Catalogue of supraspecific taxa of Scaphopoda (Mollusca)

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ABSTRACT
This annotated catalogue of Recent and fossil supraspecific names of the molluscan class Scaphopoda contains 15 class- and ordinal-level names, 33 family-level names, 114 genus-group names, and 12 non-scaphopod names erroneously assigned to this class. For the suprageneric names, this catalogue provides their original rank, their current systematic status and, if applicable, their type genus. For the genus-group names, this catalogue provides the type species, mode of designation, systematic position, and the listing of the Recent species. Complete bibliographic references are provided for all supraspecific names. The current validity of each nominal taxon is assessed based upon the literature, with junior synonyms cross-referenced.

KEY WORDS
Mollusca, Scaphopoda, Dentaliidae, Dentalium, Gadiidae, Cadulus, catalogue.
INTRODUCTION

The increased and technically improved sampling of marine sediments and subsequent morphological studies during the 20th century resulted in a high number of new species of benthic invertebrates in general, including the molluscan class Scaphopoda. The increased number of known species and the assessment of additional anatomical character sets (e.g., radula, pedal musculature, mantle morphology) led to an improved classification of the group and to the creation of numerous supraspecific taxa from genus-group to ordinal levels. In their fundamental work on scaphopod systematics, Pilsbry & Sharp (1897-1898) recognized 23 genus-group taxa in two families. Since then, 20 valid suprageneric taxa and 36 valid genera have been described. Previous papers on scaphopod classification (Ludbrook in Moore 1960; Emerson 1962; Palmer 1974; Scarabino 1995; Lamprell & Healy 1998) and catalogues of genus-group taxa (Emerson 1952a; Palmer 1986) listed these names with a varying amount of accompanying information and, together with the work of Pilsbry & Sharp (1897-1898), form the starting point for the present catalogue. This publication attempts to compile all supraspecific scaphopod names appearing in the literature to date, including incorrect subsequent spellings, emendations, and those taxa originally described as scaphopods but no longer included in this class, together with information relevant for the taxonomy and systematics of the group. The validity of the Recent taxa is indicated based upon the scaphopod classification of Scarabino (1995), as modified by Steiner (1998, 1999) (Table 1). In addition, the Recent species are listed for each valid genus. The generic assignment for Recent species is, with few exceptions, taken from the literature. Several new generic combinations and new species synonymies will be discussed in detail in the catalogue of species-level taxa (Steiner & Kabat in prep.).

Class-level to ordinal names, family-group names, genus-group names, and the non-scaphopod genus names are each listed separately and in alphabetic order. The list of class- and order-level names consists of 15 entries. The second section contains family-group names of 29 Recent and 4 extinct taxa. The classification scheme used herein (Table 1) recognises 23 Recent suprageneric taxa.

Of the 114 entries in the genus-group name section, 60 refer to valid genera, 46 Recent and 14 extinct taxa. Of the remaining entries, 22 are junior synonyms, unjustified emendations or unavailable names, 20 are incorrect subsequent spellings, and 11 are names of genera which were erroneously assigned to the Scaphopoda. Of the
Recent genera here considered valid, 22 are in the order Dentaliida and 24 in the order Gadilida. Lamprell & Healy (1998) presented a classification of Recent Australian taxa, using the dentaliid genera Dentalium, Fissidentalium, Tesseracme and Laevidentalium all sensu lato by including species assigned by other authors to Antalis, Striodentalium, Eudentaliium or Calliodentalium. Similarly, the genera Rhomboxiphus and Entalinopsis (Gadilida, Entalimorpha) were not accepted by Lamprell & Healy (1998), thus reducing the number of genera recognized in their publication by at least seven. However, we herein follow the classification scheme of Scarabino (1995).

The number of Recent species placed in each genus varies from 1 to 67. Six genera (Dentalium, Antalis, Fissidentalium of the order Dentaliida; Cadulus, Gadila, Polyschides of the order Gadilida) have more than 20 species. Nine genera (Paradentalium, Compressidentalium, Graptacme, Episiphon, Fustiaria, Laevidentalium, Pulsellum, Discides, Siphonodentalium) have 10 to 20 species. Of the 31 genera having fewer than 10 species, 12 are monotypic. Species numbers for family-level taxa are not calculated here because of the divergent use and ranking of taxa by various authors which indicates the instability of several of these taxa. However, there are 276 currently recognized Recent species in the order Dentaliida and 241 Recent species in the order Gadilida.

The catalogue is planned to be updated in suitable intervals to account for new taxa and, inevitably, changes in systematics due to new phylogenetic data. The successive updated versions will be available on internet at the URL: http://www.mnhn.fr/publication/zoosyst/z01n3a4.pdf

CLASS-LEVEL AND ORDINAL NAMES

The name of the class Scaphopoda dates from Bronn (1862) who listed it as an order containing the single suborder Prosopocephala. These names are antedated by Cirrhobranchiata de Blainville, 1824, Lateribranchiata Clark, 1851 (both de Blainville and Clark had mistaken the captacula or the tubules of the midgut gland, respectively, for the “gills” of the scaphopod animal, hence the mistaken etymology of their names), and Solenoconques Lacaze-Duthiers, 1857. In the last decade of the 19th century, Simroth (1894) and Pilsbry & Sharp (1897-1898), through their consistent use of Scaphopoda (and their implied rejection of the other class-level names) set the precedent followed by essentially all subsequent researchers who have invariably used Scaphopoda as the name of this class.

The ordinal rank had not been used for this class until 1974 when almost simultaneously Starobogatov and Palmer proposed new classifications for the Scaphopoda. The ordinal names of Starobogatov (1974), Dentaliida and Gadilida, became more accepted, not only for their slight seniority, but also for being shorter than Palmer’s (1974) Dentalioidea and Siphonodentalioidea, which could also be confused with the names of superfamilies.

Names that are currently considered to be valid are in boldface, whereas synonyms, questionable and unavailable names are in regular type. Each entry is followed by the author and citation; rank in original description (if given); synonymy and nomenclatorial remarks where appropriate; and the current systematic position, if known.

Cirrhobranchiata de Blainville, 1824: 286; 1825: 495.

As an order of the sub-class “Paracephalophora hermaphroditæ”, for the genus Dentalium, listing “Dentalium elephantinum d’Argenville” and “Dentalium entalis d’Argenville” (both names from d’Argenville (1742) and, thus, not available under ICZN Article 3.2).

Dentalia Da Costa, 1776: 127, 152, 297.

For Dentale [= Antalis].


Synonyms: Antalinae Stoliczka, 1868, partim (Emerson 1962: 466).
Current use: Anulidentaliidae, Calliodentaliidae, Dentaliidae, Gadilinidae, Laevidentaliidae, Omiglyptidae; and for the extinct family Prodentaliidae.

Order for Dentaliidae and Laevidentaliidae.
Junior synonym of, and much less used than, Dentaliida sensu Starobogatov (1974).

Entalimorpha Steiner, 1992: 397.
Suborder of the order Gadilida, for Entalinidae.

Order for Siphonodentaliidae, Loxoporidae, Gadilidae.
Synonym: Siphonopoda G. O. Sars, 1878.
Current use: Entalimorpha-Entalinidae, Gadilimorpha-Pulsellidae, Wemersoniellidae, Siphonodentaliidae; incertae sedis Compressidens, Megaentalina.

Gadilimorpha Steiner, 1992: 398.
Suborder of Gadilida, for Pulsellidae (including Compressidens), Wemersoniellidae, Siphonodentaliidae, Gadilidae, incertae sedis Megaentalina (added by Scarabino 1995: 196).

Lateribranchiata Clark, 1851: 471, 476.
In the “Third Division of Gasteropoda, as Gasteropoda lateribranchiata, Hermaphrodite, sine congressu”; for the family Dentaliidae, genus Dentalium.

Nematobranchia Gravenhorst, 1843: 66.
In Gastropoda; as family for Dentalium. Emended to Nematobranchiata by Agassiz, Gould & Perry (1855: 610).

Nematobranchiata Agassiz, Gould & Perry, 1855: 610.
Emendation of Nematobranchia Gravenhorst, 1843.

Order for Plagioglyptidae.

Incorrect subsequent spelling of Prosocephala Bronn, 1862.

