



<http://dx.doi.org/10.11646/zootaxa.3919.3.5>

<http://zoobank.org/urn:lsid:zoobank.org:pub:743AF37E-54B4-4BCB-A3E8-93092F779A20>

## New species of *Chaetozone* and *Tharyx* (Polychaeta: Cirratulidae) from the Alaskan and Canadian Arctic and the Northeastern Pacific, including a description of the lectotype of *Chaetozone setosa* Malmgren from Spitsbergen in the Norwegian Arctic

JAMES A. BLAKE

Aquatic Research & Consulting, 24 Hitty Tom Road, Duxbury, MA 02332 USA. E-mail: [jablake9@gmail.com](mailto:jablake9@gmail.com)

### Table of contents

Abstract	501
Introduction	502
Material and methods	502
Taxonomic account	503
Remarks on the Lectotype and Paralectotypes of <i>Chaetozone setosa</i> Malmgren	503
Genus <i>Chaetozone</i> Malmgren, 1867	503
Description of the lectotype of <i>Chaetozone setosa</i> Malmgren, 1867	504
<i>Chaetozone setosa</i> Malmgren, 1867	504
Description of new species of <i>Chaetozone</i> and <i>Tharyx</i> from the North American Arctic and Northeastern Pacific	507
<i>Chaetozone pigmentata</i> new species	507
<i>Chaetozone bathyala</i> new species	512
<i>Chaetozone careyi</i> new species	516
<i>Chaetozone ruffi</i> new species	519
<i>Chaetozone malmgreni</i> new species	522
<i>Chaetozone pugettensis</i> new species	524
<i>Chaetozone hobsonae</i> new species	527
<i>Chaetozone camasetosa</i> new species	530
Genus <i>Tharyx</i> Webster and Benedict, 1887	532
<i>Tharyx alaskensis</i> new species	533
<i>Tharyx circacutus</i> new species	536
Discussion	539
Key to 21 species of <i>Chaetozone</i> from the Northeastern Pacific and North American Arctic and Subarctic	543
Acknowledgements	551
References	551

### Abstract

Eight new species of cirratulid polychaetes of the genus *Chaetozone* from the Alaskan (Beaufort Sea) and Canadian Arctic (Baffin Island, Baffin Bay, Labrador, Hudson Strait, and Hudson Bay) and the Northeastern Pacific are reported together with two new species of *Tharyx* from the Alaskan Beaufort Sea and the Strait of Juan de Fuca. The new species of *Chaetozone* and *Tharyx* are compared with related species; distinct species groups within these genera are discussed. A redescription of *C. setosa* Malmgren, 1867, the type species of the genus from Spitsbergen, based on a lectotype and associated paralectotypes designated by the late Dr. Mary E. Petersen is presented. A review of characters important in the taxonomy of the genera *Chaetozone* and *Tharyx* is presented. A key to species of *Chaetozone* from the Northeastern Pacific and North American Arctic is provided.

**Key words:** Annelida, Arctic, benthos, Puget Sound, British Columbia, Alaska, Canada, new species

## Acknowledgements

Parts of this paper were presented in a Poster Session at the 11<sup>th</sup> International Polychaete Conference, Sydney, Australia in August 2013. The present paper is based on the contribution of numerous specimens by colleagues. Specimens of *Chaetozone* from the North American Arctic and NE Pacific locations were contributed or loaned by Gene Ruff (Ruff Systematics, Puyallup, WA), Leslie Harris (Los Angeles County Museum of Natural History), J sica Goldsmit (University of Montreal), and Linda Ward (National Museum of Natural History, Washington, DC). Additional material collected by AECOM personnel Paula Winchell and Stacy Doner (AECOM, Woods Hole, MA) as part of a survey at Prince Rupert, BC yielded additional species. Dr. Harlan Dean (Museum of Comparative Zoology, Cambridge, MA) assisted with observations of some of the Smithsonian material and provided a photomicrograph of *Chaetozone pigmentata* n.sp.

I am especially indebted to the late Dr. Mary E. Petersen for inspiring me to continue to define and understand the bitentaculate cirratulids and the numerous species still awaiting discovery. Mary coined the term ‘‘Characteristic Species Disease’’ for species like *C. setosa* that for so long were considered cosmopolitan in distribution. This contribution is dedicated to the memory of Dr. Petersen and who would have appreciated all of the species that have been and will continue to be parsed out of the older *C. setosa* identifications. Although Dr. Petersen and I corresponded extensively over the years and exchanged notes and data on cirratulids routinely, I am grateful for Drs. Les Watling and Kevin Eckelbarger of the Darling Marine Center for allowing me access to some of her notes and prepared microscope slides during the cleanup of her laboratory.

