



Zootaxa 3877 (1): 001–117
www.mapress.com/zootaxa/

Copyright © 2014 Magnolia Press

Monograph

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.3877.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:2695A2A6-2805-4FC6-B6B6-A8C68354B944>

ZOOTAXA

3877

Revision of the taxonomy of *Polycirrus* Grube, 1850 (Annelida: Terebellida: Polycirridae)

CHRISTOPHER J. GLASBY^{1*} & PAT HUTCHINGS²

¹Museum and Art Gallery of the Northern Territory, PO Box 4646, Darwin, Northern Territory, Australia; chris.glasby@nt.gov.au

²The Australian Museum, Sydney, NSW, 2010, Australia; Pat.Hutchings@austmus.gov.au

*corresponding author



Magnolia Press
Auckland, New Zealand

CHRISTOPHER J. GLASBY & PAT HUTCHINGS

Revision of the taxonomy of *Polycirrus* Grube, 1850 (Annelida: Terebellida: Polycirridae)
(*Zootaxa* 3877)

117 pp.; 30 cm.

21 Oct. 2014

ISBN 978-1-77557-567-2 (paperback)

ISBN 978-1-77557-568-9 (Online edition)

FIRST PUBLISHED IN 2014 BY

Magnolia Press

P.O. Box 41-383

Auckland 1346

New Zealand

e-mail: zootaxa@mapress.com

<http://www.mapress.com/zootaxa/>

© 2014 Magnolia Press

All rights reserved.

No part of this publication may be reproduced, stored, transmitted or disseminated, in any form, or by any means, without prior written permission from the publisher, to whom all requests to reproduce copyright material should be directed in writing.

This authorization does not extend to any other kind of copying, by any means, in any form, and for any purpose other than private research use.

ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

Table of contents

Abstract	4
Introduction	4
Materials and methods	5
Morphological characters	8
Systematic account	13
Order Terebellida Dales, 1962	13
Family Polycirridae Nogueira, Fitzhugh & Hutchings, 2013	13
<i>Polycirrus</i> Grube, 1850	14
Key to the valid world species of <i>Polycirrus</i>	14
<i>Polycirrus abrolhensis</i> Garraffoni & Costa, 2003	17
<i>Polycirrus antarcticus</i> (Willey, 1902)	19
<i>Polycirrus aquila</i> Caullery, 1944	19
<i>Polycirrus arcticus</i> Sars, 1865	22
<i>Polycirrus arenivorus</i> Caullery, 1915	24
<i>Polycirrus aurantiacus</i> Grube, 1860	26
<i>Polycirrus bicrinalis</i> Hutchings & Glasby, 1986	26
<i>Polycirrus boholensis</i> Grube, 1878	29
<i>Polycirrus breviuncinatus</i> Carrerette & Nogueira, 2013	29
<i>Polycirrus broomensis</i> Hartmann-Schröder, 1979	31
<i>Polycirrus caliendrum</i> Claparède, 1870, species inquirenda	31
<i>Polycirrus californicus</i> Moore, 1909	33
<i>Polycirrus carolinensis</i> Day, 1973	33
<i>Polycirrus chilensis</i> Schmarda, 1861	36
<i>Polycirrus clavatus</i> (Kinberg, 1867)	36
<i>Polycirrus coccineus</i> Grube, 1870	40
<i>Polycirrus coibensis</i> n. sp.	41
<i>Polycirrus corallicola</i> Verrill, 1900, species inquirenda	42
<i>Polycirrus decipiens</i> (Gravier, 1905)	43
<i>Polycirrus denticulatus</i> de Saint-Joseph, 1894	45
<i>Polycirrus disjunctus</i> Hutchings & Glasby, 1986	48
<i>Polycirrus dodeka</i> Hutchings, 1990	48
<i>Polycirrus dubius</i> Day, 1973	51
<i>Polycirrus elisabethae</i> McIntosh, 1915	51
<i>Polycirrus eous</i> Annenkova, 1924	54
<i>Polycirrus eximius</i> Leidy, 1855, species inquirenda	55
<i>Polycirrus fedorovi</i> Jirkov & Leontovich in Jirkov, 2001	55
<i>Polycirrus glaucus</i> Hutchings, 1993	56
<i>Polycirrus haematodes</i> (Claparède, 1864), species inquirenda	58
<i>Polycirrus hamiltoni</i> Benham, 1921	58
<i>Polycirrus hesslei</i> Monro, 1930	60
<i>Polycirrus holthei</i> Londoño-Mesa & Carrera Parra, 2005	61
<i>Polycirrus jubatus</i> Bobretzky in Annenkova, 1924, species inquirenda	63
<i>Polycirrus kerguelensis</i> (McIntosh, 1885)	63
<i>Polycirrus latidens</i> Eliason, 1962	64
<i>Polycirrus leocine</i> (Quatrefages, 1865), species inquirenda	66
<i>Polycirrus luminosus</i> Verrill, 1900	66
<i>Polycirrus macintoshi</i> nomen novum	68
<i>Polycirrus medius</i> Hesse, 1917	69
<i>Polycirrus medusa</i> Grube, 1850	71
<i>Polycirrus mexicanus</i> (Rioja, 1947)	73
<i>Polycirrus multisetigerus</i> Hartmann-Schröder, 1962	75
<i>Polycirrus multus</i> Hutchings, 1990	75
<i>Polycirrus nephrosus</i> Hutchings & Glasby, 1986	78
<i>Polycirrus nervosus</i> Marenzeller, 1884	81
<i>Polycirrus nonatoi</i> Carrerette & Nogueira, 2013	81
<i>Polycirrus norvegicus</i> Wollebæk, 1912	81
<i>Polycirrus octosetus</i> (Hutchings, 1977)	83
<i>Polycirrus paivai</i> Garraffoni & Costa, 2003	85
<i>Polycirrus papillosus</i> Carrerette & Nogueira, 2013	86
<i>Polycirrus parvus</i> Hutchings & Glasby, 1986	86
<i>Polycirrus paucidens</i> Hutchings & Glasby, 1986	89
<i>Polycirrus pellucida</i> (Quatrefages, 1865), species inquirenda	89