Prosopcephala Bronn, 1862: 522.
In the “2. Unterkreis, Malacozoa cephalophora (or cephalota) = Cephalomalacia” (including the classes Scaphopoda, Gastropoda, and Cephalopoda); as the only suborder of the class Scaphopoda.

Scaphopoda Bronn, 1862: 522.
As class of the “2. Unterkreis, Malacozoa cephalophora (or cephalota) = Cephalomalacia” (including the classes Scaphopoda, Gastropoda, and Cephalopoda).

Order for families Siphonodentaliidae Simroth, 1894 and Cadulidae Grant & Gale, 1931.
Junior synonym of, and less used than, Gadilida Starobogatov, 1974.

Emended to Solenoconchae by M. Sars (1861: 22), and to Solenoconchia by Monterosato (1872: 27) and G. O. Sars (1878: 100).

FAMILY-GROUP NAMES
Recent and fossil (marked [F]) family-group taxa are listed alphabetically, with valid names in bold. The author and reference for each are followed by the type genus and the junior synonyms. Where appropriate, the originally assigned rank, current usage and the included subtaxa are given for each taxon under Remark.

Antalinae Stoliczka, 1868: 437.
TYPE GENUS. — Antalis H. & A. Adams, 1854.
Currently included in Dentaliidae [Children, 1834] (fide Emerson 1962: 466).
REMARK. — Introduced as a subfamily of Dentaliidae, for Dentalium, Antale, Entalis [both Antalis], and Fustiaria [including Fustiaria and Laevidentalium].
Type genus. — *Anulidentalium* Chistikov, 1975.  
Remark. — Proposed as subfamily of Dentaliidae; current use: *Anulidentaliidae* (*fide* Steiner 1999: 151), including *Anulidentalium* and *Epirhabdoides*.

*Baltodentaliidae* Engeser & Riedel, 1992: 49.  

Type genus. — *Bathoxiphus* Pilsbry & Sharp, 1897.  
Remark. — Introduced as a subfamily of Entaliniidae, including *Bathoxiphus*, *Rhomboxiphus*, and *Solenoxiphus*.

Cadulidae Grant & Gale, 1931: 438.  
Type genus. — *Cadulus* Philippi, 1844.  
Incorrectly proposed replacement name for *Siphonodentaliidae* Tryon, 1884, because the authors listed Siphonodentaliidae as a junior synonym, although it actually antedates their establishment of Cadulidae.  
Remark. — Originally included *Cadulus*, *Siphonodentalium*, and *Entalina*; adopted by Palmer (1974: 121) for *Cadulus*, *Gadila*, *Dischides*, *Polychides*, *Striocadulus*, *Sagamicadulus*.

Type genus. — *Calliodentalium* Habe, 1964.  
Objective junior synonym: *Eboreidentidae* Chistikov, 1975 (n. syn., see under *Eboreidens* in the genus-group section).  
Remark. — Introduced as a subfamily of Dentaliidae, including *Calliodentalium*, *Laevidentalium*, and *Pseudantalis* (*sensu* Monterosato 1884); current use: *Calliodentaliidae* including only *Calliodentalium* (*fide* Scarabino 1995: 271).

“Dentaliacea” — Römer, 1836: 133.  
Incorrect subsequent spelling of *Dentaliidae* [Children, 1834] (*ICZN* Article 32.5.3).

“Dentaliidae” — Römer, 1836: 133.  
Incorrect subsequent spelling of *Dentaliidae* [Children, 1834] (*ICZN* Article 32.5.3).

“Dentaliidae” — d’Orbigny, 1843: 399.  
Incorrect subsequent spelling of *Dentaliidae* [Children, 1834] (*ICZN* Article 32.5.3).

Dentaliidae [Children, 1834]: 112.  
Type genus. — *Dentalium* Linnaeus, 1758.  
Junior synonyms: *Antalinae* Stoliczka, 1868 (*partim*); *Dentaliacea* Römer, 1836; *Dentaliidae* Clark, 1851, *Dentaliidae* d’Orbigny, 1843; *Dentaliina* MacGillivray, 1843; *Plagioglyptidae* Starobogatov, 1974 (*partim*); *Scaphopoda* G. O. Sars, 1878: 100.  
Remark. — The “Synopsis of the Contents of the British Museum” for 1834 did not indicate the authorship of the conchological section. However, J. G. Children was in charge of the mollusc collection at that time, and he was credited with the authorship of the conchological section of the “Synopsis of the Contents of the British Museum” for 1838 (Children 1838). Thus, it is most logical to infer, pursuant to *ICZN* Article 51, Recommendation 51D, that Children was the author of this section in the 1834 edition. The family originally included only *Dentalium* and was subsequently enlarged with the addition of *Entalis* and *Gadila* by Gray (1847: 158).

“Dentaliina” — MacGillivray, 1843: 72.  
Incorrect subsequent spelling of *Dentaliidae* [Children, 1834] (*ICZN* Article 32.5.3).

Type genus. — *Eboreidens* Chistikov, 1975, a junior synonym of *Calliodentalium* Habe, 1964 (n. syn., see under *Eboreidens* in the genus-group section).  
Objective junior synonym of *Calliodentaliidae* Chistikov, 1975 (*fide* Scarabino 1995: 243, the first reviser who tentatively synonymized these names).

Type genus. — *Entalina* Monterosato, 1872.  
Remark. — Originally included genera are *Bathoxiphus*, *Entalina*, *Entalinopsis*, *Heteroschismoides*, and *Megaentalina*. Scarabino (1995:...
196; 365) removed *Megaentalina* from this taxon. Also used as subfamily *Entalinae* (diagnosis *in* Chistikov 1982c: 1492) for *Entalina*.

**Episiphonidae, Episiphoninae** Chistikov, 1975: 20.

*Type genus.* — *Episiphon* Pilsbry & Sharp, 1897.

**Fustiariidae** Steiner, 1991: 18.

*Type genus.* — *Fustiaria* Stoliczka, 1868.

**Gadilinae** Stoliczka, 1868: 440.

*Type genus.* — *Gadila* Gray, 1847.

*Remark.* — Introduced as a subfamily of Dentaliidae, for *Siphonodentalium, Gadila, Helonyx [Cadulus], Pulselium; current use:* *Gadilidae sensu* Steiner (1992), equivalent to *Siphonodentailidae sensu* Scarabino (1995), including the subfamilies *Siphonodentailinae* (*Siphonodentalium, Sagamicadulus, Striocadulus, Polyschides, Discides*) and *Gadilinae* (*Cadulus, Bathycadulus, Gadila*).

**Gadilinidae** Chistikov, 1975: 20.

*Type genus.* — *Gadilina* Foresti, 1895.

*Remark.* — The family originally included *Gadilina* and *Bathoxiphus; current use: Gadilinidae:* *Gadilina, Episiphon* (*fide* Steiner 1999: 157); *Gadilininae: Gadilina*.

**Gadinae** Cossmann *in* Cossmann & Peyrot, 1917: 159.

*Type genus.* — *Gadila* Gray, 1847.

*Objective junior synonym of Gadilinae* Stoliczka, 1868.

*Remark.* — Originally proposed as a subfamily of Dentaliidae for *Gadila* and *Siphonodentalium*.

**Heteroschismoidinae** Chistikov, 1982a: 675.


*Remark.* — Introduced as a subfamily of Entalinae, for *Heteroschismoides, Costentalina, Entalinopsis, Pertusiconcha, Spadentalina*.

**Laevidentaliidae** Palmer, 1974: 120.

*Type genus.* — *Laevidentalium* Cossmann, 1888.

*Remark.* — Introduced as a family for *Laevidentalium, Calliodentalium, Pseudantalis, Rhabdus, Fustiaria, Plagioglypta, Omniglypta, Progadilina, Gadilina, Lobantale, Episiphon, Bathoxiphus; current use:* *Laevidentaliidae: Laevidentalium*.


*Type genus.* — *Lobantale* Cossmann, 1888.

*Remark.* — Introduced as a subfamily of Episiphonidae for *Lobantale*.

**Loxoporidae** Starobogatov, 1974: 10.

*Type genus.* — *Loxoporus* Jeffreys, 1868, a junior synonym of *Cadulus* Philippi, 1844.

**Omniglyptidae** Chistikov, 1975: 21.

*Type genus.* — *Omniglypta* Kuroda & Habe *in* Habe, 1953.

