. Near South Georgia, *Discovery* stn. 33 (33 miles N 37°E of Jason Light), 0-50 m; stn. 25 (18 miles N 60 °E of Jason Light), 0-5 m; stn. 35 (53 miles N 40°E of Jason Light), 0-90 m; stn. 38 (18.5 miles N 33ºE of Jason Light), 0-90 m; stn. 127 (53°48'30"S 37°08'W), 82 m; stn. 128 (53°38'30"S 37°08'W), 100 m; stn. 131 (53°59'30"S 36°11'W), 128 m; stn. 134 (54°22'S 35°56'W), 61 m; stn. 137 (54°19'30"S 35°03'30"W), 0-132 m; stn. 138 (54°17'S 34°47'W), 77-155 m; stn. 151 (53°25'S 35°15'W), 1025-1275 m; *William Scoresby,* stn. WS19 (54°00'30"S 36°20'30"W), 164 m; stn. WS20 (53°52'30"S 36°00'W), 0-500 m; stn. WS21 (53°45'30"S 35°48'W), 50-100 m; stn. WS22 (53°38'S 35°35'W), 50-250 m; stn. WS26 (53°33'15"S 37°45'15"W), 0-750 m; stn. WS28 (53°48'15"S 38°13'W), 50-100 m; stn. WS29 (53°41'15"S 38°24'45"W), 100-500 m; stn. WS30 (53°41'15"S 38°24'45"W), 100-250 m; stn. WS36 (55°22'15"S 34°46'30"W), 250-750 m; stn. WS37 (54°45'S 35°11'W), 0-50 m; stn. WS38 (54°01'S 35°14'W), 750-1000 m; stn. WS39 (54°08'S 35°43'W), 50-100 m; stn. WS43 (54°54'S 36°50'W), 50-100 m; stn. WS44 (55°06'S 36°57'W), 0-1000 m; stn. WS54 (53°29'S 37°13'45"W), 100-500 m; stn. WS57 (53°37'S 36°51'W), 0-66 m; stn. WS58 (53°06'15"S 37°06'30"W), 0-112 m; stn. WS59 (52°57'S 37°06'30"W), 0-5 m; stn. WS60 (52°47'S 37°06'30"W), 75 m; stn. WS61 (52°37'30"S 37°06'30"W), 100-1000 m; stn. WS63 (54°36'S 39°14'W), 100-1000 m; stn. WS66 (53°31'15"S 42°03'30"W), 88 m; stn. WS67 (53°19'S 45°16'W), 750-1000 m; stn. WS68 (52°53'S 48°48'W), 50-750 m; stn. WS69 (52°19'S 52°11'W), 100-1000 m; stn. WS70 (51°58'S 55°42'W), 100-1000 m; stn. WS110 (53°46'S 35°47'W), 50-1000 m; stn. WS111 (53°39'S 35°34'W), 250-750 m; stn. WS112A (53°39'S 35°34'W to 53°54'30"S 36°06'W), 50-100 m; stn. WS112 (53°54'30"S 36°06'W), 0-5 m; stn. WS113 (54°07'S 36°24'W), 50-150 m; stn. WS114 (54°00'S 36°12'W), 58 m. South-west Atlantic *Discovery* stn. 239 (46°56'S 46°03'W). East mid-Atlantic *Discovery* stn. 297 (12°08'N 20°53'W), 0-200 m & 0-300 m. (K.H. Barnard 1932 and Hardy & Gunther 1935). Near the South Shetland Islands, South Orkney Islands and South Georgia (56°17'S 32°55'W) (Jazdzewski & Presler 1988). Weddell Sea *Irizar 1985* stn. 7 (74°01'00"S 34°02'00"W); stn. 8 (73°01'00"S 37°25'00"W); stn. 10 (71°50'03"S 39°28'06"W); stn. 11 (70°54'00"S 39°18'00"W); stn. 12 (69°59'00"S 39°36'00"W); stn. 13 (68°57'32"S 41°25'83"W); stn. 14 (68°01'25"S 43°06'39"W); stn. 16 (65°59'00"S 47°47'00"W) & stn. 17 (65°00'00"S 48°40'00"W) (Dinofrio, 1997).
Indian Sector: Near the Davis Sea, *Challenger* stn. (63°30'S 88°57'E), surface; (Stebbing 1888); *Ob* stn. 111 (64°25'S 92°52'E), 0-2700 m; (Vinogradov 1962). Near Prydz Bay, *BANZARE* st. 27 (64°32'S 75°55'E), 1000 m; (Hurley 1960a) and *Ob* stn. 116 (57°40'S 79°19'E), 230-550 m; stn. 124 (45°03'S 69°44'E), 241-600 m & stn. 455 (59°28'S 67°41'E), 0-1100 m; (Vinogradov 1962). Near Enderby Land, *BANZARE* stn. 45 (63°51'S 54°16'E), 2000 mw & stn. 46 (55°11'S 55°51'E), 100-50 m and north-east of Heard Island, stn. 67 (45°53'S 84°33'E), 3000 mw & stn. 68 (45°10'S 87°13'E), 750-500 m; (Hurley 1960a). South of Australia, *Challenger* stn. (48°18'S 130°04'E), surface; (Stebbing 1888). Off Wilkes Land *BANZARE* stn. 92 (64°19'S 116°42'E), 500-250 & 750-500 m; stn. 93 (64°21'S 116°02'E), 1500 mw & stn. 109 (51°26'S 101°34'E), 750-500 m; (Hurley 1960a); and *Ob* stn. 29 (65°06'S 111°24'E), 217-550 & 0-2000 m; stn. 33 (64°53'S 115°01'E), 210-540 m; stn. 34 (64°21'S 115°55'E), 220-550 m; stn. 36 (62°55'S 118°52'E), 0-3700 m; stn. 44 (66°08'S 128°25'E), 210-550 m; stn. 103 (53°26'S 112°11'E), 0-600 m; stn. 411 (61°42'S 109°15'E), 0-110 m; stn. 413 (58°58'S 109°21'E),

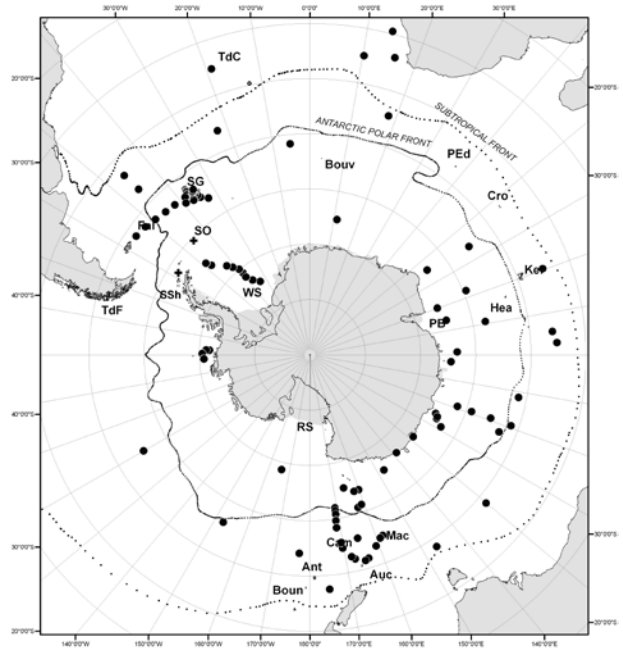

Figure 16. Distribution records of *Primno macropa.*

0-2180 m; stn. 415 (55°18'S 109°20'E), 0-1200 m; stn. 417 (51°22'S 109°26'E), 0-1200 m; stn. 423 (39°54'S 109°17'E), 0-2000 m; (Vinogradov 1962). Prydz Bay, *Aurora Australis* stns. (range 65°27'-67°30'S 70°-75°E; surface-459 m); (specimens in SAMA).

Pacific Sector: South of New Zealand and towards the Ross Sea region, *Terra Nova* stn. 230 (64°03'S 160°12'E), 80 m; stn. 235 (52°41'S 168°15'E), 10 m; stns. 237 & 238 (52°11'S 167°25'E), 10 & 30 m; stn. 250 (54°02'S 177°00'W), surface; stn. 269 (68°37'S 166°14'W), surface; stn. 306 (55°55'S 152°39'W), surface & stn. 307 (55°16'S 120°03'W), 6 m; (K.H. Barnard 1930); and *Ob* stn. 60 (61°22'S 160°57'E), 240-600 m; stn. 70 (53°23'S 160°50'E), 224-550 m & stn. 73 (51°26'S 164°48'E), 0-220 m; (Vinogradov 1962); also Kane (1962), stn. A310 (47°26'S 175°07'E), surface; stn. B98 (51°41.5'S 163°49'E), surface: stn. B106 (55°42.5'S 165°23'E), surface; stn. B110 (61°56.3'S 170°39'E), 500-0 m; stn. B111 (61°25.5'S 170°41'E), 500-0 m; stn. B112 (60°47'S 170°44'E), 500-0 m; stn. B114 (59°39'S 171°02'E), 125-0 m; stn. B116 (58°20'S 171°14'E), 125-0 m; stn. B118 (55°34.5'S 170°27'E), 150-0 m & stn. B119 (54°31'S 170°20'E), 500-0 m. Near Macquarie Island, *Southern Surveyor* stns. (54°30.3'S 158°58.7'E), surface & (54°45'S 157°59'E), 670 m; (specimens in SAMA). South of Tasmania, *BANZARE* stn. 78 (48°23.5'S 146°29.5'E), 500-250 m; (Hurley 1960a). Near the Balleny Islands, *Ob* stn. 57 (64°03'S 161°59'E); stn. 368 (65°09'S 165°49'E), 500-1000 m & stn. 384 (64°02'S 160°04'E), 0-110 m; (Vinogradov 1962) and *BANZARE* stn. 84 (61°02'S 162°29'E), 750-500 m; (Hurley 1960a). Off George V Coast, *BANZARE* stn. 87 (65°14'S 147°13'E), 750-500 m & stn. 90 (66°21'S 138°28'E), 2200 mw; (Hurley 1960a). Bellingshausen Sea, *Belgica* plancton stns. vi, ix & xiiiB (70°50'S 92°22'W; 70°33'S 89°22'W & 71°15'S 87°27'W); (Monod 1926).