<i>Polycirrus perplexus</i> Moore, 1923	89
<i>Polycirrus phosphoreus</i> Verrill, 1880	91
<i>Polycirrus plumosus</i> (Wollebæk, 1912)	93
<i>Polycirrus porcatus</i> Knox & Cameron, 1971	94
<i>Polycirrus pumilis</i> Hartmann-Schröder, 1990	94
<i>Polycirrus purpureus</i> Schmarda, 1861	97
<i>Polycirrus quadratus</i> Hutchings, 1990	99
<i>Polycirrus rosea</i> Hutchings & Murray, 1984	99
<i>Polycirrus swakopianus</i> Augener, 1918	102
<i>Polycirrus tentaculatus</i> (Hartmann-Schröder, 1960)	102
<i>Polycirrus tessellatus</i> Hutchings & Glasby, 1986	104
<i>Polycirrus twisti</i> Potts, 1928	107
<i>Polycirrus variabilis</i> Hutchings & Glasby, 1986	108
Summary	109
Acknowledgements	110
References	110
Appendix	115

Abstract

The large polychaete genus *Polycirrus* (Terebellida: Polycirridae) is revised based on a morphological study of the type material of most of the approximately 74 nominal species; 59 species, including a new species, *P. coibensis* n.sp., from the Pacific coast of Panama, are accepted as valid. All characters are reanalysed and discussed in the light of recent phylogenetic studies of terebellomorph taxa, and a standard set of characters is developed. Most of the 59 accepted species are redescribed and illustrations provided in order to facilitate future identifications of members of the genus. We designate a neotype for the type species of the genus, *Polycirrus medusa* Grube, 1850, and a lectotype for *P. elisabethae* McIntosh, 1915, in order to stabilize the concept and type locality of these taxa. A replacement name is proposed for *Polycirrus kerguelensis* McIntosh, 1885, which is a secondary junior homonym of *Ereutho kerguelensis* McIntosh, 1885, viz. *Polycirrus macintoshi* new name. Two species are newly synonymised: *Polycirrus insignis* Gravier, 1907 (senior synonym *P. antarcticus* (Willey, 1902)) and *Polycirrus habitans* Carrerette & Nogueira, 2013 (senior synonym, *P. clavatus* (Kinberg, 1867)). In addition, several previously synonymised species are reinstated. All available names in the genus are tabulated with type species and type localities and their taxonomic status is assessed. A key to all valid species is provided.

Key words: polychaete, terebellid, systematics, key, new species

Introduction

Polycirrus Grube, 1850 is the most speciose genus of the family Polycirridae (Annelida: Terebellida). Until recently, Polycirridae was treated as a subfamily (Polycirrinae) under Terebellidae, but elevation in rank was required following the results of a comprehensive phylogenetic analysis of the terebellomorphs (Nogueira *et al.* 2013). About 74 nominal species have been described worldwide (Glasby & Glasby 2006; Glasby *et al.* 2004; Fauchald & Bellan 2013), including four species recently described from Brazil by Carrerette & Nogueira (2013). The genus is characterised among polycirrids by having chaetigerous segments bearing both noto- and neuropodia, although both may be absent in some mid-body chaetigers in some species. *Polycirrus* species occur from the intertidal to depths exceeding 1500 m, often in soft sediments, but may also be found on reefs associated with algae, sessile invertebrates, dead shells, and coral. Unlike other terebellids, most *Polycirrus* species do not live in obvious tubes, although several species construct a temporary mucous sheath (Holthe 1986a; pers. observ.), incorporate sand grains into a rigid tube (Hutchings 1997a), or construct permanent thick tubes (J. Nogueira pers. obs.).