**Plagioglyptidae** Starobogatov, 1974: 8.

*Type genus.* — *Plagioglypta* Pilsbry *in* Pilsbry & Sharp, 1898. Currently included in *Dentaliidae* [Children, 1834].


*Type genus.* — *Prodentalium* Young, 1942.

**Pulsellidae** Boss, 1982: 1166 (*ex* Scarabino MS).

*Type genus.* — *Pulselium* Stoliczka, 1868.

*Remark.* — Originally included *Pulselium, Striopulselium, Annulipulselium, Compressidens, Emersoniella [= Wemersoniella]; current use: Pulsellidae: Pulselium, Annulipulselium, Striopulselium*.


*Type genus.* — *Quasidentalium* Shimansky, 1974.

*Quasidentalium* is no longer classified as a scaphopod. See section “Other taxa described as Scaphopoda”.

**Rhabdidae** Chistikov, 1975: 20.

*Type genus.* — *Rhabdus* Pilsbry & Sharp, 1897.

*Remark.* — Also used as superfamily taxon Rhabdoidea (Chistikov 1975: 20).

**Scaphopoda** G. O. Sars, 1878: 100.

*Type genus.* — *Antalis* “Aldrovandus” (unavailable under ICZN Article 3.2).
Junior synonym of Dentaliidae [Children, 1834].
REMARK. — As family-group name not based on a genus name and, thus, not available (ICZN Article 11.7.1).

Siphonodentaliinae Tryon, 1884: 114.
TYPE GENUS. — Siphonodentalium Sars, 1859.
REMARK. — Introduced as a subfamily of Dentaliidae, for Siphonodentalium, Cadulus, Dischides; current use Siphonodentaliidae sensu Scarabino (1995), equivalent to Gadilidae sensu Steiner (1992), including the subfamilies Siphonodentaliinae (Siphonodentalium, Sagamicadulus, Striocadulus, Polyschides, Dischides) and Gadilinae (Cadulus, Bathycadulus, Gadila).

Family-group name for Siphonodentalium, Siphonentalis [Pulsellum, Entalina] and Cadulus.
REMARK. — As family-group name not based on a genus name and, thus, not available (ICZN Article 11.7.1).

Family for Entalina, Pulsellum, Siphonodentalium, Dischides, Cadulus, Lexoporus [sic], Gadila.
REMARK. — Name not based on a genus name and, thus, not available (ICZN Article 11.7.1).


GENUS-GROUP NAMES

The alphabetic catalogue of genus-group names of Scaphopoda contains both Recent and fossil (marked [F]) taxa and is an update of the compilations by Emerson (1952a, 1962). For the sake of completeness, we have included incorrect subsequent spellings in this catalog. They are set off by quotation marks and followed by “—”. Although these are not available names for the purposes of homonymy (ICZN Article 33.3), their inclusion herein will readily allow future generations of researchers who find these names in the older literature to determine their status from this catalog. Recent genera included in the classifications of Scarabino (1995) and Steiner (1999) (Table 1) and valid fossil genera are in boldface, whereas synonyms, questionable and unavailable names are in regular type. Each entry name is followed by the author and citation; type species and mode of designation; synonymy and nomenclatorial remarks; and the systematic position of the genus. The number of valid Recent species and an alphabetical list of the species names terminate the entries for valid genera.

TYPE SPECIES. — Annulipulsellum euzkadii Scarabino, 1986, by original designation.
RECENT SPECIES. — 1 [euzkadii Scarabino, 1986].

Antale Sacco, 1896: 97.
TYPE SPECIES. — Dentale vulgare Da Costa, 1778, by subsequent designation (Sacco 1897: 98). Objective junior synonym of Dentale Da Costa, 1778 (fide Emerson 1951: 298), which was placed on the Official Index of Rejected and Invalid Names in Zoology by ICZN Opinion 361 (1955) and replaced by Antalis H. & A. Adams, 1854.
REMARK. — The name is taken from Antale of Aldrovandi (1606).

Antalis Herrmannsen, 1846: 63 [without species].
REMARK. — See also Emerson (1951), Pilsbry (1951), and Ludbrook & Emerson (1952).

Antalis H. & A. Adams, 1854: 457.
REMARK. — Placed on the *Official List of Generic Names in Zoology* by ICZN Opinion 361 (1955), after an application by Ludbrook & Emerson (1952), by which *Dentale* Da Costa, 1778, and *Antalis* Herrmannsen, 1846 are placed on the *Official Index of Rejected and Invalid Names in Zoology*. Other synonyms: *Entalis* Gray, 1847 non *Entalis* Sowerby, 1839 (Annelleda), *Entaliopsis* Newton & Harris, 1894, *Antale* Sacco, 1896 (all *fide* Emerson 1951). [Dentaliida, Dentaliidae].

**Recent species.** — 40 [*aculeata* (Sowerby, 1860); *agilis* (G. O. Sars, 1872); *antillaris* (d’Orbigny, 1853); *bartletti* Henderson, 1920; *berryl* (Smith & Gordon, 1948); *boucheti* Scarabino, 1995; *cerata* (Dall, 1881); *circumcincta* (Watson, 1879); *dentalis* (Linnaeus, 1758); *diarrhox* (Watson, 1879); *disparile* (d’Orbigny, 1853); *entalis* (Linnaeus, 1758); *gardineri* (Melvill, 1909); *glauccarena* (Dell, 1953); *guillei* Scarabino, 1995; *inaequicostata* (Dautzenberg, 1891); *inflexa* (Sowerby, 1903); *infracta* (Odhner, 1931); *intesi* Nicklés, 1979; *longitrosa* (Reeve, 1842); *marukawai* Ouka, 1933; *nana* (Hutton, 1873); *novemcostata* (Lamarck, 1818); *occidentalis* (Stimpson, 1851); *panorma* (Chenu, 1843); *perinvoluta* (Ludbrook, 1954); *phrasea* (Dall, 1895); *pilsbryi* Rehder, 1942; *porcata* (Gould, 1859); *pretiosa* (Sowerby, 1860); *rossati Capriott, 1966; *senegalensis* (Dautzenberg, 1891); *suteri* (Emerson, 1954); *tachris* (Dall, 1889); *tibana* (Nomura, 1940); *tubulata* Henderson, 1920; *uisata* (E. A. Smith, 1894); *valdiviae* Plate, 1908; *vulgaris* (Da Costa, 1778); *weinkauffi* (Dunker, 1877)].

**Anulidentalum** Chistikov, 1975: 19.

**Type species.** — *Anulidentalum bambusa* Chistikov, 1975, by original designation. [Dentaliida, Anulidentalidae].

**Recent species.** — 1 [*bambusa* Chistikov, 1975].


**Type species.** — *Baltodentalium weitschati* Engesser & Riedel, 1992 [Early Jurassic of Germany], by original designation. [? Dentaliida, Baltodentaliidae].


**Bathoxifus** Pilsbry & Sharp, 1897: 121.

**Type species.** — *Dentalium ensicuslus* Jeffreys, 1877, by subsequent designation (Boissevain 1906: 48).

Calliodentalium Habe, 1964: 30.
Type species. — Dentalium crocinum Dall, 1907, by original designation.
Objective junior synonym: Eboreidens Chistikov, 1975 (n. syn., see under Eboreidens). [Dentaliida, Dentaliidae].

Recent species. — 4 [balanoides (Plate, 1908); callipeplum (Dall, 1889); crocinum (Dall, 1907); semitracheatum (Boissevain, 1906)].

Type species. — Calstevenus arcturus Yancey, 1973 [Lower Permian of Nevada, USA], by original designation. [Gadilida, Siphonodentaliidae].

Chistikovia Scarabino, 1995: 327.
Type species. — Chistikovia kermadecae, by original designation. [Gadilida, Gadilimorpha, Wemersoniellidae].
Recent species. — 1 [kermadecae Scarabino, 1995].


[F] Clavulites Girty, 1904.
Not a scaphopod.
See section “Other taxa described as Scaphopoda”.

Coccodentalium Sacco, 1896: 98.
Type species. — Dentalium radula Gmelin, 1791 [fossil, Miocene of Italy], by original designation. Described as subgenus of Dentalium Linnaeus, 1758.
Remark. — The authorship of the type species has frequently been attributed to “Schröter, 1784” (e.g., Emerson 1952a: 298, 1962: 469; Ludbrook 1960: I 38; Palmer 1974: 119, 1986: 395).