***Worldwide distribution*:**
Mostly restricted to the Subantarctic and Antarctic regions, occuring right up to the Antarctic Continent. Often found near the surface and frequently in the 200-500 m layer, but can occur down to 1000 m or more.

***Type locality*:** Near Chile; "trouvé dans les mers du Chili" (Guérin-Méneville 1836b).

***Type material location*:** The holotype female is in the ANSP, Philadelphia (CA2685; Guérin-Méneville Coll. no. 435); once alcohol preserved, now dry.

Superfamily PLATYSCELOIDEA Bate, 1862

Family BRACHYSCELIDAE Stephensen, 1923

Brachyscelus crusculum Bate, 1861

Cocco, 1832: 207, (*Orio zancleus*).
Cocco, 1833: 113, fig. 3a, (*Orio zancleus*).
Costa & Costa, 1840: 5 (list), (*Orio zancleus*).
Natale, 1850: 12, pl.2, fig. 3, (*Orio zancleus*).
Costa in Hope, 1851: 21 (list), (*Orio zancleus*).
Bate, 1861: 7-10, pl. 2, figs. 1, 2.
Bate, 1862: 333-335, pl. 53, figs. 2, 3.
Bate, 1862: 335, pl. 53, fig. 4, (*Thamyris antipodes*).
Costa, 1867: species no. 54, (*Orio zancleus*).
Bovallius, 1887a: 31.
Bovallius, 1887a: 31, (*Thamyris antipodes*).
Bovallius, 1887b: 574, (*Thamyris antipodes*).
Claus, 1887: 60, pl. 16, figs. 11-18, (*Thamyris mediterranea*).
Claus, 1887: 60, pl. 21, figs. 1, 2, (*Thamyris lycaeoides*).
Stebbing, 1888: 1544-1549, pls. 195,196.
Stebbing, 1888: 1555-1556, pl. 197C, (*Brachyscelus acuticaudatus*).
Stebbing, 1888: 1556-1557, (*Brachyscelus mediterranea*).
Chevreux, 1895: 70, text figs. 1-8.
Chevreux, 1900: 153.
Chevreux, 1900: 154, (*Brachyscelus mediterraneus*).
Norman, 1900: 134.
Lo Bianco, 1902: 423, 426, 448, (*Thamyris mediterranea*).
Senna, 1903: 3-5, (*Orio zancleus*).
Senna, 1903: 5-8, figs. 1-10, (*Brachyscelus mediterranea*).
Lo Bianco, 1903: 135, 144, table facing p.278, (*Thamyris mediterranea*).
Fowler, 1904: 50, (*Brachyscelus mediterraneus*).
Lo Bianco, 1904: 44, pl. 23, fig. 77, (*Thamyris mediterranea*).
Stebbing, 1904: 40-41, (*Brachyscelus mediterraneus*).
Tattersall, 1906: 26.
Holmes, 1908: 490.
Walker, 1909: 54.
Sexton, 1911: 223.
Stewart, 1913: 262.
Spandl, 1924a: 32.
Chevreux & Fage, 1925: 427-428, fig. 418.
Stephensen, 1925: 172-176.
Schellenberg, 1927: 649-650, fig. 49.
Spandl, 1927: 210.
Pirlot, 1929: 139-140.
K.H. Barnard, 1930: 432.
Pirlot, 1930: 25-26.
K.H. Barnard, 1932: 292.
Boone, 1935: 222-226, pl. 66.
Boone, 1935: 226-230, pls. 67, 68, (*Brachyscelus stebbingi*).
Chevreux, 1935: 196-197.
Pirlot, 1939a: 46-47.
Dakin & Colefax, 1940: 123, fig. 212.
Shoemaker, 1945b: 242.
Shoemaker, 1948: 13.
Bulycheva, 1955: 1048 (table).
Hurley, 1955: 181 (key).
Reid, 1955: 25-26.
Irie, 1959: table 3.
Nayer, 1959: 47.
Hurley, 1960b: 282.
Evans, 1961: 200.
Grice & Hart, 1962: 300, (*Brachyscelus acuticaudatus*).

Kane, 1962: 310-311.
Vinogradov, 1962: 23-24.
Siegfried, 1963: 6 (list), 10.
Sheard, 1965: 244 (list).
Pillai, 1966: 225-226, fig. 15.
Hurley, 1969: 33, pl. 19 (map 8).
Dick, 1970: 68-69, fig. 13 (part).
Yoo, 1971b: 62.
Brusca, 1973: 19.
Thurston, 1976: 433-434.
Harbison *et al*., 1977: 472.
Madin & Harbison, 1977: 457.
Shulenberger, 1977a: 379 (table).
Tranter, 1977: 649 (table), 650.
Zeidler, 1978: 28-29, 49, figs. 28, 29.
Laval, 1980: 20 (table), 23 (table).
Brusca, 1981a: 31 (key), 44, figs. 18g, 18j, 18m.
Vinogradov *et al*., 1982: 396 (key), 396-398, fig. 213.
Zeidler, 1984: 295.
Nagata, 1986: 274-275.
Young & Anderson, 1987: 717 (table), 719, 721.
Barkhatov & Vinogradov, 1988: passim.
Lin & Chen, 1988: 325.
Young, 1989: 717 (table).
Vinogradov, 1990: 77.
Vinogradov, 1991: 261 (table).
Zeidler, 1991: 133.
Zeidler, 1992: 115-116, fig. 19.
De Broyer & Jazdzewski, 1993: 118 (list).
Vinogradov, 1993: 45 (table).
Lin & Chen, 1994: 115, 118 (list).
Montu, 1994: 132 (list).
Lin *et al*., 1995: 118, 122 (table).
Shih & Chen, 1995: 178-180, figs. 116, 117.
Lin *et al*., 1996: 231 (table).
Zeidler, 1998: 96.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1145 (table), 1193 (key), 1193, fig. 4.134.
Lowry, 2000: 325 (list).
Gasca & Shih, 2001: 496 (table).
Lima & Valentin, 2001: 473 (list), 474 (table).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003a: 308 (table).
Gasca, 2003b: 118 (table), 119 (table).
Gasca & Shih, 2003: 95 (table).
Gasca, 2004: 997 (table), 998 (table).
Gasca & Suárez-Morales, 2004: 26 (table).
Vinogradov *et al*., 2004: 15-16, 24 (table).
Browne *et al*., 2007: 819 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 118 (table).
Gasca, 2008: 89 (table), 91.
Gasca & Franco-Gordo, 2008: 569 (table).

***Southern Ocean distribution*:**
Indian Sector: Off South-Western Australia, (45°02.9'S 115°00.6'E); (Nagata 1986) and *Ob* stn. 415 (55°18'S 109°20'E), 0-1200 m; (Vinogradov 1962).
Pacific Sector: South of New Zealand, (58° 172°W); (Bate 1862).
***Worldwide distribution*:**
Relatively common and widespread in the tropical and temperate regions of all the worlds oceans, including the Mediterranean Sea. In the Atlantic it ranges from about 60°N to 32°S. In the Indian Ocean it is common in the tropics and ranges from the Red Sea to south of Australia, as above. In the Pacific it occurs generally below 40°N to south of New Zealand, as above. Most records are from surface waters to 300-400 m.
***Type locality*:** Unknown; not recorded.
***Type material location*:** Not found in any major European museum; considered lost.

Brachyscelus rapacoides Stephensen, 1925

Stephensen, 1925: 179-180, figs. 67, 68.
K.H. Barnard, 1930: 432.
Pirlot, 1930: 27, fig. 7.
Pirlot, 1939a: 47.
Pirlot, 1939b: 70.
Hurley, 1955: 181 (key).
Reid, 1955: 26.
Vinogradov, 1962: 24.
Dick, 1970: 69, fig. 13 (part).
Brusca, 1973: 19.
Harbison *et al*., 1977: 471.
Laval, 1980: 20 (table).
Zeidler, 1992: 117-119, fig. 21.
Gasca & Shih, 2001: 496 (table).
Lima & Valentin, 2001: 473 (list), 476 (table).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2004: 997 (table), 998 (table).
Gasca, 2007: 118 (table).
Gasca, 2008: 89 (table).