This manuscript benefitted from careful reviews by Mr. Wagner Magalh es and Dr. Melih  inar. Finally, I thank Dr. Nancy Maciolek, for a thorough technical and editorial review of the manuscript, table, and illustrations. Any errors or omissions that remain are entirely my own.

## References

- Banse, K. & Hobson, K.D. (1968) Benthic polychaetes from Puget Sound, Washington. *Proceedings of the United States National Museum*, 125 (3667), 1–53.  
<http://dx.doi.org/10.5479/si.00963801.125-3667.1>
- Berkeley, E. & Berkeley, C. (1952) Annelida. Polychaeta Sedentaria. *Canadian Pacific Fauna*, 9b (Part 2), 1–139. [Fisheries Research Board of Canada]
- Blake, J.A. (1991) Revision of some genera and species of Cirratulidae from the Western North Atlantic. In: Petersen, M.E. & J.B. Kirkegaard (Eds.), *Proceedings of the Second International Polychaete Conference, Copenhagen. Ophelia*, Supplement No. 5, 17–30.
- Blake, J.A. (1994) Chapter 3. Introduction to the Polychaeta. In: Blake, J.A. & Hilbig, B. (Eds.), *Taxonomic Atlas of the Santa Maria Basin and Western Santa Barbara Channel. Vol. 4. Annelida Part 1. Oligochaeta and Polychaeta: Phyllocoridae (Phyllocoridae to Paralacydoniidae)*. Santa Barbara Museum of Natural History, pp. 39–113.
- Blake, J.A. (1996) Chapter 8. Family Cirratulidae Ryckholdt, 1851. In: Blake, J.A., Hilbig, B. & Scott, P.H. (Eds.), *Taxonomic Atlas of the Santa Maria Basin and Western Santa Barbara Channel. Vol.6. Annelida Part 3. Polychaeta: Orbiniidae to Cossuridae*. Santa Barbara Museum of Natural History, pp. 263–384.
- Blake, J.A. (2006) New species and records of deep-water Cirratulidae (Polychaeta) from off Northern California. *Scientia Marina*, 70 (Supplement 3), 45–57.
- Blake, J.A. & Dean, D. (1973) Polychaetous annelids collected by the R/V *Hero* from Baffin Island, Davis Strait and West Greenland in 1968. *Bulletin of the Southern California Academy of Sciences*, 72, 31–39.
- Busdosh, M. (1984) *Prudhoe Bay Waterflood Project Infaunal Monitoring Program*. Chapter 3 in a Report submitted by Affinis to the U.S. Army Corps of Engineers, Anchorage, Alaska, vi + 89 pp. + Appendices.
- Carey, A.G., Boudrias, M.A., Kern, J.C. & Ruff, R.E. (1984) *Selected Ecological Studies on Continental Shelf Benthos and Sea Ice Fauna in the Southeastern Beaufort Sea*. Final Report submitted to Outer Continental Shelf Environmental Assessment Program, Research Unit 6. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Ocean Service, Office of Oceanography and Marine Assessment, Ocean Assessments Division, Anchorage, Alaska, pp. 1–164.
- Chambers, S.J. (2000) A redescription of *Chaetozone setosa* Malmgren, 1867 including a definition of the genus, and a description of a new species of *Chaetozone* (Polychaeta: Cirratulidae) from the northeast Atlantic. *Bulletin of Marine Science*, 67, 587–596.
- Chambers, S.J. & Woodham, A. (2003) A new species of *Chaetozone* (Polychaeta: Cirratulidae) from deep water in the northeast Atlantic, with comments on the diversity of the genus in cold northern waters. *Hydrobiologia*, 496, 41–48.  
<http://dx.doi.org/10.1023/A:1026116008735>