However, Schröter 1784 is a non-binomial publication (fide Sherborn 1902: xlvii). Kohn (1992: 40, 41) noted that most of the names in Schröter were validated by Gmelin (1791). [Dentaliida, Dentaliidae].

Recent species. — 2 [cancellatum (Sowerby, 1860); gemmiparum (Melvill, 1909)].

Type species. — Dentalium hungerfordi Pilsbry & Sharp, 1897, by original designation.
Remark. — Described as subgenus of Dentalium Linnaeus, 1758. [Gadilida, Gadilimorpha, incertae sedis].
Recent species. — 10 [ceciliae Scarabino, 1995; clathratum (von Martens, 1881); compressatum (Plate, 1908); infimus Scarabino, 1995; kikuchii (Kuroda & Habe, 1952); ophiodon (Dall, 1881); platyceeras Sharp & Pillsbry in Pillsbry & Sharp, 1897; pressum Sharp & Pillsbry in Pillsbry & Sharp, 1897; stearnsii Pillsbry & Sharp, 1898; wellsiana Kraeuter, 1972].

Costentalina Chistikov, 1982b: 1309.
Type species. — Costentalina elegans Chistikov, 1982b, by original designation. [Gadilida, Entalimorpha, Entalinidae, Heteroschismoidinae].

Type species. — Cyrhoconella tenuistriata Patrulius, 1996 [Lower Bathonian-Callovian, Middle Jurassic of Romania], by monototypy. [incertae sedis].
Remark. — This taxon was tentatively classified in the Scaphopoda.

Dentalia Da Costa, 1778: 24.
Type species. — Dentalia vulgare Da Costa, 1778, by monotypy.
Unavailable senior synonym of Antalis H. & A. Adams, 1854 (ICZN 1955).

Dentalia Perry, 1811: caption to pl. 52.
Type species. — Dentalia viridis Perry, 1811 (a junior synonym of Dentalium elephantinum Linnaeus, 1758), by subsequent designation (Emerson 1952a: 298).
Objective junior synonym of Dentalium Linnaeus, 1758.

Incorrect subsequent spelling of Dentalium Linnaeus, 1758.

Dentalites Gmelin, 1793: 420.
[For “Helmintholithus dentalii”: marmoreus, radulae, interrupti, vitrei, sexanguli].
Remark. — The third volume of Gmelin’s edition of Linnaeus is unavailable for nomenclatorial purposes (ICZN 1954).

Dentalites Schlotheim, 1813: 91, 100, 110.
For fossil species Dentalites striatus, Dentalites obsoletus, and Dentalites minutus, all nom. nud. Junior homonym of Dentalites Gmelin, 1793 (unavailable name for fossil Scaphopoda). Under ICZN Article 20, Dentalites Schlotheim, 1813 is not a valid name of a taxon, and is only available for the purposes of homonymy.
Remark. — Schlotheim (1820) described six new fossil species in combination with the name Dentalites: D. laevis, D. cingulatus, D. torquatus, D. nodulosus, D. elephantinus, and D. radularis. The subsequent designation of Dentalium elephantinum Linnaeus, 1758, as type species by Emerson (1952a: 298) was incorrect because it was not originally included in Dentalites.


Recent species. — 12 [atlantideus Nicklès, 1955; belcheri Pilsbry & Sharp, 1898; dartevellei Nicklès, 1979; dichelus (Watson, 1879); hintoni Lamprell & Healy, 1998; leloeufti Nicklès, 1979; minutus (H. Adams, 1872); ovalis Boissevain, 1906; politus (S. Wood, 1842); prionotus (Watson, 1879); vepriensis (Melvill & Standen, 1896); yateensis Scarabino, 1995].

Eboreidens Chistikov, 1975: 18-19. Type species. — Now fixed (under ICZN Article 70.3) as Calliodentalium crocinum (Dall, 1907), misidentified as Dentalium lacteum Deshayes, 1825, in the original designation by Chistikov (1975). Objective junior synonym of Calliodentalium Habe, 1964.

Remark. — Scarabino (1995: 243), as the first reviser, pointed out that Chistikov’s (1975) description and illustration are “not corresponding to the characteristics of G. [Graptacme] lactea. Examination of the figure of the radula [...] indicates that Chistikov’s species is Calliodentalium crocinum”. The first author (GS) has examined Chistikov’s specimens labelled “Eboreidens” and confirms the conclusion reached by Scarabino (1995).


Remark. — Subsequently, Scarabino (1986a) described Wemersoniella for this taxon.


Recent species. — 7 [adenensis Ludbrook, 1954; dorsicosata Lamprell & Healy, 1998; inaequisculpta Ludbrook, 1954; mirifica (E. A. Smith, 1895); plata modes (Watson, 1879); subterlineata (Tomlin, 1931); tetragona (Brocchi, 1814)].


Remark. — Dentalium nivosum is a junior synonym of Entalinopsis intercostata (Boissevain, 1906) (fide Habe 1963: 272). Entalinopsis was described as subgenus of Entalina Monterosato, 1872. [Gadilida, Entalimorpha, Entalinidae, Heteroschismoidinae].

Recent species. — 4 [habutae (Kuroda & Kikuchi, 1933); intercostata (Boissevain, 1906); micra Scarabino, 1995; stellata Scarabino, 1995].

Entaliopsis Newton & Harris 1894: 66. Replacement name for Entalis Gray, 1847 non Entalis Sowerby, 1839 (Annelida). Type species. — “Dentalium e. Desh 1825” (= Dentalium entalis Linnaeus, 1758, fide
Emerson 1951: 18), by original designation (of *Entalis* Gray, 1847).


*Entalis* Gray, 1847: 158.

**Type species.** — “Dentalium e. Desh 1825” (= *Dentalium entalis* Linnaeus, 1758, *fide* Emerson 1951: 18), by original designation.

Junior homonym of *Entalis* Sowerby, 1839 (Annelida).

Replacement name: *Entaliopsis* Newton & Harris, 1894, an objective junior synonym of *Antalis* H. & A. Adams (*fide* Emerson 1952a: 298).

“*Entaliscri*”— Preston 1922: 54.

Incorrect subsequent spelling of *Entalis* Gray, 1847.

*Entalites* Walch, 1768: 276.


**Remark.** — Walch’s publication was rejected as an invalid non-binominal work (ICZN 1958).


**Type species.** — *Eodentalium grandis* Medina & Del Valle, 1985 [Upper Cretaceous of Antarctic], by original designation. [Dentaliida, Denticulatae].

*Epirhabdoides* Steiner, 1999: 153.

**Type species.** — *Epirhabdoides ivanovi* Steiner, 1999, by original designation. [Dentaliida, Anulodentaliidae].

**Recent species.** — 1 [ivanovi Steiner, 1999].

*Episiphon* Pilsbry & Sharp, 1897: 117.

**Type species.** — *Dentalium sowerbyi* Guilding, 1834, by subsequent designation (Suter 1913: 821).

**Remark.** — Described as a subgenus of *Dentalium* Linnaeus, 1758. [Dentaliida, Gadilinidae, Episiphoninae].

**Recent species.** — 19 [attenatum (Sowerby, 1860); bordensis Cotton & Ludbrook, 1938; candelatum Kira, 1959; didymum (Watson, 1879); filum (Sowerby, 1860); fistula (Sowerby, 1860); gazellae Plate, 1908; innumerabile Pilsbry & Sharp, 1897; jamiesoni Lamprell & Healy, 1998; kiaochowwanense Tchang & Tsi, 1950; longum Sharp & Pilsbry in Pilsbry & Sharp, 1897; minutissimum Ludbrook, 1954; pichoni Lamprell & Healy, 1998; sominium (Okutani, 1964); sowerbyi (Guilding, 1834); subrectum (Jeffreys, 1883); subtorquatum (Fischer, 1871); truncatum (Boissevain, 1906); virginiae Scarabino, 1995].