***Southern Ocean distribution*:**
Indian Sector: South of Australia, *Ob* stn. 97 (45°26'S 125°52'E), 0-800 m; (Vinogradov 1962).
***Worldwide distribution*:**
Relatively rare, known from widely separated records from tropical and temperate regions of all the world's oceans, including the Mediterranean Sea (types). In the Atlantic it has been recorded from about 44°N to tropical regions off Africa and Brazil, including the Caribbean and Gulf of Mexico. In the Indian Ocean it is known from only one record, south of Australia, as above. In the Pacific it has been recorded from the Indo-Pacific region and the Tasman Sea including the region just north of New Zealand with one doubtful record from Hawaii. Most catches are from near-surface waters.
***Type locality*:** The Mediterranean Sea, *Thor* stn. 183 (37°52'N 23°09'E), surface; stn. 282 & 283 (38°12'N 15°37'E), 40 mw and stn. 743 (34°26'N 20°08'E).
***Type material location*:** The syntypes (13 specimens) are in the ZMUC, Copenhagen.

Family TRYPHANIDAE Boeck, 1871

Tryphana malmii Boeck, 1871

Boeck, 1871: 89, (*Tryphana Malmii*).
Boeck, 1872: pl. 1, fig. 3, (*Tryphana Malmii*).
Boeck, 1876: 92-93, (*Tryphana Malmii*).
Sars, 1882: 76, (*Lycaea Malmii*).
Bovallius, 1887a: 30, (*Tryphaena Malmi*).
Bovallius, 1887a: 30, (*Tryphana Nordenskioldi*).
Bovallius, 1887b: 573, (*Tryphaena Malmi*).
Bovallius, 1887b: 573, (*Tryphaena Nordenskioldi*).
Stebbing, 1888: 1539-1543, pl. 194, (*Tryphana boecki*).
Sars, 1895: 17-18, pl. 7, (*Tryphaena Malmi*).
Chevreux, 1900: 153, (*Tryphaena Malmi*).
Norman, 1900: 133-134, (*Tryphaena Malmii*).
Fowler, 1903: 127.
Tattersall, 1906: 25, (*Tryphaena Malmi*).
Tesch, 1911: 187, (*Tryphana* sp.).
Tattersall, 1913: 21, (*Tryphaena malmi*).
Stephensen, 1923a: 36-37, (*Tryphana Malmi*).
Stephensen, 1925: 171, (*Tryphana Malmi*).
Schellenberg, 1927: 654, fig. 52.
Pirlot, 1929: 135-136, (*Tryphana Malmii*).
Stephensen, 1929: 45, fig. 13.10.
K.H. Barnard, 1930: 428.
Runnström, 1932: 43.
Stephensen, 1932a: 375.
Pirlot, 1939a: 43, (*Tryphana Malmi*).
Stephensen, 1942: 467.
Shoemaker, 1945b: 243, (*Tryphana malmii*).
Hurley, 1955: 180.
Vinogradov, 1962: 24.
Siegfried, 1963: 6 (list), 9.
Hurley, 1969: 33, pl. 19 (map 8).
Dick, 1970: 68.
Lorz & Pearcy, 1975: 1444 (table), 1445.
Thurston, 1976: 434-435.
Shulenberger, 1977a: 379 (table), (*Tryphana boecki*).
Tranter, 1977: 649 (table), 651.
Laval, 1980: 23 (table).
Brusca, 1981a: 31 (key), 44, figs. 18e, 18h, 18k.
Vinogradov *et al*., 1982: 393-395, fig. 212.
Barkhatov & Vinogradov, 1988: 168 (table), 173, 177.
Vinogradov, 1990: 76.
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 118 (list).
Vinogradov, 1993: 45 (table).
Lin & Chen, 1994: 118 (list).
Lin *et al*., 1995: 118, 122 (table).
Shih & Chen, 1995: 187-189, figs. 123, 124.
Lin *et al*., 1996: 230 (table).
Zeidler, 1998: 97-100, figs. 55-57.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1149 (table), 1204, fig. 4.183.
Lowry, 2000: 332 (list).
Lima & Valentin, 2001: 473 (list), 476 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 308 (table).
Vinogradov *et al*., 2004: 19, 25 (table).
Gasca *et al*., 2006: 240 (table), fig. 3h.
Browne *et al*., 2007: 820 (table), fig. 4 (phylogenetic tree).
Gasca, 2007: 120 (table).
Gasca, 2008: 89 (table).

***Southern Ocean distribution*:**
Indian Sector: South of Australia, *Ob* stn. 97 (45°26'S 125°52'E), 0-800 m; (Vinogradov 1962).
Pacific Sector: South of New Zealand, *Ob* stn. 73 (51°26'S 164°48'E), 0-220 m & stn. 352 (46°10'S 162°51'E), 0-1000 m; (Vinogradov 1962).
***Worldwide distribution*:**
Moderately common and widespread, mainly in the temperate regions of all the world's oceans, including one record from the Mediterranean Sea. In the Atlantic it has been recorded from about 67°N to Bermuda and to off the west coast of South Africa. In the Indian Ocean it has been recorded from the south-western part (Walters Shoal region) and south of Australia, to 45°26'S, but is not known from the equatorial zone or the northern part. In the Pacific it is widespread, from the Indo-Pacific region in the west and from about 51°N in the east (specimens in SAMA) to the Subtropical Frontal Zone in the south. Most catch records are from near-surface waters (0-200 m).
***Type locality*:** North Atlantic, Hardangerfjord, west coast of Norway.
***Type material location*:** Not found in any major European museum; considered lost.

Family LYCAEIDAE Claus, 1879

Lycaea pachypoda (Claus, 1879)

Claus, 1879b: 41, (*Pseudolycaea pachypoda*).
Carus, 1885: 426, (*Pseudolycaea pachypoda*).
Bovallius, 1887a: 34, (*Pseudolycaea pachypoda*).
Claus, 1887: 64-65, pl. 20, figs. 12-22, (*Pseudolycaea pachypoda*).
Chevreux & Fage, 1925: 430-431, fig. 420, (*Pseudolycaea pachypoda*).
Stephensen, 1925: 169-171, fig. 64, (*Pseudolycaea pachypoda*).
Spandl, 1927: 215-216, fig. 36, (*Pseudolycaea pachypoda*).
Pirlot, 1939a: 43-44, (*Pseudolycaea pachypoda*).
Pirlot, 1939b: 70, (*Pseudolycaea pachypoda*).
Evans, 1961: 203, (*Pseudolycaea pachypoda*).
Vinogradov, 1962: 24-25, (*Pseudolycaea pachypoda*).
Hurley, 1969: 33, pl. 19 (map 8).
Dick, 1970: 68, fig. 12 (part), (*Pseudolycaea pachypoda*).
Harbison *et al*., 1977: 470, (*Pseudolycaea pachypoda*).
Shulenberger, 1977a: 379 (table), (*Pseudolycaea pachypoda*).

Laval, 1980: 19 (table), 20 (table), 23 (table).
Vinogradov *et al*., 1982: 382 (key), 388-389, fig. 209.
Barkhatov & Vinogradov, 1988: passim.
Vinogradov, 1990a: 76.
Vinogradov, 1991: 261 (table).
De Broyer & Jazdzewski, 1993: 118 (list).
Lin & Chen, 1994: 115, 118 (list).
Lin *et al*., 1995: 122 (table).
Shih & Chen, 1995: 183-185, figs. 120, 121.
Lin *et al*., 1996: 230 (table).
Zeidler, 1998: 101-104, figs. 58, 59.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1146 (table), 1194 (key), 1194, fig. 4.139.
Lowry, 2000: 326 (list).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2003b: 118 (table).
Vinogradov *et al*., 2004: 16, 25 (table).
Gasca, 2007: 119 (table).
Gasca, 2008: 89 (table).

***Southern Ocean distribution*:**
Indian Sector: South of Australia, *Ob* stn. 97 (45°26'S 125°52'E), 0-800 m; (Vinogradov 1962).
***Worldwide distribution*:**
Relatively uncommon but widely distributed in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea, generally between the Subtropical Convergences. Most catch records are from near-surface waters.
***Type locality*:** Mediterranean Sea, near Messina, Italy and the Indian Ocean near Zanzibar.
***Type material location*:** Not found in any major European museum; considered lost.

Lycaea pauli Stebbing, 1888

Stebbing, 1888: 1566-1567.
K.H. Barnard, 1930: 430, fig. 58.
Hurley, 1955: 180 (key).
Harbison & Madin, 1976: 169.
Vinogradov *et al*., 1982: 382 (key), 385, fig. 206.
Barkhatov & Vinogradov, 1988: 167, 168 (table).
Vinogradov, 1990a: 74.
Vinogradov, 1991: 261 (table).
Vinogradov, 1993: 45 (table).
Barkhatov *et al*., 1999: 808 (table).
Gasca & Shih, 2001: 496 (table).
Escobar-Briones *et al*., 2002: 367 (list).
Gasca, 2008: 89 (table).