- Chambers, S.J., Dominguea-Tejo, E.L., Mair, J.M., Mitchell, L.A. & Woodham, A. (2007) The distribution of three eyeless *Chaetozone* species (Cirratulidae: Polychaeta) in the north-east Atlantic. *Journal of the Marine Biological Association of the United Kingdom*, 87, 1111–1114.  
<http://dx.doi.org/10.1017/S0025315407057724>
- Chambers, S., Lanera, P. & Mikac, B. (2011) *Chaetozone carpenteri* McIntosh, 1911 from the Mediterranean Sea and records of other bi-tentaculate cirratulids. *Italian Journal of Zoology*, 78 (S1), 41–48.  
<http://dx.doi.org/10.1080/11250003.2011.580565>
- Dean, H.K. & Blake, J.A. (2007) *Chaetozone* and *Caulleriella* (Polychaeta: Cirratulidae) from the Pacific Coast of Costa Rica, with description of eight new species. *Zootaxa*, 1451, 41–68.
- Doner, S.A. & Blake, J.A. (2006) New species of Cirratulidae (Polychaeta) from the northeastern United States. *Scientia Marina*, 70 (Supplement 3), 65–73.
- Doner, S.A. & Blake, J.A. (2009) Two new species of *Aphelochaeta* (Polychaeta: Cirratulidae) from deep water off northern California. *Zoosymposia*, 1, 127–137.
- Eakin, R.M. & Hermans, C.O. (1988) Eyes. In: Westheide, W. & Hermans, C.O. (Eds.), *The Ultrastructure of Polychaeta. Microfauna Marina*, 4, 135–156.
- Gallardo, V.A. (1967) Polychaeta from the Bay of Nha Trang, South Viet Nam. *NAGA Report, Scientific Results of Marine Investigations of the South China Sea and the Gulf of Thailand 1959–1961*, 4 (3), 35–279.
- Goldsmith, J., Howland, K.L. & Archambault, P. (2014) Establishing a baseline for early detection of non-indigenous species in ports of the Canadian Arctic. *Aquatic Invasions*, 9 (3), 16 pp.  
<http://dx.doi.org/10.3391/ai.2014.9.3.08>
- Hartman, O. (1961) Polychaetous annelids from California. *Allan Hancock Pacific Expeditions*, 25, 1–226, 34 plates.
- Hartman, O. (1969) *Atlas of the Sedentariate Polychaetous Annelids from California*. Allan Hancock Foundation, University of Southern California, Los Angeles, 812 pp.
- Hilbig, B. & Blake, J.A. (2000) Long-term analysis of benthic infaunal communities in Massachusetts Bay, USA. *Bulletin of Marine Science*, 67, 147–164.
- Hutchings, P. & Murray, M. (1984) Taxonomy of polychaetes from the Hawkesbury River and the southern estuaries of New South Wales, Australia. *Records of the Australian Museum*, 36 (Supplement 3), 1–118.  
<http://dx.doi.org/10.3853/j.0812-7387.3.1984.101>
- Jirkov, I.A. (2001) *Polychaeta of the Arctic Ocean*. Yanus-K Publisher, Moscow, 632 pp. [in Russian]
- Kędra, M., Legeżyńska, J. & Walkusz, W. (2011) Shallow winter and summer macrofauna in a high Arctic fjord (79° N, Spitsbergen). *Marine Biodiversity*, 41, 425–439.  
<http://dx.doi.org/10.1007/s12526-010-0066-8>
- Magalhães, W.F. & Bailey-Brock, J.H. (2013) Bitentaculate Cirratulidae (Annelida: Polychaeta) from the northwestern Pacific Islands with a description of nine new species. *Zootaxa*, 3630 (1), 80–116.  
<http://dx.doi.org/10.11646/zootaxa.3630.1.3>
- Malmgren, A.J. (1867) Annulata Polychaeta Spetsbergiae, Groenlandiae, Islandiae et Scandinaviae hactenus cognita. *Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar*, 24, 127–235.
- McIntosh, W.C. (1911) Notes from the Gatty Marine Laboratory, St. Andrews.—No. 32. *Annals & Magazine of Natural History*, Series 8, 7, 45–173.
- McLean, B., Vilks, G., Aiken, A., Boudreau, H., Briggs, W., Bruneau, D., Doiron, A., Durham, D., Hardy, I., Mode, W., Powell, R., Retelle, M., Stravers, J., Taylor, A. & Allen, V. (1991) CSS *Hudson* Cruise 90-023. Marine geological investigations, in Hudson Strait, Ungava Bay, and Frobisher Bay. Cruise Report. *Geological Survey of Canada, Open File Report*, 2372, 152 pp.
- Moore, J.P. (1923) Polychaetous annelids dredged by the U.S.S. *Albatross* off the coast of Southern California in 1904, Spionidae to Sabellariidae. *Proceedings of the Philadelphia Academy of Natural Sciences*, 74, 179–250, pls. 17–18.
- Petersen, M.E. (1999) Reproduction and development in Cirratulidae (Annelida: Polychaeta). *Hydrobiologia*, 402, 107–128.  
<http://dx.doi.org/10.1023/A:1003736408195>
- Pettibone, M.H. (1954) Marine polychaete worms from Point Barrow, Alaska, with additional records from the North Atlantic and North Pacific. *Proceedings of the United States National Museum*, 103, 203–356.  
<http://dx.doi.org/10.5479/si.00963801.103-3324.203>
- Pettibone, M.H. (1956) Marine polychaete worms from Labrador. *Proceedings of the United States National Museum*, 105, 531–584.  
<http://dx.doi.org/10.5479/si.00963801.105-3361.531>
- Woodham, A. & Chambers, S. (1994) A new species of *Chaetozone* (Polychaeta, Cirratulidae) from Europe, with a redescription of *Caulleriella zetlandica* (McIntosh). *Mémoires de Muséum National d'histoire Naturelle*, 162, 307–316.