**Eudentalium** Cotton & Godfrey, 1933: 140.

**Type species.** — *Dentalium quadricostatum* Brazier, 1877, by original designation.

**Remark.** — Described as a subgenus of *Dentalium* Linnaeus, 1758. [Dentaliida, Dentaliidae].

**Recent species.** — 1 [quadricostatum (Brazier, 1877)].

**Fissidentalium** Fischer, 1885: 894.

**Type species.** — *Dentalium ergasticum* Fischer, 1883, by monotypy.

**Remark.** — *Dentalium ergasticum* is a junior synonym of *Dentalium capillus* Jeffreys, 1877. *Fissidentalium* was described as a subgenus of *Dentalium* Linnaeus, 1758. [Dentaliida, Dentaliidae].

**Recent species.** — 41 [actinophorum Shimek, 1997; aegem (Watson, 1879); amphialium (Watson, 1879); candidum (Jeffreys, 1877); capillus (Jeffreys, 1877); carduum (Dall, 1889); ceras (Watson, 1879); complexum (Dall, 1895); concinnum (von Martens, 1878); cornubovis (E. A. Smith, 1906); edenensis Lamprell & Healy, 1998; elizabethae Lamprell & Healy, 1998; erosum Shimek & Moreno, 1996; eualdes (Barnard, 1963); exasperatum (Sowerby, 1903); frankelinae Lamprell & Healy, 1998; horikoshii Okutani, 1982; kawamurai Kuroda & Habe in Habe, 1961; laterischismum Shikama & Habe, 1963; levi Scarabino, 1995; magnificum (E. A. Smith, 1896); malayanum (Boissevain, 1906); megathyris (Dall, 1890); metiviieri Scarabino, 1995; opacum (Sowerby, 1829); paucivestitum (Watson, 1879); peruvianum (Dall, 1908); platyleurem Tomlin, 1931; ponderi Lamprell & Healy, 1998; profundorum (E. A. Smith, 1894); salpinx Tomlin, 1931; semivestitum (Locard, 1897); serrulatum (E. A. Smith, 1906); shirleyae Lamprell & Healy, 1998; shoplandii (Jouseaume, 1894); temucostatum Qi & Ma, 1989; verconis Cotton & Ludbrook, 1938; vicdani Kosuge, 1981; waterhouae Lamprell & Healy, 1998; yokoyamai (Makiyama, 1931); zelandicum (Sowerby, 1860)].


*Fustiaria* Stoliczka, 1868: 439.

**TYPE SPECIES.** — *Dentalium circcinatum* Sowerby, 1823 [fossil, Eocene of France], by subsequent designation (Pilsby & Sharp 1897: 127).

Junior synonym: *Pseudantalis* Monterosato, 1884 (fide Emerson 1952b: 204; fide Steiner 1991: 2, but not according to Palmer 1974: 118; see also under *Pseudantalis*).

REMARK. — Cossmann (1888: 9) had previously designated *Dentalium politum* Linnaeus, 1758, as the type species; this designation was invalid as that nominal species was not an originally included species (ICZN Article 67.2). [Dentaliida, Fustiariidae].

**RECENT SPECIES.** — 11 *[caesura* (Colman, 1958); *crosnierei* Nicklès, 1979; *engischista* (Barnard, 1963); *gruveli* (Dautzenberg, 1910); *langfordi* (Habe, 1963); *liodon* (Pilsby & Sharp, 1897); *nipponica* Yokoyama, 1922; *politum* (Linnaeus, 1767); *rubescens* (Deshayes, 1825); *stenoschiza* Pilsby & Sharp, 1897; *vagina* Scarabino, 1995].

**Gadila** Gray, 1847: 159.

**TYPE SPECIES.** — *Dentalium gadus* Montagu, 1803, by original designation.


**RECENT SPECIES.** — 65 *[aberrans* (Whiteaves, 1887); *abruptoinflata* Boissevain, 1906; *acuminata* (Tate, 1887); *acus* (Dall, 1889); *aequalis* (Dall, 1881); *agassizii* (Dall, 1881); *amianta* (Dall, 1889); *anguidens* (Melvill & Standen, 1898); *anguistor* (Verco, 1911); *arctus* (Henderson, 1920); *austinclarkii* (Emerson, 1951); *boissevainae* Jauckel, 1932; *bordaensis* Cotton & Godfrey, 1940; *boucheti* Nicklès, 1979; *braziliensis* (Henderson, 1920); *brycei* Lamprell & Healy, 1998; *bushii* (Dall, 1889); *calessi* Lamprell & Healy, 1998; *clavata* (Gould, 1859); *cobbi* Lamprell & Healy, 1998; *desaintlaurentae* Scarabino, 1995; *divae* (Vélain, 1877); *dominguense* (d’Orbigny, 1853); *doumenci* Scarabino, 1995; *elena* Scarabino, 1995; *elephas* (Henderson, 1920); *fraseri* Nicklès, 1955; *gada* (Montagu, 1803); *greenlawi* Lamprell & Healy, 1998; *honoluluhensis* (Watson, 1879); *iota* Henderson, 1920; *ludbrookae* (Cotton & Godfrey, 1940); *marshadi* Nicklès, 1979; *mayori* Henderson, 1920; *minutalis* Scarabino, 1995; *monodonta* Scarabino, 1995; *nicklesi* (Dell, 1964); *olivi* (Scacchi, 1835); *opportuna* Kuroda & Habe *in Habe*, 1961; *pandions* (Verrill & Smith *in Verrill*, 1880); *perpusilla* (Sowerby in Broderip & Sowerby, 1832); *peruviana* Dall, 1908; *platystoma* Pilsby & Sharp, 1898; *providensis* (Henderson, 1920); *pseudolivae* (Boissevain, 1906); *rastridens* (Watson, 1879); *regularis* Henderson, 1920; *rushii* Pilsby & Sharp, 1898; *sagamiensis* Kuroda, Habe & Oyama, 1971; *sauridens* (Watson, 1879); *senegalis* (Locard, 1897); *singaporenensis* Sharp & Pilsby in Pilsby & Sharp, 1898; *spreata* (Tate & May, 1900); *strangulata* (Locard, 1897); *striata* Pilsby & Sharp, 1898; *subcolubridens* Ludbrook, 1954; *subtilis* Plate, 1908; *subula* Henderson, 1920; *tolmiei* (Dall, 1897); *verrillii* Henderson, 1920; *virginalis* Boissevain, 1906; *vulpidens* (Watson, 1879); *watsoni* (Dall, 1881); *whitneyae* Lamprell & Healy, 1998; *zonata* (Boissevain, 1906)].

“*Gadilia*” – Tate & May 1900: 102. Incorrect subsequent spelling of *Gadila* Gray, 1847.

**Gadilina** Foresti, 1895: 259.

**TYPE SPECIES.** — *Dentalium triquetrum* Brocchi, 1814 [fossil, Miocene of Italy], by monotypy.

REMARK. — Described as a subgenus of *Siphonodentalium* M. Sars, 1859. [Dentaliida, Gadilinidae, Gadilininae].

**RECENT SPECIES.** — 2 *[insolita* (E. A. Smith, 1894); *pachypleura* Boissevain, 1906].


**TYPE SPECIES.** — *Ditrupa dentalina* Guppy, 1873 [Miocene of Jamaica], by original designation.

REMARK. — Described as a “section” [= subgenus] of *Cadulus* Philippi, 1844. [Gadilida, Gadilimorpha, Gadilidae].

Junior homonym of *Gadus* Linnaeus, 1758 (Pisces).

**Type species.** — Not specified; three originally included species [*Gadus parisiensis*, *Gadus bilabiatu*, and *Gadus brevis*, all Deshayes, 1861 (fossil, Eocene of France)].

**Remark.** — The scaphopod species referred to *Gadus* Deshayes are now classified in *Gadila* Gray, 1847; therefore, *Gadus* Deshayes is herein considered to be a junior synonym of *Gadila* Gray.


Incorrect subsequent spelling for *Graptacme* Pilsbry & Sharp, 1897.

*Graptacme* Pilsbry & Sharp, 1897: 85.

**Type species.** — *Dentalium eboreum* Conrad, 1846 by subsequent designation (Woodring 1925: 201).

**Remark.** — Described as a subgenus of *Dentalium* Linnaeus, 1758. [Dentaliidae, Dentaliidae].

**Recent species.** — 17 [*acicula* (Gould, 1859); *acuticostata* Plate, 1908; *acutissima* (Watson, 1879); *africana* (Sowerby, 1903); *calama* (Dall, 1889); *eborea* (Conrad, 1846); *elpis* (Winckworth, 1927); *inversa* (Deshayes, 1825); *lactea* (Deshayes, 1825); *marchadi* Nicklès, 1979; *nielseni* Lamprell & Healy, 1998; *novaehollandiae* (Chenu, 1843); *perlonga* (Dall, 1881); *sectis* (Deshayes, 1825); *semistrata* (Turton, 1819); *splendida* (Sowerby in Broderip & Sowerby, 1832); *takakoe* Tsuchiya & Tachi, 1999].