***Southern Ocean distribution*:**
Pacific Sector: Central part to 48°43'S (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
The unsatisfactory state of the systematics of *Lycaea* makes it difficult to provide accurate distribution data for species. In the Atlantic *Lycaea pauli* has been recorded form the central part and the Caribbean. In the Indian Ocean it has been recorded only from the south-western part (Walters Shoal region). In the Pacific it ranges from just north of New Zealand and along the coast of Peru/Chile to the southern Subtropical Frontal Zone as far south as 48°43'S. Most catch records are from the surface, with a few from about 300 m.
***Type locality*:** Mid-Atlantic Ocean, off St. Paul's Rocks, *Challenger* stn. 108 (01°10'N 28°23'W), surface.
***Type material location*:** The unique holotype male is in the NHM, London (89.5.15.248); on one microscope slide.

Family PLATYSCELIDAE Bate, 1862

Hemityphis tenuimanus Claus, 1879

Claus, 1879b: 12-13.
Bovallius, 1887a: 46, (*Dithyrus tenuimanus*).
Claus, 1887: 38, pl. 14, figs. 1-13.
Stebbing, 1888: 1472-1475, pl. 183.
Chevreux, 1900: 149.
Stebbing, 1910: 656.
Stewart, 1913: 259.
Stewart, 1913: 260-261, pl. 7, figs. 1-9, (*Hemiscelus diplochelatus*).
Spandl, 1924: 268-270, fig. 2, (*Euscelus steueri*).
Stephensen, 1925: 219-220.
Spandl, 1927: 233-236, figs. 46a-h.
Pirlot, 1929: 159-160, (*Hemityphis rapax*).
K.H. Barnard, 1930: 437-438, (*Hemityphis rapax)*.
Pirlot, 1930: 37-38, (*Hemityphis rapax*).
K.H. Barnard, 1932: 298-299, (*Hemityphis rapax*).
Pirlot, 1932: 298-299, (*Hemityphis rapax*).
Pirlot, 1939a: 57, (*Hemityphis rapax*).
Pirlot, 1939b: 71, (*Hemityphis rapax*).
Shoemaker, 1945b: 259, (*Hemityphis rapax*).
Stephensen, 1949: 57, 60 (table), (*Hemityphis rapax*).
Bulycheva, 1955: 1048 (table), (*Hemityphis rapax*).
Reid, 1955: 35, (*Hemityphis rapax*).
Hurley, 1956: 188, (*Hemityphis rapax*).
Evans, 1961: 201, (*Hemityphis rapax*).
Vinogradov, 1962: 26, (*Hemityphis rapax*).
Siegfried, 1963: 7 (list), 11, (*Hemityphis rapax*).
Hurley, 1969: 33, pl. 19 (map 8), (*Hemityphis rapax*).
Dick, 1970: 44 (key), 78, (*Hemityphis rapax*).
Thurston, 1976: 442, (*Hemityphis rapax*).
Harbison, *et al*., 1977: 477, (*Hemityphis rapax*).
Shulenberger, 1977a: 379 (table).
Tranter, 1977: 651, (*Hemityphis rapax*).
Stuck, *et al*., 1980: 367, (*Hemityphis rapax*).
Brusca, 1981a: 34 (key), (*Hemityphis rapax*).
Vinogradov *et al*., 1982: 446-448, fig. 239.
Vinogradov *et al*., 1982: 475, fig. 256, (*Hemiscelus diplochelatus*).

Barkhatov & Vinogradov, 1988: 168 (table).
Vinogradov, 1990a: 85.
Vinogradov, 1991: 262 (table), 263 (table).
Zeidler, 1992: 124, (*Hemityphis rapax*).
De Broyer & Jazdzewski, 1993: 118 (list), (*Hemityphis rapax*).
Vinogradov, 1993: 46 (table).
Montu, 1994: 133 (list).
Lin *et al*., 1995: 120, 123 (table).
Shih & Chen, 1995: 242-243, fig. 162.
Vincencio-Aguilar & Fernández-Alamo, 1995: 4, 30 (list).
Lin *et al*., 1996: 231 (table).
Zeidler, 1996: passim.
Zeidler, 1998: 114-115.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1146 (table), 1199, fig. 4.158, (*Hemiscelus diplochelatus*).
Vinogradov, 1999: 1146 (table), 1201, fig. 4.166.
Lowry, 2000: 330 (list).
Gasca & Shih, 2001: 497 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 308 (table).
Gasca, 2003a: 308 (table), (*Hemiscelus diplochelatus*).
Gasca, 2003b: 118 (table), (*Hemiscelus diplochelatus*).
Gasca & Shih, 2003: 95 (table).
Gasca, 2004: 997 (table), 998 (table).
Gasca & Suárez-Morales, 2004: 26 (table).
Gasca, 2007: 118 (table).
Gasca, 2008: 90 (table), 91-92.

***Southern Ocean distribution*:**
Atlantic Sector: North-west of the Falkland Islands (Hurley 1969).
Pacific Sector: Central part to 48°43'S, (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
Relatively common and widespread in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it has been recorded from about 40°N to the Cape of Good Hope in the east, and to near the Falkland Islands in the west. There are few records from the Indian Ocean, mainly from the south-western part (Walters Shoal region) and from off Western Australia. In the Pacific it ranges from the Kuroshio and Indo-Pacific regions and the eastern part to the Tasman Sea, and centrally to 48°43'S. Found mainly in surface waters, rarely penetrating deeper than 200 m.
***Type locality*:** Atlantic Ocean, near Cape of Good Hope.
***Type material location*:** Not found in any major European museum; considered lost.

Platyscelus ovoides (Risso, 1816)

Risso, 1816: 122-123, pl. 2, fig. 9, (*Typhis ovoides*).
Milne Edwards, 1830: 395, pl. 11, fig. 8, (*Typhis ferus*).
Costa & Costa, 1840: 5 (list), (*Typhis ovoides*).
Milne Edwards, 1840: 97-98, (*Typhis ovoides*).
Lucas, 1846: 57, (*Typhis ovoides*).
Bate, 1861: 4-6, pl. 2, figs. 3, 4, (*Platyscelus serratus*).
Bate, 1862: 327-328, pl.52, fig. 7, (*Typhis ovoides*).
Bate, 1862: 330-332, pl. 52, figs. 10, 11, (*Platyscelus serratus*).
Claus, 1879b: 9-10, (*Eutyphis ovoides*).
Claus, 1879b: 12, (*Eutyphis globosus*).
Thomson, 1879: 244-245, pl. 10, fig. D4, (*Platyscelus intermedius*).
Carus, 1885: 424, (*Eutyphis ovoides*).
Carus, 1885: 425, (*Eutyphis globosus*).
Thomson & Chilton, 1886: 151, (*Platyscelus intermedius*).
Bovallius, 1887a: 45, (*Eutyphes ovoides*).
Bovallius, 1887a: 45, (*Eutyphes globosus*).
Claus, 1887: 35-36, pl. 1, figs. 1-11; pl. 2, figs. 1, 2; pl. 3, figs. 1-3, (*Eutyphis ovoides*).
Claus, 1887: 38, pl. 3, figs. 4, 15-19, (*Eutyphis globosus*).
Stebbing, 1888: 1463-1464.
Lo Bianco, 1902: 419, 426, 448, (*Eutyphis ovoides*).
Lo Bianco, 1903: 139, 142, 149, 150, 154, 156, 199, table facing p.278, (*Eutyphis ovoides*).
Lo Bianco, 1904: 44, pl.23, fig. 72, (*Eutyphis ovoides*).
Tattersall, 1906: 25.
Lo Bianco, 1909: 597, (*Thyropus ovoides*).
Walker, 1909: 54, (*Eutyphis ovoides*).
Spandl, 1924b: 270.
Chevreux & Fage, 1925: 420-422, fig. 413.
Stephensen, 1925: 213-215.
Stephensen, 1925: 218-219, (*Platyscelus globosus*).
Schellenberg, 1927: 647-648, fig. 48.
Spandl, 1927: 228-229, fig. 44.
Pirlot, 1929: 156-157, (*Eutyphis ovoides*).
K.H. Barnard, 1932: 297-298.
Chevreux, 1935: 200.
K.H. Barnard, 1937: 194.
Pirlot, 1939a: 58.
Shoemaker, 1945b: 256-259, figs. 47, 48.
Hurley, 1955: 189-192, figs. 272-290.
Reid, 1955: 36-37.
Hurley, 1960b: 283.
Siegfried, 1963: 7 (list), 11.
Hurley, 1969: 33, pl. 19 (map 8).
Dick, 1970: 79-80, fig. 16 (part).
Yoo, 1971b: 60-61.
Bowman & Gruner, 1973: fig. 74.
Thurston, 1976: 443.
Shulenberger, 1977a: 379 (table).
Tranter, 1977: 649 (table), 651.
Laval, 1980: 21 (table).
Stuck *et al*., 1980: 367.
Brusca, 1981a: 34 (key), fig. 24t.
Vinogradov *et al*., 1982: 440 (key), 440-441, fig. 235.
Young & Anderson, 1987: 717 (table), 721.
Barkhatov & Vinogradov, 1988: passim.
Young, 1989: 716 (table).
Vinogradov, 1990a: 84.
Vinogradov, 1991: 262 (table).