Monophyly of Polycirridae is supported by three morphology based phylogenetic studies of Terebellida (Glasby *et al.* 2004; Garraffoni & Lana 2008; Nogueira *et al.* 2013). The only molecular study of Terebellida (Colgan *et al.* 2001) also found in favour of monophyly. By contrast, the position of Polycirridae within Terebellida remains uncertain. The first two studies found Polycirridae to be nested within Thelepodidae, whereas the most recent morphological study showed that Polycirridae is the basal-most clade of Terebellida. The molecular study (Colgan *et al.* 2001) found the former subfamily Terebellinae to be paraphyletic with respect to Polycirrinae. The

type material but having a sufficiently detailed original description that could be standardised using the present character set were accepted as valid provided they could be clearly differentiated from other species in the genus. Standardisation will facilitate future descriptions of species of *Polycirrus* as we are aware that many more remain to be described, including some in Australia and in New Zealand (four new species). However, well-preserved, intact specimens are needed and often they are damaged during collection. This study was based mainly on an examination of type specimens in order to clarify the validity of existing species; we have been unable to fully characterise the morphological limits of each species, apart from synthesising available data on intraspecific variability in the number of notochaetigerous segments and the first appearance of neuropodia. Future taxonomic studies of *Polycirrus* would be rewarded by a more thorough consideration of morphological variability, as currently we do not have a good understanding of the range of variability that can be accepted for each species. This applies in particular to intraspecific variation of uncini shape within each species and a better understanding of the form and distribution of nephridial papillae in relation to sexual maturity.

Acknowledgements

This project has had a long gestation and some of the people thanked below have now retired or moved institutions. We would like to thank the following people for lending us material or helping us to locate material: Steve Keable (Australian Museum); David George and Alex Muir (The Natural History Museum, London); Daphne Fautin (California Academy of Sciences, San Francisco); Birger Neuhaus and G. Hartwich, Museum für Naturkunde, Zentralinstitut der Humboldt-Universität zu Berlin; Gesa Hartmann-Schröder (Zoologisches Institut und Zoologisches Museum der Universität Hamburg); Javier Sanchez (Museo Nacional de Ciencias Naturales de Madrid); Fred Pleijel, Jean-Claude Dauvin and Tarik Meziane (Museum d'Histoire Naturelle, Paris); Jadwiga Wiktor (Muzeum Przyrodnicze, Wrocław); C.C. Lu, Robin Wilson and Chris Rowley (Museum of Victoria, Melbourne); Geoff Read (National Institute for Water and Atmospheric Research, Wellington); Erich Kritscher (Naturhistorisches Museum, Wien); Roy Oleröd (Swedish Museum of Natural History, Stockholm); Kristian Fauchald and Linda Ward (National Museum of Natural History, Washington, D.C.); Ardis Baker Johnston and Lourdes Rojas, Yale Peabody Museum, New Haven; Seibrecht Van der Spoel, Zoological Museum of Amsterdam, Netherlands; Inger Winsnes, Zoologisk Museum, Oslo, Lars Wallin, Zoological Museum, Uppsala University, Dieter Fiege, Senckenberg Research Institute and Natural History Museum, Frankfurt; Torleif Bakken, Museum of Natural History and Archaeology, Trondheim. We should also like to thank Anna Murray for illustrating most of the species, Jane McRae for illustrating some of the Antarctic species, and Eunice Wong for making figure corrections in review. We thank Emma Gray and Fran Smith, librarians at the Australian Museum, and Andrea McKey, former librarian, Museum and Art Gallery Northern Territory, for locating early literature and Elena Kupriyanova for Russian translations. We also would like to thank the two reviewers, Drs Joao Nogueira and Brigitte Hilbig, for their constructive reviews.