*Helonyx* Stimpson, 1865: 63.

**Type species.** — *Dentalium clavatum* Gould, 1859, by original designation.

Junior synonym of *Gadila* Gray, 1847 (fide Pilsbry & Sharp 1898: 162).


Not a scaphopod.

See section “Other taxa described as Scaphopoda”.

*Heteroschisma* Simroth, 1895: 460.

**Type species.** — *Dentalium subterfissum* Jeffreys, 1877, by subsequent designation (of *Heteroschismoides*) (Ludbrook 1960: I 39).

Described as subgenus of *Dentalium*, for *D. incertum* Deshayes, 1825 [fossil], *D. subterfissum* Jeffreys, 1877, *D. leoninae* Meunier, 1878 [fossil].

Junior homonym of *Heteroschisma* Wachsmuth, 1893 (Echinodermata).


**Remark.** — Although Ludbrook (1960: I 39) attributed the subsequent designation of *D. subterfissum* as type species to Pilsbry & Sharp (1897) she was the first to do so. Pilsbry & Sharp (1897: 61-62) stated that “if adopted as a subgeneric or sectional name it may be restricted to species of the subterfissum type” and listed *D. subterfissum* and *D. calithrix* under the heading *Heteroschisma*. This statement by Pilsbry & Sharp does not constitute a valid type species designation according to ICZN Article 67.5.


**Type species.** — *Dentalium subterfissum* Jeffreys, 1877, by original designation.

Replacement name for *Heteroschisma* Simroth, 1895, non *Heteroschisma* Wachsmuth, 1893 (Echinodermata). [Gadilida, Entalimorpha, Entalinidae, Heteroschismoidinae].

**Recent species.** — 1 [*subterfissus* (Jeffreys, 1877)].


**Type species.** — *Dentalium incertum* Deshayes, 1825 [fossil, Eocene of France], by original designation.

**Remark.** — Described as a subgenus (“section”) of *Dentalium* Linnaeus, 1758. [Dentaliida, Laevidentalidae].

**Recent species.** — 19 [*ambiguum* (Chenu, 1843); *arnoldi* Lamprell & Healy, 1998; *banale* Boissevain, 1906; *bisinuatum* André, 1896; *coruscum* Pilsbry, 1905; *eburneum* (Linnaeus, 1767); *eniforme* (Chenu, 1842); *erectum* (Sowerby, 1860); *gofasi* Scarabino, 1995; *houbricki* Scarabino, 1995; *lebruni* (Mabille & Rochebrune in Rochebrune & Mabille, 1889); *leptosceles* (Watson, 1879); *lubricatum* (Sowerby, 1860); *marshae* Lamprell & Healy, 1998; *martyi* Lamprell & Healy, 1998; *translucidum* (Deshayes, 1825); *zeidleri* Lamprell & Healy, 1998].


Incorrect subsequent spelling of *Laevidentalium* Cossmann, 1888.
Lentigodentalium Habe, 1963: 258.
TYPE SPECIES. — Dentalium variabile Deshayes, 1825, by original designation.
REMARK. — Described as a subgenus of Dentalium Linnaeus, 1758.

“Lexoporus” — Simroth 1895: 466.
Incorrect subsequent spelling of Loxoporus Jeffreys, 1868.

TYPE SPECIES. — Dentalium duplex Defrance, 1819 [Eocene of Paris Basin], by original designation.
REMARK. — Described as a subgenus (“section”) of Dentalium Linnaeus, 1758. [Gadilinidae, Lobantalininae].

Lobinterna Cossmann, 1919 [1920?]: 140 [88].
TYPE SPECIES. — Dentalium subeburneum d’Orbigny, 1850, by original designation.
REMARK. — Described as a “section” (subgenus) of Pseudantalis Monterosato, 1884. This taxon was overlooked by subsequent scaphopod researchers (e.g., Emerson 1952a, 1962; Ludbrook 1960).

Incorrect subsequent spelling of Loevidentalium Cossmann, 1888.

Loxoporus Jeffreys, 1868: 664; 1869: 233.
TYPE SPECIES. — Now fixed (under ICZN Article 70.3) as Cadulus jeffreysi (Monterosato, 1875), misidentified as Siphonodentalium subfusiformis Sars, 1865 (fide Monterosato 1875: 20, confirmed by Jeffreys 1883: 664-665), in the monotypic designation.
Junior synonym of Cadulus Philippi, 1844 (fide Jeffreys 1883: 664).
REMARK. — Jeffreys listed this name as “Cadulus (or Loxoporus) subfusiformis” in his discussion of the Shetland Islands deep-water fauna. Jeffreys (1883: 664) stated that “I proposed in 1869 [sic, 1868] the generic name Loxoporus, if Philippi’s name Cadulus were not applicable to this group of shells”. Pilsbry & Sharp (1898: 162) incorrectly stated that Loxoporus was “apparently undescribed, and type unknown (said by Sacco to be C. subfusiformis Sars)”. Emerson (1962: 478) listed Loxoporus as a junior synonym of Gadila Gray, 1847, but erroneously dated this name to “Jeffreys, 1883” and stated that the type species was Dentalium olivi Scacchi, 1835, “by monotypy”. This is incorrect, since D. olivi was not an originally included species. The correct type species of Loxoporus is currently classified in Cadulus, not Gadila.

TYPE SPECIES. — Megaentalina teramachii Habe, 1963, by original designation.
REMARK. — Megaentalina teramachii is a junior synonym of Megaentalina mediocarinata (Boisseyvain, 1906) (fide Habe 1964: 42). [Gadilida, Gadilimorpha, incertae sedis].
RECENT SPECIES. — 2 [cornucopiae (Boisseyvain, 1906); mediocarinata (Boisseyvain, 1906)].

TYPE SPECIES. — Dentalium cerinum Pilsbry, 1905, by original designation. [Dentaliida, Omniglyptidae].
RECENT SPECIES. — 1 [cerina (Pilsbry, 1905)].

TYPE SPECIES. — Dentalium (Paleodentalium) kansasense Gentile, 1974 [Carboniferous, Pennsylvanian, of USA], by monotypy.
REMARK. — Described as a subgenus of Dentalium Linnaeus, 1758. [Dentaliida, Dentaliidae].

Paradentalium Cotton & Godfrey, 1933: 139.
REMARK. — Emerson (1952a: 299; 1962: 467) pointed out that Cotton & Godfrey (1933) had misidentified specimens of Dentalium bednalli Pilsbry & Sharp, 1897 as representing the type species, Dentalium intercalatum Gould, 1859. However, Verco (1904: 135) had synonymized
these two species. Subsequently, *Paradentalium* was used as a valid genus by Palmer (1974: 118) with the type species as *Dentalium bednalli*, and by Scarabino (1995: 194, 216) who listed the type species as *Dentalium intercalatum*. Most recently, Lamprell & Healy (1998: 59, 61) confirmed the synonymy of Verco (1904), thereby rejecting the conclusions of Emerson and Palmer.

**RECENT SPECIES.** — 14 [*americanum* (Chenu, 1843); *angustistriatum* Chistikov, 1979; *flindersi* Cotton & Ludbrook, 1938; *francisense* (Verco, 1911); *gradile* Chistikov, 1979; *hemileuron* (Verco, 1911); *hexagonum* (Gould, 1859); *intercalatum* (Gould, 1859); *katowense* (Brazier, 1877); *natalense* (Gould, 1859); *octopleuron* (Verco, 1911); *pistis* (Winckworth, 1940); *pseudo-seaxonum* (Deshayes, 1825); *rudi* Scarabino, 1995].

**Plagioglypta** Pilsbry in Pilsbry & Sharp, 1898: xxxi-xxxii.

**TYPE SPECIES.** — *Dentalium undulatum* Münster, 1844 [fossil, Triassic of Austria], by original designation. [Dentaliida, Dentaliidae].