Zeidler, 1992: 125.
De Broyer & Jazdzewski, 1993: 118-119 (list).
Vinogradov, 1993: 45 (table).
Shih & Chen, 1995: 226-227, fig. 149.
Lin *et al*., 1996: 231 (table).
Zeidler, 1998: 121.
Barkhatov *et al*., 1999: 808 (table).
Vinogradov, 1999: 1147 (table), 1202 (key), 1202, fig. 4.172.
Lowry, 2000: 330 (list).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 308 (table).
Gasca, 2003b: 118 (table).
Gasca, 2007: 119 (table).
Gasca, 2008: 90 (table).

***Southern Ocean distribution*:**
Atlantic Sector: North-west of the Falkland Islands (Hurley 1969).
Pacific Sector: Central part to 48°43'S, (Barkhatov & Vinogradov 1988).
***Worldwide distribution*:**
Relatively common and widely distributed, mainly in the tropical regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it occurs south of 50°S to near the Falkland Islands. In the Indian Ocean it seems to be more common in the eastern part. In the Pacific it ranges from the Kuroshio region to New Zealand, and centrally to just beyond 48°S. Most records are from near-surface waters (0-200 m), but in the Mediterranean Sea it has been found in catches from 800 m.
***Type locality*:** Mediterranean Sea, near Nice, France.
***Type material location*:** Not found in any major European museum; considered lost.

Tetrathyrus forcipatus Claus, 1879

Claus, 1879b: 14-15.
Bovallius, 1887a: 47.
Bovallius, 1887a: 47, (*Tetrathyrus rectangularis*).
Bovallius, 1887a: 48, (*Tetrathyrus inscriptus*).
Claus, 1887: 40-41, pl. 5, figs. 10-18; pl. 6, figs. 1-3.
Stebbing, 1888: 1480-1483, pl. 184, (*Tetrathyrus moncoeuri*).
Stebbing, 1888: 1484-1485.
Chevreux, 1900: 150.
Stebbing, 1910: 656 (list), (*Tetrathyrus moncoeuri*).
Spandl, 1924: 38-39, fig. 11.
Chevreux & Fage, 1925: 422-423, figs. 4, 5.
Shoemaker, 1925: 54, figs. 22-24, (*Tetrathyrus sancti-josephi*).
Stephensen, 1925: 224.
Spandl, 1927: 240-243, fig. 48.
K.H. Barnard, 1930: 439.
Pirlot, 1930: 42-43, fig. 11.1, (*Tetrathyrus forcipatus forcipatus*).
K.H. Barnard, 1931: 133.
K.H. Barnard, 1937: 195.
Pirlot, 1939a: 58, (*Tetrathyrus forcipatus forcipatus*).
Pirlot, 1939b: 72, (*Tetrathyrus forcipatus forcipatus*).
K.H. Barnard, 1940: 521 (list).
Dakin & Colefax, 1940: 128, fig. 216, (*Tetrathyrus moncoeuri*).
Shoemaker, 1945b: 259.
Shoemaker, 1948: 15.
Bulycheva, 1955: 1048 (table).
Hurley, 1955: 188 (key).
Reid, 1955: 34-35.
Irie, 1959: table 4, 32 (table).
Evans, 1961: 192 (table), 203.
Siegfried, 1963: 7 (list), 11.
Pillai, 1966: 230-232, fig. 19.
Hurley, 1969: 33, pl. 19 (map 8).
Dick, 1970: 80, fig. 16 (part).
Thurston, 1976: 444.
Harbison *et al*., 1977: 476 (table), 477.
Shulenberger, 1977a: 379 (table).
Tranter, 1977: 649 (table), 651.
Zeidler, 1978: 43-44,50, fig. 42.
Laval, 1980: 21 (table).
Stuck *et al*., 1980: 367-368.
Brusca, 1981a: 34 (key), 46.
Vinogradov *et al*., 1982: 455 (key), 455-457, fig. 244.
Zeidler, 1984: 295.
Zeidler, 1992: 128.
De Broyer & Jazdzewski, 1993: 119 (list).
Lin & Chen, 1994: 114.
Lin *et al*., 1995: 120, 123 (table).
Shih & Chen, 1995: 249-251, figs. 167, 168.
Lin *et al*., 1996: 231 (table).
Zeidler, 1998: 122.
Vinogradov, 1999: 1148 (table), 1202, fig. 4.174.
Lowry, 2000: 330 (list).
Gasca & Shih, 2001: 497 (table).
Lima & Valentin, 2001: 473 (list), 474 & 475 (table).
Escobar-Briones *et al*., 2002: 368 (list).
Gasca, 2003a: 308 (table).
Gasca, 2003b: 118 (table).
Gasca & Shih, 2003: 95 (table).
Gasca, 2004: 997 (table), 999 (table).
Gasca & Suárez-Morales, 2004: 26 (table).
Vinogradov *et al*., 2004: 17, 24 (table).
Gasca, 2007: 120 (table).
Gasca, 2008: 90 (table).
Gasca & Franco-Gordo, 2008: 569 (table).

***Southern Ocean distribution*:**
Pacific Sector: South of New Zealand, *Terra Nova* stn. 209 (51°48'S 172°18'E), surface; (K.H. Barnard 1930).
***Worldwide distribution*:**
Relatively common and abundant in the tropical and temperate regions of all the world's oceans, including the Mediterranean Sea. In the Atlantic it is found from

43°N to off South Africa. In the Indian Ocean it is most common in the tropical regions, ranging from the Red Sea to off Western Australia, but does not reach the southern Subtropical Convergence. In the Pacific it ranges from the Kuroshio region and the Californian coast to just south of New Zealand. Most records are from surface waters.
***Type locality*:** South Atlantic, near the Cape of Good Hope.
***Type material location*:** Not found in any major European museum; considered lost.

APPENDIX 1. Species recorded south of 40°S, but outside of the RAMS geographic scope, that may eventually be found to occur in the Southern Ocean (*s.l.*).

Family MIMONECTIDAE Bovallius, 1885
***Mimonectes loveni* Bovallius, 1885.** South Pacific (43°S 158°W & 40°21'S 158°W); Vinogradov & Semenova (1996). Also *Dana* stn. 3642 (46°43'S 176°08.5'E), 1500 & 2500 mw; specimens in ZMUC.

Family SCINIDAE Stebbing, 1888
***Scina indica* Vinogradov, 1964.** South Pacific (43°S 158°W); Vinogradov & Semenova (1996).
***Scina oedicarpus* Stebbing, 1895.** South Pacific (43°S 158°W); Vinogradov & Semenova (1996).
***Scina vosseleri* Tattersall, 1906.** South Pacific (43°S 158°W); Vinogradov & Semenova (1996).

Family LANCEOLIDAE Bovallius, 1887
***Lanceola pacifica* Stebbing, 1888.** South Pacific, *Dana* stn. 3642 (46°43'S 176°08.5'E), 1000 mw; Zeidler (2009).

Family MEGALANCEOLIDAE Zeidler, 2009
***Megalanceoloides remipes* (K.H. Barnard, 1932).** South Atlantic, *Discovery* stn. 72 (41°43'S 42°20'W), 2000-0 m; type locality.

Family MIMONECTEOLIDAE Zeidler, 2009
***Mimonecteola diomedeae* Woltereck, 1909.** South Pacific (41°21'S 158°W); Vinogradov & Semenova (1996).

Family PROLANCEOLIDAE Zeidler, 2009
***Prolanceola vibiliformis* Woltereck, 1907.** South Pacific (43°S 158°E); Barkhatov & Vinogradov (1988).

Family VIBILIIDAE Dana, 1852
***Vibilia robusta* Bovallius, 1887.** South Pacific, BANZARE stn. 111 (44°11'S 143°36'E), 1710-0 m; Hurley (1960a).

Family HYPERIIDAE Dana, 1852
***Hyperoche picta* Bovallius, 1889.** South Indian Ocean, (41°S 58°E); Vinogradov & Semenova (1996).
***Themisto australis* (Stebbing, 1888).** South Pacific, *Ob* stn. 352 (46°10'S 162°51'E), 1000-0 m; Vinogradov (1962).

Family ANAPRONOIDAE Bowman & Gruner, 1973
***Anapronoe reinhardti* Stephensen, 1925.** South Pacific, *Ob* stn. 352 (46°10'S 162°51'E), 1000-0 m; Vinogradov (1962).

Family LYCAEIDAE Claus, 1879
***Lycaea nasuta* Claus, 1879.** South Pacific, stn. A331 (41°46'S 163°51'E), surface; Kane (1962).

Family PRONOIDAE Claus, 1879
***Eupronoe maculata* Claus, 1879.** South Indian/Pacific, *Ob* stn. 94 (40°45'S 131°14'E), 700-0 m; Vinogradov (1962).
***Eupronoe minuta* Claus, 1879.** South Indian/Pacific, *Ob* stn. 94 (40°45'S 131°14'E), 700-0 m; Vinogradov (1962).
***Paralycaea gracilis* Claus, 1879.** South Pacific, *Ob* stn. 352 (46°10'S 162°51'E), 1000-0 m; Vinogradov (1962).
***Parapronoe campbelli* Stebbing, 1888.** South Pacific, stn. A332 (41°41'S 167° 03'E), surface; Kane (1962).
***Parapronoe crustulum* Claus, 1879.** South Pacific, *Ob* stn. 348 (42°34'S 159°01'E), 2200-0 m; Vinogradov (1962).

