



Zootaxa 3804 (1): 001–063
www.mapress.com/zootaxa/

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Monograph

ISSN 1175-5326 (print edition)

ZOOTAXA

ISSN 1175-5334 (online edition)

<http://dx.doi.org/10.11646/zootaxa.3804.1.1>

<http://zoobank.org/urn:lsid:zoobank.org:pub:C1A766F2-D26E-4567-A977-61EF72CBD83A>

ZOOTAXA

3804

**An illustrated catalogue of the scalpellid barnacles (Crustacea: Cirripedia:
Scalpellidae) collected during the HMS “Challenger” expedition and
deposited in the Natural History Museum, London**

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Magnolia Press
Auckland, New Zealand

Accepted by D. Jones: 8 Apr. 2014; published: 29 May 2014

KATE SHALAEVA & GEOFF BOXSHALL

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(*Zootaxa* 3804)

63 pp.; 30 cm.

29 May 2014

ISBN 978-1-77557-395-1 (paperback)

ISBN 978-1-77557-396-8 (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/>

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ISSN 1175-5326 (Print edition)

ISSN 1175-5334 (Online edition)

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Abstract

For the first time since 1883, the “Challenger” collection of scalpellids stored in the Natural History Museum (London) and studied by Hoek, has been reviewed. It comprises 40 species now assigned to 17 genera and three subfamilies within the family Scalpellidae. A checklist of published records, type status, sources of supplementary descriptive information, updated distributions and known depth records is given. New photographs are included which may be useful for species identification and for any future systematic rearrangement of the scalpellids. *Trianguloscapellum weltnerianum* (Pilsbry, 1911) is recognised as a junior subjective synonym of *Trianguloscapellum album* (Hoek, 1883).

Key words: updated nomenclature, holotypes, taxonomy, photographs

Introduction

Stalked barnacles of the family Scalpellidae Pilsbry, 1907 are mostly deep-water species and because of sampling limitations, many species were described from just a single specimen. Nevertheless, the number of known species has gradually increased from six (Darwin, 1852) to 270 (Young, 2007). Hoek (1883) placed all 43 known species in a single genus, *Scapellum* Leach, 1817. In the 20th Century the classification of the scalpellid barnacles has undergone extensive changes, culminating in the series of reviews by Zevina (1978a, b; 1981a). Collectively these reviews were a landmark, synthesising all the changes proposed to that date. Zevina distributed over two hundred species of scalpelliform barnacles across eight subfamilies, five of which were later placed in Scalpellidae *sensu stricto* (Newman, 1996). According to the recent review of Buckeridge & Newman (2006), all stalked barnacles with more than five capitular primary plates (two terga, two scuta, and the carina) were placed in the order Scalpelliformes Buckeridge & Newman, 2006. Within this order, the family Scalpellidae comprises the stalked barnacles characterised by a peduncle that is usually scaly and a capitulum with five primary plates, two upper latera and a whorl of four to seven plates below.

Currently, 28 genera are included in the family Scalpellidae. Their classification is mainly based on Zevina's reviews in which she relied heavily on the state of calcification of the capitular plates and the relative position of the umbo. However, these characters are variable during ontogeny, which creates an additional instability for many taxa. Young (1999a) demonstrated the polyphyletic nature of many scalpellid taxa and highlighted numerous inconsistencies in the current classification.

Recently, there have been attempts to resolve some of the inconsistencies in scalpellid classification. Some new diagnostic characters, such as peduncular armament pattern (Newman & Ross, 1998; Young, 2001b), have been considered. Young (1998b, 2007) revised several genera within the Scalpellidae and provided alternative identification keys for the genus *Neoscapellum* Pilsbry, 1907 and, in part, for *Trianguloscapellum* Zevina, 1978. Despite this progress, a recent molecular sequence-based analysis of six scalpellid barnacles from the Antarctic (Linse *et al.*, 2013) rejected monophyly of the genera *Arcoscapellum* Hoek, 1907, *Litoscapellum* Newman & Ross, 1971 and *Scapellum*. It is apparent that some morphological characters, such as the mouth and thoracic appendages, have been under-used in systematic studies. In addition, data on the morphological changes during larval and post-larval development have rarely been available. The lack of access to samples of adequate size contributes to the present situation as it is impossible to assess levels of infraspecific variability. Given these constraints, it is hardly surprising that phylogenetic relationships within the Scalpellidae remain unresolved and that reliable taxonomic keys are not available for most genera.

An important step in the resolution of this situation is the re-examination of the types. A review of the rich collection of type material in the Natural History Museum, London will help to establish accurate species-level diagnoses and will also facilitate the recognition of generic characters for use in subsequent, morphology-based phylogenetic analysis.

Supplementary descriptions. Zevina & Tarasov (1964) and Nilsson-Cantell (1978).

Distribution. Arctic Sea; Atlantic, Northeast. Known depth range 28 to 1360 m.

Habitat. Found on Pycnogonida legs.

Remarks. When describing *Scalpellum nymphocola* Hoek (1883) noted that this species “comes very near to *Scalpellum angustum* G.O. Sars”. Withers (1922) pointed out that *S. angustum* G. O. Sars, 1879 was a homonym of *S. angustum* Dixon, 1850, a fossil. The name *S. sarsi* was proposed as a replacement name by Withers (1922), but *S. nymphocola* is the oldest available name for this taxon.

Hoek (1883) also mentioned material from HMS “Triton”, Stn 8: Atlantic, Northeast (South of Faroe Islands), 1170 m. The material cannot be located in the NHM collection.

Acknowledgements

The revision of the heritage barnacle collection was supported through the Vodafone World of Difference Programme. We would like to thank Miranda Lowe, NHM collection manager, for her invaluable support during the curatorial part of the work, and Harry Taylor of the Photographic Unit for his excellent photographs. We are grateful to Diana Jones for her improvements to the manuscript.

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