**RECENT SPECIES.** — 1 [ *pertracheata* Plate, 1908].

**Platyschides** Henderson, 1920: 104.


**REMARK.** — Described as a subgenus of *Cadulus* Philippi, 1844.

[F] *Polylopia* Clark, 1925. Not a scaphopod.

See section “Other taxa described as Scaphopoda”.

**Polyschides** Pilsbry & Sharp, 1898: 146-147.

**TYPE SPECIES.** — *Cadulus tetrachistus* Watson, 1879, by original designation.

**REMARK.** — Described as a subgenus (“section”) of *Cadulus* Philippi, 1844. [Gadilida, Gadilimorpha, Gadilidae, Siphonodontinae].

**RECENT SPECIES.** — 23 [*andersonii* Lamprell & Healy, 1998; *arnaudi* Scarabino, 1995; *carolinensis* (Dall, 1889); *cupidatus* Nicklès, 1979; *elongatus* (Henderson, 1920); *fsusta* Kuroda, Habe & Oyama, 1971; *foweyensis* (Henderson, 1920); *gibbosus* Verco, 1911; *grandis* (Verrill, 1884); *katyomaruie* Okutani, 1975; *miamiensis* (Henderson, 1920); *nedallisoni* Emerson, 1978; *nidulius* (Henderson, 1920); *pelamidae* Chistikov, 1979; *poculum* (Dall, 1889); *portoricensis* (Henderson, 1920); *quadrifissatus* Pilsbry & Sharp, 1898; *sakuraii* (Kuroda & Habe in Habe, 1961); *spectabilis* (Verrill, 1885); *sutherlandi* Lamprell & Healy, 1998; *tetrachistus* (Watson 1879); *tetradon* Pilsbry & Sharp, 1898; *vietnamica* Chistikov, 1979].

[F] *Prodentalium* Young, 1942: 120.

**TYPE SPECIES.** — *Prodentalium raymondi* Young, 1942 [Carboniferous, Pennsylvanian of New Mexico, USA], by original designation.

**REMARK.** — Described as genus of the family Dentaliidae. [Dentaliida, Dentaliidae].


**TYPE SPECIES.** — *Pipadentalium protuberans* Yoo, 1988 [Lower Carboniferous of Australia], by original designation. [Dentaliida, Laevidentaliiidae].


**TYPE SPECIES.** — *Dentalium trigonale* Moore, 1866 [Lower Jurassic of England], by original designation.
REMARK. — Emerson (1978:118) erroneously listed *D. undulatum* as the type species; this is actually the type species of *Plagioglypta* Pilsbry & Sharp, 1897 (see Palmer 1987: 30-31). [Dentaliida, incertae sedis].

_Pseudantalis_ Monterosato, 1884: 32.

**Type species.** — *Dentalium rubescens* Deshayes, 1825, by subsequent designation (Sacco 1897: 111). [Dentaliidae, Fustiariidae].

Junior synonym of *Fustiaria* Stoliczka, 1868 (fide Emerson 1952b: 204; fide Steiner 1991: 2; but not according to Palmer 1974: 118). REMARK. — Emerson (1952b) analysed the complex history of misidentifications and subsequent type species designations for _Fustiaria_ and _Pseudantalis_. He came to the conclusion that the type species of _Pseudantalis_, _Dentalium rubescens_, was referable to the genus *Fustiaria*, a decision he favored for nomenclatorial stability. Consequently, he used _Pseudantalis_ as a subjective junior synonym of _Fustiaria_. Palmer (1974), however, kept the smooth-shelled _Pseudantalis_ species separate from _Fustiaria circinatum_, the annulated type species of _Fustiaria_. Emerson's argument is herein given preference, as in Steiner (1991), especially because Stoliczka (1868) neither mentioned annulated shells in the diagnosis nor described an annulated species in combination with _Fustiaria_.


_Pulchellum_ Stoliczka, 1868: 441.

**Type species.** — *Siphonodentalium lofotense* M. Sars, 1865, by subsequent designation (Cossmann 1888: 11). [Gadilida, Gadilimorpha, Pulsellidae].

**Recent species.** — 15 [*affine* (M. Sars, 1865); _beecheyi_ Lamprell & Healy, 1998; _bushi_ Henderson, 1920; _eboracense_ Watson, 1879); _falklandicum_ Dell, 1964; _fragile_ Scarabino, 1995; _hige_ Habe, 1963; _kurogenge_ Habe & Kosuge, 1964; _lofotense_ (M. Sars, 1865); _occidentale_ Henderson, 1920; _pusillum_ Watson, 1879); _salisburnum_ Marshall, 1980; _teres_ Jeffreys, 1883); _thomassini_ Lamprell & Healy, 1998; _verrilli_ (Henderson, 1920)].


Not a scaphopod. See section “Other taxa described as Scaphopoda”.

_Rhabdus_ Pilsbry & Sharp, 1897: 112.

**Type species.** — *Dentalium rectius* Carpenter, 1864, by original designation.

REMARC. — Described as a subgenus of _Dentalium_ Linnaeus, 1758. [Dentaliida, Rhabdidae].

**Recent species.** — 6 [*aequatorius* Pilsbry & Sharp, 1897; _dalli_ Pilsbry & Sharp, 1897; _perceptum_ Mabille & Rochebrune in Rochebrune & Mabille, 1889; _rectius_ (Carpenter, 1864); _toymaense_ (Kuroda & Kikuchi, 1933); _watsoni_ Pilsbry & Sharp, 1897].


Incorrect subsequent spelling of _Rhomboxifus_ Chistikov, 1983.


**Type species.** — *Dentalium (Bathoxiphus) tricarinatus* Boissevain, 1906, by original designation.

REMARC. — Described as a subgenus of _Bathoxiphus_ Pilsbry & Sharp, 1897. [Gadilida, Entalimorpha, Entalinidae, Bathoxiphinae].

**Recent species.** — 2 [*colmani* (Palmer, 1974); _tricarinatus_ (Boissevain, 1906)].


**Type species.** — _Rhytiodentalium kentuckyensis_ Pojeta & Runnegar, 1979 [Upper Middle Ordovician of USA], by original designation. [Gadilida, Laevidentaliidae].

_Sagamicadulus_ Sakurai & Shimazu, 1963: 250.

**Type species.** — _Striocadulus (Sagamicadulus) elegantissimus_ Sakurai & Shimazu, 1963, by monotypy.

REMARC. — Described as a subgenus of _Striocadulus_ Emerson, 1962. [Gadilida, Gadilimorpha, Gadilidae, Siphonodentaliidae].

**Recent species.** — 1 [*elegantissimus* Sakurai & Shimazu, 1963].
**Schizodentalium** Sowerby, 1894: 158.

**Type species.** — *Schizodentalium plurifissuratum* Sowerby, 1894, by monotypy. [Dentaliida, Dentaliidae].

**Recent species.** — 1 [plurifissuratum Sowerby, 1894].

[F] **Scissuradentalium** Yoo, 1988: 249.

**Type species.** — *Scissuradentalium runnegari* Yoo, 1988 [Lower Carboniferous of Australia], by original designation. [Dentaliida, Laevidentaliidae].

**Siphonentalis** G. O. Sars, 1878: 104.

**Type species.** — *Siphonodentalium lofotense* M. Sars, 1865, by subsequent designation (Emerson 1952a: 300).

Objective junior synonym of *Pulsellum* Stoliczka, 1868.

“**Siphodentalis**” — Paetel 1888: 565.

Incorrect subsequent spelling of *Siphonentalis* G. O. Sars, 1878.

*Siphodentalium* Monterosato, 1874: 258.

Unjustified emendation of *Siphonodentalium* M. Sars, 1859, and a name introduced in synonymy. It is available under ICZN Article 11.6.1 through its subsequent use by Jeffreys (1877: 155, and later) and Watson (1879 and later).

“**Siphonodentalis**” — Clessin 1896: 30.

Incorrect subsequent spelling of *Siphonentalis* G. O. Sars, 1878.

*Siphonodentalium* M. Sars, 1859: 52; 1860: 183.

**Type species.** — *Dentalium vitreum* M. Sars, 1851, by monotypy.

**Remark.** — *Dentalium vitreum* is a junior homonym of *Dentalium vitreum* Gmelin, 1791. Pilsbry & Sharp (1897: 136-137) recognized that *D. vitreum* was preoccupied and replaced it by its junior synonym *Dentalium lobatum* Sowerby, 1860. [Gadilida, Gadilimorpha, Gadilidae, Siphonodentaliinae].