Family PLATYSCELIDAE Bate, 1862
***Amphithyrus bispinosus* Claus, 1879.** South Indian Ocean (41°S 60°E); Vinogradov & Semenova (1996).
***Platyscelus serratulus* Stebbing, 1888.** South Indian Ocean (41°S 58°E); Vinogradov & Semenova (1996).

APPENDIX 2. Useful identification tools for hyperiidean amphipods.

The following is a guide to the more recent literature to aid in the identification of hyperiidean amphipods worldwide. The terminology used to describe the main characters in diagnoses and keys is illustrated in figure 17.

General

Many of the older texts, although often useful and essential to taxonomic studies, are not recommended here because of the many changes and additions that have occurred since their publication. Generally most researchers use the higher classification proposed by Bowman & Gruner (1973) and this is still a useful text for keys to families and genera, although now somewhat dated. The other main text currently used by most researchers is Vinogradov *et al*. (1982) with additions by Vinogradov & Semenova (1996). This standard text, now out of date, is primarily a catalogue of species based almost entirely on previously published works, and relies mostly on classifications little changed this century. Thus, this text should only be used as a first step for the identification of species that should be confirmed by referring to more recent revisions (if available) as detailed below. Other references, covering regional faunas, that are also useful, are Brusca (1981a), Dick (1970), Gates *et al*. (2003), Shih & Chen (1995), Vinogradov (1999) and Zeidler (1992, 1998). Shih & Chen (1995) is particularly useful because keys and figures for many species are provided.

Infraorder PHYSOSOMATA

Superfamily ARCHAEOSCINOIDEA. One family: Archaeoscinidae.
Reviewed by Zeidler (2006), with keys to genera and species and figures for all currently recognised species.

Superfamily LANCEOLOIDEA. Families: Lanceolidae, Chuneolidae, Megalanceolidae, Metalanceolidae, Microphasmidae, Mimonecteolidae, Prolanceolidae.
Reviewed by Zeidler (2009), with keys to families, genera and species and figures for all currently recognised species.

Superfamily SCINOIDEA. Families: Scinidae, Mimonectidae, Proscinidae.
This group of families is badly in need of taxonomic revision. Vinogradov *et al*. (1982) is still the best general text for identifying species. Wagler (1926) is still an essential text for the Scinidae with keys and good illustrations for species and Zeidler (1990, 1998) provides more information on species of *Scina* together with a key (1990) and figures for several species. Shih & Hendrycks (1996) propose two new additions to the Proscinidae and provide a key to species of *Proscina*.

Infraorder PHYSOCEPHALATA

Superfamily VIBILIOIDEA. Families: Vibiliidae, Cyllopodidae, Paraphronimidae.
Reviewed by Zeidler (2003b), with keys to genera and species and figures for all currently recognised species. Shih & Hendrycks (2003) document new records of *Vibilia* for the eastern Pacific, describe one new species, and provide figures for some species and a key to species of *Vibilia*.

Superfamily CYSTISOMATOIDEA. One family: Cystisomatidae.
Reviewed by Zeidler (2003a), with a key to species of *Cystisoma* and figures for all currently recognised species.

Superfamily LYCAEOPSOIDEA. One family: Lycaeopsidae.
Reviewed by Zeidler (2004a), with a key to the species of *Lycaeopsis* and figures for the two currently recognised species.

Superfamily PHRONIMOIDEA. Families: Phronimidae, Bougisidae, Dairellidae, Iulopididae, Hyperiidae, Lestrigonidae, Phrosinidae.
Families and genera reviewed by Zeidler (2004b), with keys to families and genera and keys to species of *Iulopis*, *Primno*, *Themisto* and male species of the family Lestrigonidae with pereonites 1-2 fused (except *Phronimopsis*). Figures of species of *Iulopis* and *Dairella* are also provided.
Shih (1969, 1971a, 1971b, 1991a) provides the most comprehensive information on the Phronimidae, together with keys and figures for all species. Bowman (1973) provides detailed information, with keys and figures, for most species of the Hyperiidae and Lestrigonidae and additional information is provided by Bowman & McGuiness (1982). Weigmann-Haass (1978, 1985) reviews the Antarctic species of *Hyperiella* (1989) and *Hyperoche* (1985), with figures of the species.

Superfamily PLATYSCELOIDEA. Most of the families in this group are in need of taxonomic revision.
Family Anapronoidae: Two species are currently recognised; reviewed by Zeidler (1997b).
Family Brachyscelidae: Zeidler (1992) provides information and figures for some species with a key to species of *Brachyscelus*.
Family Lycaeidae: Harbison & Madin (1976) tentatively reviewed the genus *Lycaea* and provided a key to species.
Family Oxycephalidae: Fage (1960) is still the most comprehensive text on this family. The genus *Oxycephalus* is reviewed by Zeidler (1999), with a key to species and figures for all currently recognised species.
Family Pronoidae: Zeidler (1992) provides information on *Eupronoe*, *Parapronoe* and *Pronoe* with figures for most species. Further information on *Eupronoe*, *Parapronoe* and *Paralycaea* is provided by Zeidler (1998), with additional figures of species.

Family Parascelidae: Limited information is provided by Shih & Chen (1995) and Zeidler (1992, 1998), with figures for some species.

Family Platyscelidae: Limited information is provided by Shih & Chen (1995) and Zeidler (1992, 1998), with figures for some species.

Family Tryphanidae: One recognised species; see Zeidler (1998) for a diagnosis and figures.

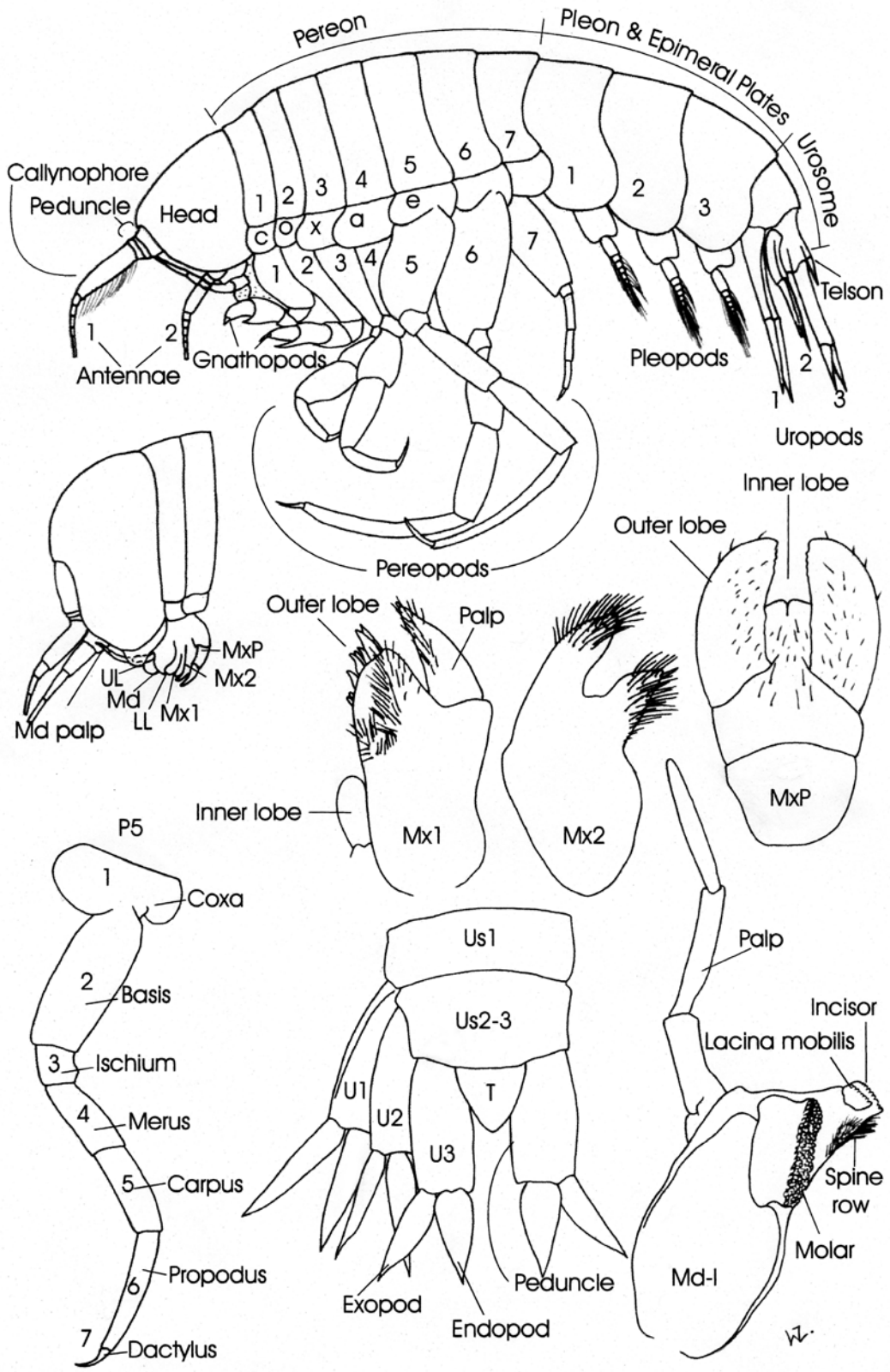

Fig. 17. Generalised hyperiidean amphipod and appendages, illustrating the terminology used in publications. Left aspect of body and head; lower lip (LL); upper lip (UL); left mandible (Md-l); first and second maxilla (Mx1, Mx2); maxilliped (MxP); fifth pereopod (P5); urosomites (Us1, Us2-3); uropoda (U1-3) and telson (T).