References

- Annenkova, N. (1924) Neues über die Verbreitung einiger Arien der Polychaeten. *Akademia Nauk SSSR Compte Rendus, Doklady*, 1924, 125–128.
- Augener, H. (1914) Polychaeta II. Sedentaria. In: Michaelsen, W. & Hartmeyer, R. (Eds.), *Die Fauna Südwest-Australiens. Vol. 5*. Gustav Fischer, Jena, pp. 1–72.
- Augener, H. (1918) Polychaeta. *Beiträge zur Kenntnis der Meeresfauna West-Afrikas*, 2, 67–625.
- Augener, H. (1925) Über westindische und einige andere Polychaeten-typen von Grube (Oersted), Krøyer, Morch und Schmarida. *Publicationer fra Universitets Zoologiske Museum, København*, 39, 1–47.
- Augener, H. (1932) Antarktische und antiboreale Polychaeten nebst einer Hirudinee. Scientific results of the Norwegian Antarctic Expeditions 1927–1928 et sqq., instituted and financed by Consul Lars Christensen. No. 9. *Det Norske Videnskaps-Akademi I Oslo*, 1932, 1–86.
- Benham, W.B. (1921) Polychaeta. *Scientific Reports Australian Antarctic Expedition Zoology and Botany, Series C*, 6, 1–128.
- Capa, M. (2003) *Estudio de la criptofauna coralina y de los Anélidos poliquetos (Annelida: Polychaeta) de sustratos duros del Parque Nacional de Coiba, Panamá*. PhD Tesis. Universidad Autónoma de Madrid, Spain, 382 pp.
- Capa, M. & Hutchings, P. (2006) Terebellidae (Polychaeta) from the Pacific coast of Panama (Coiba National Park) including