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TAXONOMIC INDEX

Colour Plates

Plate 1 : a. *Scina rattrayi rattrayi*, male (© Martin Rauschert) ; b. *Scina rattrayi rattrayi*, female (© Martin Rauschert) ; c. *Chuneola paradoxa* (© Russ Hopcroft) ; d. *Lanceola clausi* (© Russ Hopcroft) ; e. *Scypholanceola aestiva* (© Russ Hopcroft) ; f. *Lanceola loveni antarctica* (© Russ Hopcroft).

Plate 2 : a. *Cyllopus lucasii* (© Martin Rauschert) ; b. *Cyllopus lucasii* (© Russ Hopcroft) ; c. *Cyllopus magellanicus* (© Russ Hopcroft) ; d. *Vibilia antarctica* (© Russ Hopcroft) ; e. *Hyperia gaudichaudii* (© Russ Hopcroft).

Plate 3 : a. *Hyperia macrocephala*, female (© Russ Hopcroft) ; b. *Hyperia macrocephala*, female (© Russ Hopcroft) ; c. *Hyperia macrocephala*, male (26 mm) (© Martin Rauschert) ; d. *Hyperiella cf dilatata* (© Martin Rauschert) ; e. *Hyperia cf spinigera* (30 mm)(© Martin Rauschert).

Plate 4 : a. *Hyperoche capucinus* (© Russ Hopcroft) ; b. *Hyperoche capucinus* (© Russ Hopcroft) ; c. *Pegohyperia princeps* (© Russ Hopcroft); d. *Primno macropa* (© Russ Hopcroft) ; e. *Themisto gaudichaudii* (© Volker Siegel) ; f. *Themisto gaudichaudii* (© Volker Siegel).

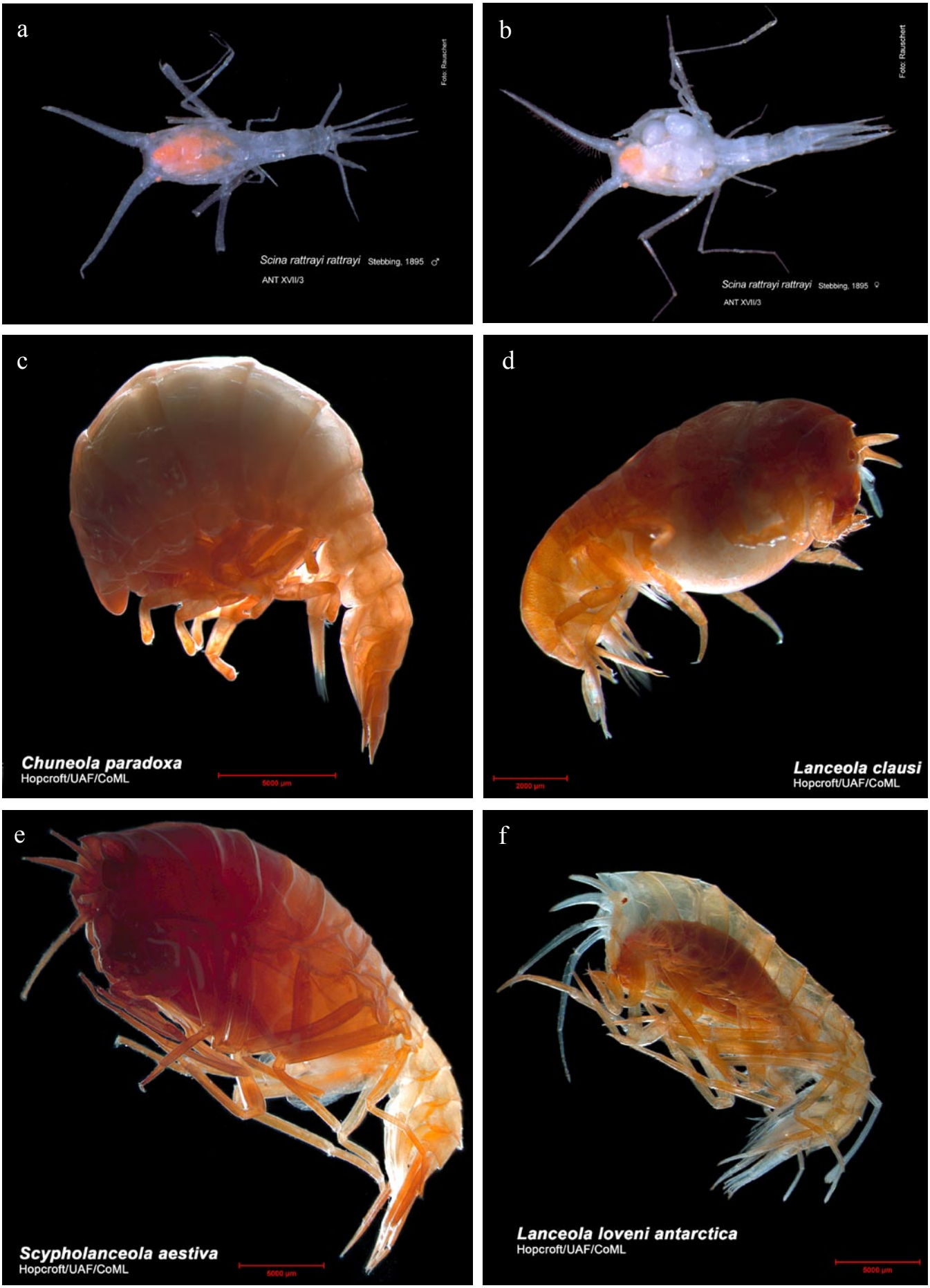
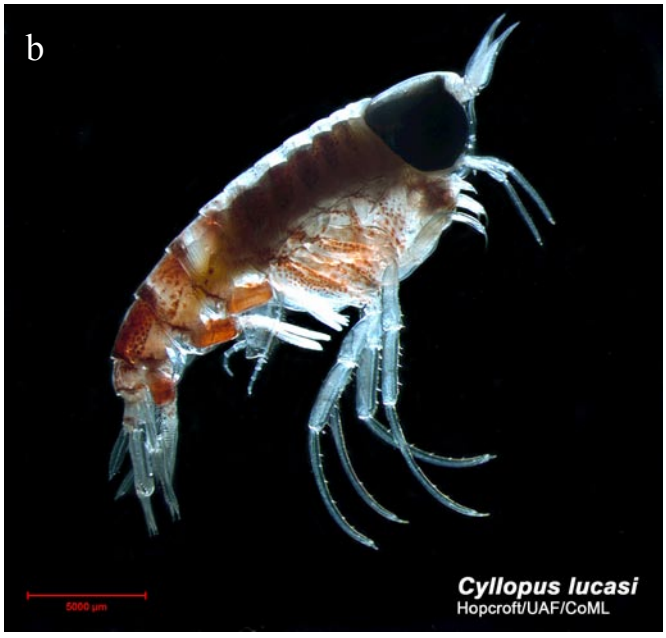

a
Foto: Rauschert
Scina rattrayi rattrayi Stebbing, 1895 ♂
ANT XVII/3
b
Foto: Rauschert
Scina rattrayi rattrayi Stebbing, 1895 ♀
ANT XVII/3
c
Chuneola paradoxa
Hopcroft/UAF/CoML
5000 µm
d
Lanceola clausi
Hopcroft/UAF/CoML
2000 µm
e
Scypholanceola aestiva
Hopcroft/UAF/CoML
5000 µm
f
Lanceola loveni antarctica
Hopcroft/UAF/CoML
5000 µm

Plate 1


a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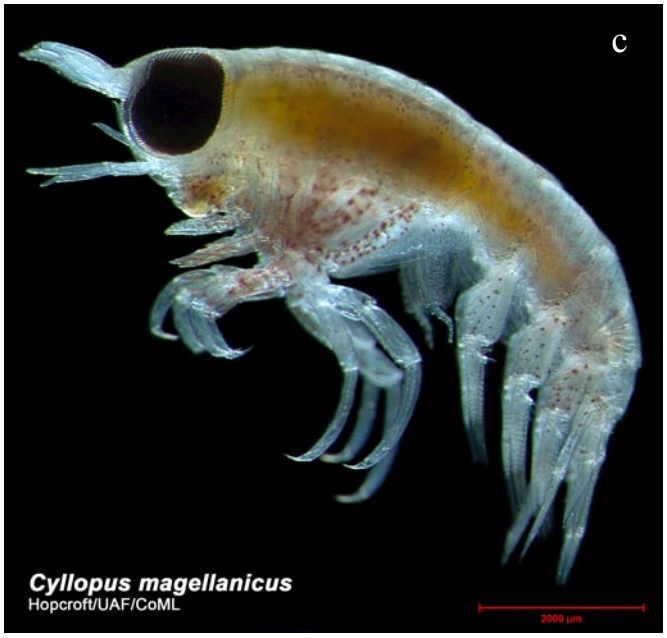
Hopcroft/UAF/CoML


c
Cyllopus magellanicus
Hopcroft/UAF/CoML


d
Vibilia antarctica
Hopcroft/UAF/CoML


e
Hyperia gaudichaudii
Hopcroft/UAF/CoML

Plate 2

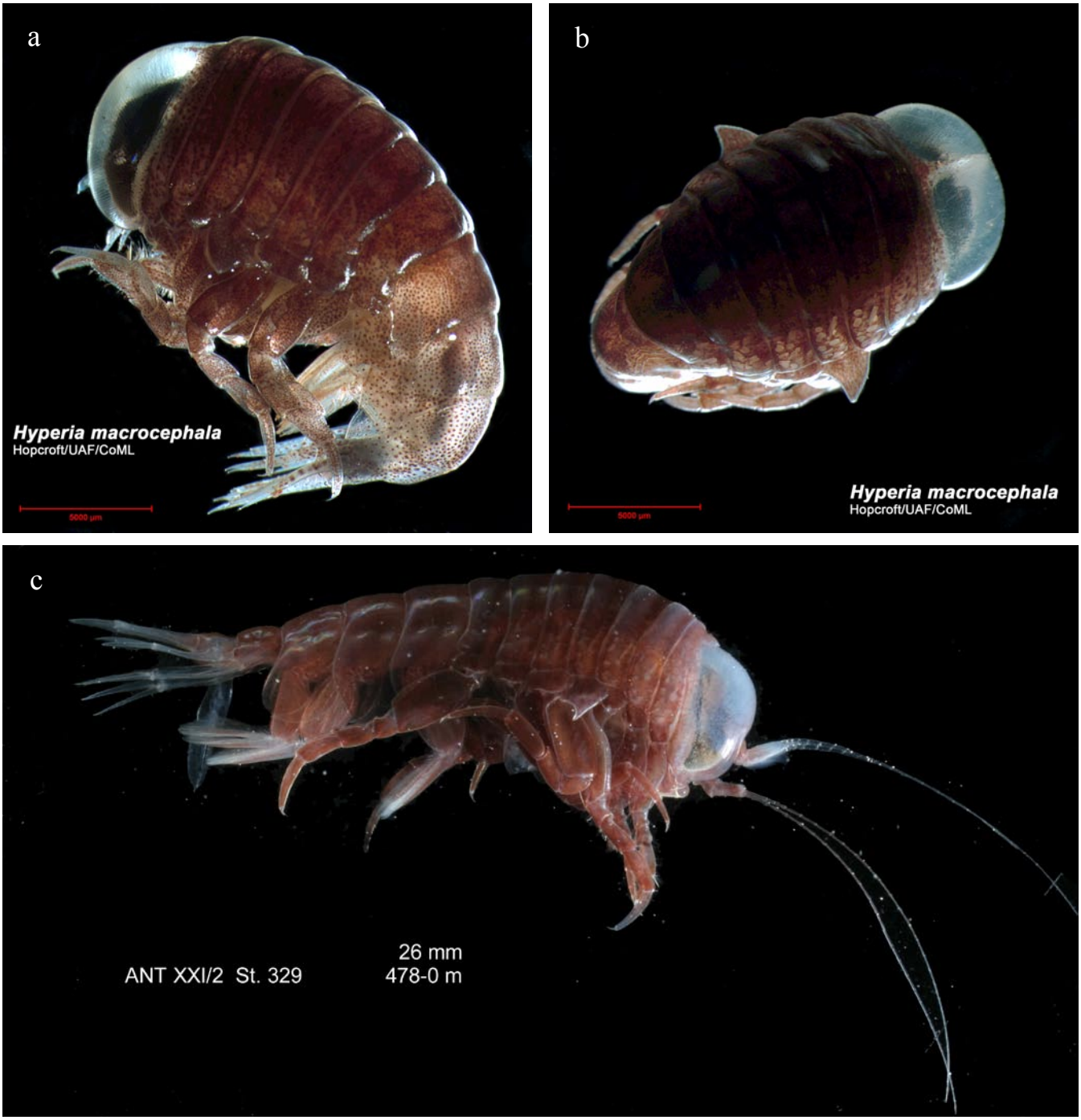
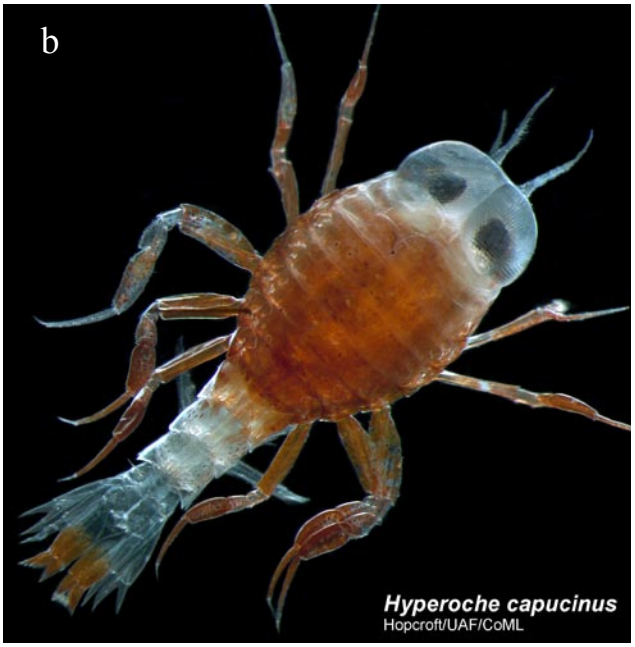
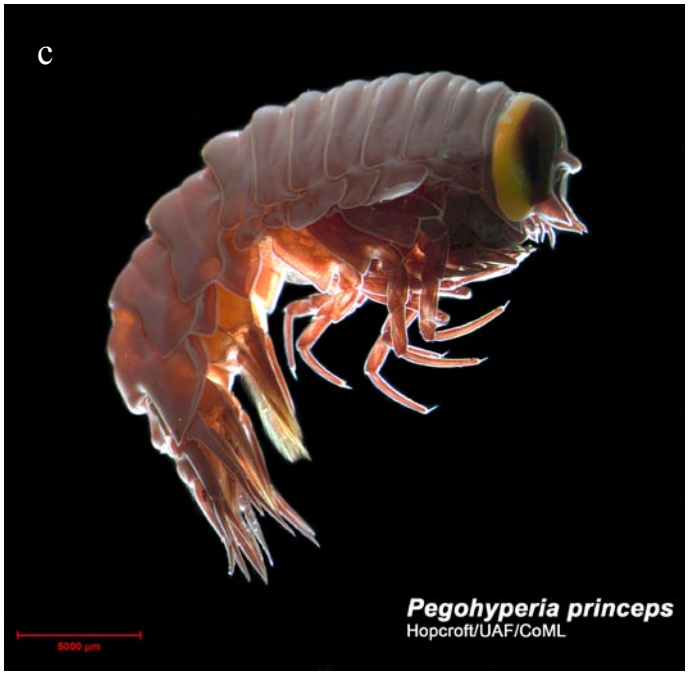
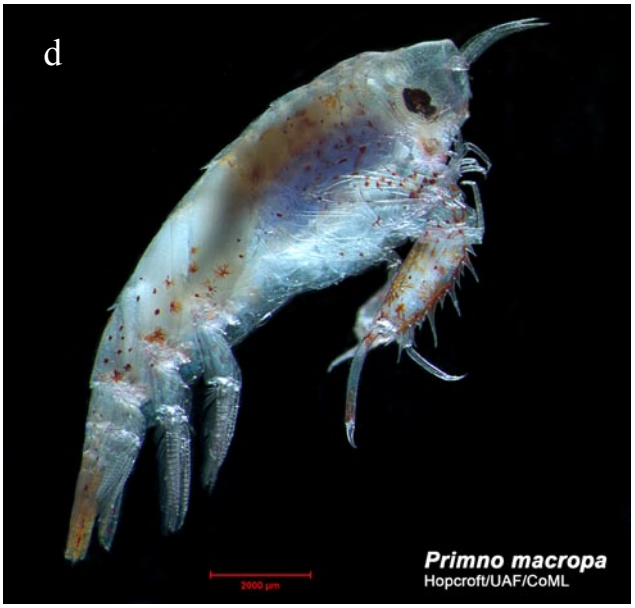

a
Hyperia macrocephala
Hopcroft/UAF/CoML
5000 µm
b
Hyperia macrocephala
Hopcroft/UAF/CoML
5000 µm
c
ANT XXI/2 St. 329
26 mm
478-0 m
d
3 mm
ANT XXI/2 St. 329 470 m
e
Hyperia cf. spinigera
dorsal > 30 mm
ANT XXI St. 322 200 m

Plate 3


a
Hyperoche capucinus
Hopcroft/UAF/CoML
2000 µm


b
Hyperoche capucinus
Hopcroft/UAF/CoML


c
Pegohyperia princeps
Hopcroft/UAF/CoML
5000 µm


d
Primno macropa
Hopcroft/UAF/CoML
2000 µm


e


f

Plate 4

CONTENTS

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