- descriptions of four new species and synonymy of genus *Pareupolymnia* with *Lanicola*. *Zootaxa*, 1375, 1–29.
- Carrerette, O. & Nogueira, J.M.M. (2013) Four new species of *Polycirrus* Grube, 1850 (Polychaeta: Terebellidae) from Campos Basin, southeastern Brazil. *Zootaxa*, 3626 (1), 146–172.
<http://dx.doi.org/10.11646/zootaxa.3626.1.6>
- Caullery, M. (1915) Sur les Térébelliens de la sous-famille Polycirridae Malmgr. 1. Délimitation des genres. 11. *Polycirrus arenivorus* n.sp. *Société Zoologique de France, Bulletin*, 40, 239–248.
- Caullery, M. (1944) Polychètes sédentaire de l'Expédition du Siboga: Ariciidae, Spionidae, Chaetopteridae, Chloraemidae, Opheliidae, Oweniidae, Sabellariidae, Sternaspidae, Amphictenidae, Ampharetidae, Terebellidae. *Siboga-Expeditie, Leiden*, 24, 1–204.
- Claparède, E. (1864) Glanures zootomiques parmi les Annélides de Port-Vendres (Pyrénées Orientales). Sur les Térébellacés du genre *Aphlebina* de Quatrefages. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève*, 17 (2), 463–600.
- Claparède, E. (1870) Les Annélides Chétopodes du Golfe de Naples. Pt. 2. Annélides Sedentaires. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève*, 20, 51–223.
- Colgan, D.J., Hutchings, P.A. & Brown, S. (2001) Phylogenetic relationships within the Terebellomorpha. *Journal of Marine Biological Association UK*, 81 (5), 765–773.
<http://dx.doi.org/10.1017/S002531540100457X>
- Dales, R.P. (1955) Feeding and digestion in terebellid polychaetes. *Journal of the Marine Biological Association of the United Kingdom*, 34 (1), 55–79.
<http://dx.doi.org/10.1017/S0025315400008614>
- Dales, R.P. (1962) The polychaete stomodeum and the inter-relationships of the families of Polychaeta. *Proceedings of the Zoological Society of London*, 139 (3), 389–428.
<http://dx.doi.org/10.1111/j.1469-7998.1962.tb01837.x>
- Dallwitz, M.J. (1980) A general system for coding taxonomic descriptions. *Taxon*, 29, 41–46.
<http://dx.doi.org/10.2307/1219595>
- Dallwitz, M.J., Paine, T.A. & Zurcher, E.J. (1993) *User's guide to the DELTA System: a General System for Processing Taxonomic Descriptions. 4th Edition*. CSIRO Division of Entomology, Canberra, 136 pp.
- Day, J.H. (1973) New Polychaeta from Beaufort, with a key to all species recorded from North Carolina. In: *National Oceanographic and Atmospheric Administration Technical Report NMFS CIRC 375*. For sale by the Supt. of Docs., U.S. G.P.O., Seattle, pp. i–xiii + 1–140.
<http://dx.doi.org/10.5962/bhl.title.62852>
- Eliason, A. (1962) Die Polychaeten der Skagerak-Expedition 1933. *Zoologiska bidrag från Uppsala*, 33, 207–293.
- Fauchald, K. & Bellan, G. (2013) *Polycirrus* Grube, 1850. In: Read, G. & Fauchald, K. (Eds.), *2013 World Polychaeta database*. Available from: <http://www.marinespecies.org/polychaeta/aphia.php?p=taxdetails&id=129710> (accessed 26 July 2013)
- Garraffoni, A.R.S. & Costa, E.M. (2003) Two new species of *Polycirrus* (Polychaeta, Terebellidae) from Abrolhos Archipelago, Brazil. *Zootaxa*, 297, 1–7.
- Garraffoni, A.R.S. & Lana, P.C. (2008) Phylogenetic relationships within the Terebellidae (Polychaeta : Terebellida) based on morphological characters. *Invertebrate Systematics*, 22, 605–626.
<http://dx.doi.org/10.1071/IS07006>
- Glasby, C.J. & Glasby, T.M. (2006) Two types of uncini in *Polycirrus* (Polychaeta: Terebellidae: Polycirrinae) revealed using geometric morphometrics. *Journal of Natural History*, 40 (5–6), 237–253.
<http://dx.doi.org/10.1080/00222930600627137>
- Glasby, C.J., Hutchings, P.A. & Hall, K. (2004) Assessment of monophyly and taxon affinities within the polychaete clade Terebelliformia (Terebellida). *Journal of the Marine Biological Association of the United Kingdom*, 84 (5), 961–971.
<http://dx.doi.org/10.1017/S0025315404010252h>
- Gravier, C. (1905) Sur deux types nouveaux de Térébelliens, *Anisocirrus* nov. gen., *decepiens* nov. sp., *Aponobranthus* nov. gen., *perrieri* nov. sp. *Bulletin du Muséum d'Histoire Naturelle, Paris*, 11 (1), 437–444.
- Gravier, C. (1906) Contribution à l'étude des Annélides Polychètes de la mer Rouge. *Nouvelles Archives du Muséum National d'Histoire Naturelle, Paris*, 4th Série tome, 8, 123–236.
- Gravier, C. (1907) *Annélides polychètes Expedition Antarctique française*. Masson Cie, Paris, 75 pp.
- Gravier, C. (1911) Expédition Antarctique Française du "Porquoi-Pas", dirigée par le Dr J.-B. Charcot (1908–1910). Espèces nouvelles d'annélides polychètes. *Bulletin du Muséum National d'Histoire Naturelle, Paris*, 17, 310–316.
- Grube, A.E. (1850) Die Familien der Anneliden. *Archiv für Naturgeschichte Berlin*, 1691, 249–364.
- Grube, A.E. (1855) Beschreibungen neuer oder wenig bekannter Anneliden. *Archiv für Naturgeschichte, Berlin*, 21 (1), 81–136, pls. 3–5.
- Grube, A.E. (1860) Beschreibung neuer oder wenig bekannter Anneliden. Beitrag: Zahlreiche Gattungen. *Archiv für Naturgeschichte, Berlin*, 26, 71–118, pls. 1–3.
- Grube, A.E. (1870) Beschreibungen neuer oder weniger bekannter von Hr. Ehrenberg gesammelter Anneliden des rothen Meeres. *Monatsberich der Königlich Preussischen Akademie der Wissenschaften zu Berlin*, 1869, 484–521.
- Grube, A.E. (1878) Annulata Sempersiana. Beiträge zur Kenntniss der Anneliden fauna der Philippinen nach den von Herrn

- Prof. Semper mitgebrachten Sammlungen. *Memoires l'Académie Imperiale des Sciences de St. Petersburg*, Série 7, 25, iix + 1–300, pls. 1–15.
- Hartman, O. (1959) Catalogue of the Polychaetous annelids of the world. Part 2. Sedentaria. *Allan Hancock Foundation Occasional Paper*, 23, 355–628.
- Hartman, O. (1966) Polychaeta Myzostomidae and Sedentaria of Antarctica. *Antarctic Research Series*, 7, 1–158. <http://dx.doi.org/10.1029/AR007>
- Hartmann-Schröder, G. (1960) Zur Polychaeten-Fauna von Peru. *Beiträge zur neotropischen Fauna*, 2 (1), 1–44.
- Hartmann-Schröder, G. (1962) Die Polychaeten des Eulitorals. In: Hartmann-Schröder, G. & Hartmann, G. (Eds.), Zur Kenntnis des Eulitorals der chilenischen Pazifikküste und der argentinischen Küste Südpatagoniens unter besonderer Berücksichtigung der Polychaeten und Ostracoden. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 60, pp. 57–270.
- Hartmann-Schröder, G. (1979) Teil 2. Die Polychaeten der tropischen Nordwestküste Australiens (zwischen Derby im Norden und Port Hedland im Süden). In: Hartmann-Schröder, G. & Hartmann, G. (Eds.), Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung der Polychaeten und Ostracoden (Teil 2 und Teil 3). *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 76, pp. 75–218.
- Hartmann-Schröder, G. (1990) Teil 15. Die Polychaeten der subtropisch-tropischen und tropischen Ostküste Australiens zwischen Lake Macquarie (New South Wales) im Süden und Gladstone (Queensland) im Norden. In: Hartmann-Schröder, G. & Hartmann, G. (Eds.), Zur Kenntnis des Eulitorals der australischen Küsten unter besonderer Berücksichtigung des Polychaeten und Ostracoden. *Mitteilungen aus dem Hamburgischen Zoologischen Museum und Institut*, 87, pp. 41–87.
- Hessle, C. (1917) Zur Kenntnis der terebellomorphen Polychaeten. *Zoologiska Bidrag från Uppsala*, 5, 39–258.
- Holthe, T. (1986a) Evolution, systematics, and distribution of the Polychaeta Terebellomorpha, with a catalogue of the taxa and a bibliography. *Gunneria*, 55, 1–236.
- Holthe, T. (1986b) Polychaeta Terebellomorpha. In: *Marine Invertebrates of Scandinavia No. 7*. Norwegian University Press, Oslo, Norway, pp. 1–194.
- Hutchings, P.A. (1977) The Terebelliform polychaeta from Australia, chiefly from Moreton Bay, Queensland. *Records of the Australian Museum*, 31, 1–39.
- Hutchings, P.A. (1990) Terebellidae (Polychaeta) from the Hong Kong region. In: Moreton, B. (Ed.), *Proceedings of the Second International Workshop on the Marine Flora and Fauna of Hong Kong and Southern China, Hong Kong*, 1986. University of Hong Kong, pp. 377–412.
- Hutchings, P.A. (1993) New species of the family Terebellidae (Polychaeta) from Rottnest Island, Western Australia. In: Wells, F.E., Walker, D.I., Kirkman, H. & Lethbridge, R. (Eds.), *Proceedings of the 5th International Marine Biological Workshop. The Marine Flora and Fauna of Rottnest Island, Western Australia. Vol. 1*. Western Australian Museum, Perth, pp. 321–330.
- Hutchings, P.A. (1997a) The Terebellidae (Polychaeta) of northern Australia with a key to all the described species of the region. In: Hanley, J.R., Caswell, G. Megirian, D. & Larson, H.K. (Eds.), *Proceedings of the Sixth International Marine Biological Workshop. The Marine Flora and Fauna of Darwin Harbour, Northern Territory*. Beagle, pp. 133–161.
- Hutchings, P.A. (1997b) New species of the family Terebellidae (Polychaeta) from Abrohlos Island, Western Australia. In: Wells, F.E. (Ed.), *Proceedings of the 7th International Marine Biological Workshop. The Marine Flora and Fauna of Abrohlos Island, Western Australia. Vol. 2*. Western Australian Museum, Perth, pp. 459–502.
- Hutchings, P.A. & Avery, L. (2003) New records of the Terebellidae, Trichobranchidae, and Pectinariidae (Polychaeta: Terebellida) from the Dampier Archipelago, Western Australia. In: Wells, F.E. (Ed.), *Fauna and Flora of the Dampier Archipelago*. Records of the Western Australian Museum, pp. 425–451.
- Hutchings, P.A. & Glasby, C.J. (1986) The Polycirrinae (Polychaeta: Terebellidae) from Australia. *Records of the Australian Museum*, 38, 319–350. Available from: http://www.australianmuseum.net.au/Uploads/Journals/17666/185_complete.pdf (accessed 27 August 2014)
- Hutchings, P.A. & Glasby, C.J. (1991) A cladistic analysis of the Polycirrinae (Polychaeta: Terebellidae) and the genus *Polycirrus* (Terebellidae: Polycirrinae). *Bulletin of Marine Science*, 48 (2), 589. [abstract only]
- Hutchings, P.A. & Murray, A. (1984) Taxonomy of polychaetes from the Hawkesbury River and the southern estuaries of New South Wales, Australia. *Records of the Australian Museum Supplement*, 3, 1–119. <http://dx.doi.org/10.3853/j.0812-7387.3.1984.101>
- Jirkov, I.A. (2001) (Polychaeta of the Arctic Ocean) Polikhety severnogo Ledovitogo Okeana. Moskva, Yanus-K, 1–632. Available from: <http://hydro.bio.msu.ru/Personal/Jirkov.htm> (accessed 21 August 2014)
- Kinberg, J.G.H. (1867) Annulata nova. In: *Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar. Tjugondredje. Årgången Med Tretton Taflor*. Stockholm, no. 9, pp. 337–355.
- Knox, G.A. & Cameron, D.B. (1971) Port Phillip Survey Pt. 2. (4). Polychaeta. *Memoirs of the National Museum of Victoria*, 32, 21–41.
- Langerhans, P. (1881) Die Wurmfauna von Madeira. III. *Zeitschrift für wissenschaftliche Zoologie*, 34, 87–143.
- Langerhans, P. (1884) Die Wurmfauna von Madeira. Pt. IV. *Zeitschrift für wissenschaftliche Zoologie*, 40, 247–285.
- Leidy, J. (1855) Contributions towards a knowledge of the Marine Invertebrate Fauna, of the coasts of Rhode Island and New Jersey. *Journal of the Academy of Natural Sciences, Philadelphia*, Series 2, 3, 1–146.
- Levinsen, G.M.R. (1893) Annulata, Hydroidae, Anthozoa, Porifera. *Udbytte af Kanonbaaden "Hauche" togter i de Danske*

indenfor Skagen i Aarene, 321–464

- Londoño-Mesa, M. (2009) Terebellidae (Polychaeta: Terebellidae) from the Grand Caribbean region. *Zootaxa*, 2320, 1–93.
- Londoño-Mesa, M.H. & Carrera-Parra, L.F. (2005) Terebellidae (Polychaeta) from the Mexican Caribbean with description of four new species. *Zootaxa*, 1057, 1–44.
- Malmgren, A.J. (1866) Nordiska Hafs-Annulater. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar, Stockholm*, 22, 355–410.
- Marenzeller, E. von (1884) Südjapanische Anneliden. II. Ampharetea, Terebellacea, Sabellacea, Serpulacea. *Denkschrift der Königlichen Akademie der Wissenschaften Wien (mathematische und naturwissenschaftliche Klasse)*, 49 (2), 197–224.
- McIntosh, W.C. (1885) Report on the Annelida Polychaeta collected by H.M.S. 'Challenger' during the years 1873–76. *Report of the Scientific Results of the Exploring Voyage of H.M.S. Challenger*, 12, 1–554. [1873–76]
- McIntosh, W.C. (1915) Notes from the Gatty Marine Laboratory, St Andrews. *Annals and Magazine of Natural History Series*, 8, 15, 1–58.
- McIntosh, W.C. (1922) A monograph of the British marine annelids. In: *Polychaeta: Sabellidae to Serpulidae, part 2. Vol. 4*. The Ray Society, London, pp. 1–250, pls. 112–127, text figures 136–150.
- Milne-Edwards, H. (1844) Sur une série de Mémoires de M. A. de Quatrefages, relatifs à l'organisation des animaux sans vertèbres des côtes de la Manche'. *Annales des Sciences Naturelles*, 1, 5–24.
- Miner, R.W. (1950) *Field book of seashore life*. Putman, New York, 888 pp.
- Monro, C.C.A. (1930) Polychaete worms. *Discovery Reports*, 2, 1–222.
- Monro, C.C.A. (1936) Polychaete worms. II. *Discovery Reports*, 12, 59–198, figs. 1–33.
- Moore, J.P. (1909) Polychaetous annelids from Monterey Bay and San Diego, California. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 61, 235–295, pls. 7–9.
- Moore, J.P. (1923) The polychaetous annelids dredged by the U.S.S. "Albatross" off the coast of Southern California in 1904. IV. Spionidae to Sabellariidae. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 75, 179–259.
- Nogueira, J.M., Fitzhugh, K. & Hutchings, P. (2013) The continuing challenge of phylogenetic relationships in Terebelliformia (Annelida: Polychaeta). *Invertebrate Systematics*, 27, 186–238.
<http://dx.doi.org/10.1071/IS12062>
- Nogueira, J.M.M., Hutchings, P.A. & Fukuda, M.V. (2010) Morphology of terebelliform polychaetes (Annelida: Polychaeta: Terebelliformia), with a focus on Terebellidae. *Zootaxa*, 2460, 1–185.
- Orrhage, L. (2001) On the anatomy of the central nervous system and the morphological value of the anterior end appendages of Ampharetidae, Pectinariidae and Terebellidae (Polychaeta). *Acta Zoologica (Stockholm)*, 82, 57–71.
<http://dx.doi.org/10.1046/j.1463-6395.2001.00070.x>
- Orrhage, L. & Müller, M.C.M. (2005) Morphology of the nervous system of Polychaeta (Annelida). *Hydrobiologia*, 535, 79–111.
<http://dx.doi.org/10.1007/s10750-004-4375-4>
- Polloni, P.T., Rowe, G.T. & Teal, J.M. (1973) *Biremis blandi* (Polychaeta: Terebellidae), new genus, new species, caught by D.S.R.V. "Alvin" in the Tongue of the Ocean, new providence, Bahamas. *Marine Biology*, 20 (2), 170–175.
<http://dx.doi.org/10.1007/BF00351456>
- Potts, F.A. (1928) Report of the Annelids (Sedentary Polychaetes) Zoological Results of the Cambridge Expedition to the Suez Canal, 1924. *Transactions of the Zoological Society of London*, 22 (5), 693–705.
<http://dx.doi.org/10.1111/j.1096-3642.1928.tb00210.x>
- Quatrefages, A.de. (1865) *Histoire naturelle des Annelés marins et d'eau douce. Annélides et géphyriens. Vol. 1. & 2*. Librairie Encyclopédique de Roret, Paris, 588+794 pp.
- Rioja, E. (1947) Estudios anelidológicos. XVII. Contribucion al conocimiento de los anelidos poliquetos de Baja California y Mar de Cortes. *Anales del Instituto de Biología, Mexico*, 18, 197–224.
- Rouse, G.W. & Pleijel, F. (2001) *Polychaetes*. Oxford, Oxford University Press.
- Saint-Joseph, A. (1894) Annélides Polychètes des côtes de Dinard. Troisième Parties. *Annales des Sciences naturelles Zoologie et Paléontologie*, 17, 1–395.
- Sars, M. (1863) Geologiske og zoologiske Iagttabelse, anstillede paa en Reise i en Deelaf Trondhjems Stift i Sommerren 1862. *Nyt Magazin for Naturvidenskaberne, Christiania*, 12 (3), 253–340.
- Sars, M. (1865) Fortsatte Bidrag til Kundskaben om Norges Annelider. Forhandlinger fra Videnskabs-Selskabet i Christiania Aar, 1864, 5–20.
- Schmarda, L.K. (1861) *Neue Turbellarian, Rotatorien und Anneliden beobachtet und gesammelt auf einer Reise um die Erde 1853 bis 1857, (Part 2). Vol. 1*. Wilhelm Engelmann, Leipzig, 164 pp.
- Smith, R.I. (1988) Nephromixia or mixonephridia in terebellid polychaetes? A clarification. *Comparative Biochemistry and Physiology*, 91, 265–272. [C]
[http://dx.doi.org/10.1016/0742-8413\(88\)90195-8](http://dx.doi.org/10.1016/0742-8413(88)90195-8)
- Solis-Weiss, V., Bertrand, Y., Helléouet, M.-N. & Pleijel, F. (2004) Types of polychaetous annelids at the Museum National d'Histoire naturelle, Paris, *Zoosystema*, 26, 377–384. [S1–21]
- Verrill, A.E. (1873) Report upon the invertebrate animals of Vineyard Sound and the adjacent waters, with an account of the physical characters of the region. *Reports U.S. Fish Commission*, 1871–72, 295–778.
- Verrill, A.E. (1880) Notice of recent additions to the marine invertebrates of the north eastern coast of America, with

descriptions of new genera and species and critical remarks on others. Part 1. Annelida, Gephyrea, Nemertea, Nematoda, Polyzoa, Tunicata, Mollusca, Anthozoa, Echinodermata, Porifera. *Proceedings of the United States National Museum*, 2, 165–205.

Verrill, A.E. (1900) Additions to the Turbellaria, Nemertina and Annelida of the Bermudas, with revisions of some New England genera and species. *Transactions of the Connecticut Academy of Arts and Sciences*, 10, 595–671., pl. 70.

Webster, H.E. (1879) Annelida chaetopoda of the Virginian coast. *Transactions of the Albany Institute New York*, 9, 202–269.

Wollebæk, A. (1912) Nordeuropæiske Annulata Polychaeta 1. Ammocharidae, Amphictenidae, Ampharetidae, Terebellidae og Serpulidae. *Skrifter utgit av Videnskapselskapet i Kristiana 1911.1. Matematisk-naturvidenskabelig klasse*, 1911 (18), 1–144.

Willey, A. (1902) Polychaeta. *Report on the collections of natural history made in the Antarctic regions during the voyage of the Southern Cross*, XII, 262–283, pls. 41–46.

Zhadan, A.E. & Tzetlin, A.B. (2002) Comparative morphology of the feeding apparatus in the Terebellida (Annelida: Polychaeta). *Cahiers de Biologie Marine*, 43, 149–164.