**Recent species.** — 16 [*australasiae* Boissevain, 1906; *booceras* (Tomlin, 1926); *colubridens* (Watson, 1879); *dalli* (Pilsbry & Sharp, 1898); *hexaschistum* (Boissevain, 1906); *isaotakii* Habe, 1953; *jaeckeli* Scarabino, 1995; *japonicum* Habe, 1960; *laubieri* Bouchet & Warén, 1979; *lobatum* (Sowerby, 1860); *longilobatum* (Boissevain, 1906); *magnum* (Boissevain, 1906); *okudai* Habe, 1953; *promontorii* (Barnard, 1963); *summa* (Okutani, 1964); *tytthum* Watson, 1879].

**Siphonodontum** Locard, 1887: 359 (in footnote).

Unjustified emendation of *Siphonodentalium* Sars, 1859, and a name introduced in synonymy (not available under ICZN Article 11.6.1).

**Solenoxiphus** Chistikov, 1983: 187.

**Type species.** — *Solenoxiphus striatulus* Chistikov, 1983, by original designation. [Gadilida, Entalimorpha, Entalinidae, Bathoxiphinae].

**Recent species.** — 1 [*striatulus* Chistikov, 1983].

**Spadentalina** Habe, 1963: 264.

**Type species.** — *Dentalium tubiforme* Boissevain, 1906, by original designation.

**Remark.** — Described as a genus of the Dentaliidae. [Gadilida, Entalimorpha, Entalinidae, Heteroschismoidinae].

**Recent species.** — 2 [*ingrata* Scarabino, 1995; *tubiformis* (Boissevain, 1906)].

**Striocadulus** Emerson, 1962: 478-479.

**Type species.** — *Cadulus albicomatus* Dall, 1890, by original designation.

**Remark.** — Described as a subgenus of *Cadulus* Philippi, 1844. [Gadilida, Gadilimorpha, Gadilidae, Siphonodentaliinae].

**Recent species.** — 4 [*albicomatus* (Dall, 1890); *ludbrooki* Scarabino, 1995; *pulcherrimus* (Boissevain, 1906); *sagei* Scarabino, 1995].

**Striodentalium** Habe, 1964: 22.

**Type species.** — *Dentalium rhabdotum* Pilsbry, 1905, by original designation. [Dentaliida, Dentaliidae].

**Recent species.** — 8 [*chinensis* Qi & Ma, 1989; *concretum* (Colman, 1958); *hosoii* (Habe, 1963); *kanakorum* Scarabino, 1995; *polycostatum* Qi & Ma, 1989; *rhabdotum* (Pilsbry, 1905); *thesid* (Hedley, 1903); *tosraensis* (Habe, 1963)].

Type species. — *Siphonodentalium minimum* Plate, 1908, by original designation. [Gadilida, Gadilimorpha, Pulselidae].

Recent species. — 3 *galatheae* (Knudsen, 1964); *minimum* (Plate, 1908); *striatinum* (Henderson, 1920).


Type species. — *Suevidontus jaegeri* Engeser, Riedel & Bandel, 1993 [Middle Jurassic of Germany], by original designation. [Dentaliida, incertae sedis].


Type species. — *Cadulus* (*Sulcogadila*) *caprottii* Moroni & Ruggieri, 1981 [Lower Pleistocene of Italy], by original designation.

Remark. — Described as a subgenus of *Cadulus* Philippi, 1844. [Gadilida, Gadilimorpha, Gadiliidae, Gadilinae].

*Tesseracme* Pilsbry & Sharp, 1898: 249.

Type species. — *Dentalium quadrapicale* Sowerby, 1860, by subsequent designation (Woodring 1925: 199).

Remark. — Described as a subgenus (“section”) of *Dentalium* Linnaeus, 1758. [Dentaliida, Dentaliidae].

Recent species. — 7 *dispar* (Sowerby, 1860); *hancocki* Emerson, 1956; *philcolmani* Lamprell & Healy, 1998; *quadrapicalis* (Sowerby in Broderip & Sowerby, 1832); *tesseragona* (Sowerby in Broderip & Sowerby, 1832); *tesseraleura* (Boissevain, 1906).

[F] *Throopella* Greger, 1933.

Doubtful scaphopod.

See section “Other taxa described as Scaphopoda”.

*Tubidentalium* Locard, 1887: 149 (in footnote).

Unjustified emendation of *Siphonodentalium* Sars, 1859, and a name introduced in synonymy (not available under ICZN Article 11.6.1).

*Wemersoniella* Scarabino, 1986a: 3.

Type species. — *Wemersoniella turnerae* Scarabino, 1986, by original designation.

Remark. — *Emersoniella* Boss, 1982 (ex Scarabino MS), a nomen nudum, could not have been validated due to the valid name *Emersoniella* Tendeiro, 1965 (Insecta), so Scarabino proposed *Wemersoniella* instead. [Gadilida, Gadilimorpha, Wemersoniellidae].

Recent species. — 4 *duartei* Scarabino, 1986; *indica* Scarabino, 1995; *knudseni* Scarabino, 1995; *turnerae* Scarabino, 1986.

Other taxa described as Scaphopoda

The list of non-scaphopod supraspecific taxa erroneously described or assigned to this class contains names of 12 extinct taxa of Scaphopoda. The format is that of the preceding list of genus-group names and includes the taxon the name is currently referred to.


Type species. — *Clavulites howardensis* Girty, 1904, by original designation. Burlingham Shale, Howard, Kansas, USA (Carboniferous).

Remark. — Girty (1904: 733) noted that he had discussed this taxon with Pilsbry, who “suggested as a possibility that this genus may be related to *Hyolithes* or to the Conulariidae”. However, Girty (1904: 733) concluded that “it appears much more probable that *Clavulites* is allied to *Dentalium* than [to any other genus]”. Yochelson (1971: 128) argued that the welt on the concave side, the irregular growth lines, and several taphonomic factors associated with the specimens justified the removal of this taxon from the Scaphopoda, and he tentatively classified it into the polychaete family Serpulidae.


A junior synonym of *Pyrgopolon* Montfort, 1808 (Polychaeta) (fide Pilsbry & Sharp 1898: 245).

Remark. — Pilsbry & Sharp (1898: 245-246) explained that “*Entale Defrancé*” (Blainville, 1825: 628) and “*Entalis Defr.*” (Sowerby, 1839: 42) are errors for *Entalium* Defrancé.
Falcula Conrad, 1870: 77.
**Type species.** — *Dentalium “hamatus”* [sic] Conrad, 1869; by original designation. Cretaceous. New Jersey, USA.
**Remark.** — Conrad (1870: 77) noted that the characters of this taxon “renders it doubtful whether this shell belongs to the family Dentaliidae”. Pilsbry & Sharp (1898: 244-245) concluded that this taxon “was based upon internal casts of *Hamulus*” Morton, 1834 (Polychaeta).

Hamulus Morton, 1834: 73.
**Type species.** — *Hamulus onyx* Morton, 1834; by monotypy. Cretaceous. South Carolina and Alabama, USA. Polychaeta (fide Pilsbry & Sharp 1898: 244-245).
**Remark.** — Pilsbry & Sharp (1898: 245) stated that “we do not hesitate to refer it to the Serpulidae”.

**Type species.** — *Hensonella cylindrica* Elliott, 1960, by original designation. Lower Cretaceous of Iraq and Iran.
**Remark.** — The author noted that this common microfossil “has sometimes been taken for a dasy-clad alga”, but cross-sections revealed a two-layered shell that was inconsistent with botanical structures (Elliott 1960: 229). The author concluded that “it is tentatively suggested here that it may be a little scaphopod species in which changes during fossilization have removed the outer surface layer and accentuated the radial structure of the inner layer” (Elliott 1960: 229-230). Since the microstructure of the tube does not resemble that of other Scaphopoda, it is unlikely that this taxon even belongs to the Mollusca, and it is herein excluded from the Scaphopoda.

Pharetrium König, 1825: 4.

Polylopia Clark, 1925: 12.
**Type species.** — *Salterella billingsi* Safford, 1869; original designation. Ordovician. Transferred to the Scaphopoda by Fisher (1958: 144-146). Yochelson (1968) concluded that this taxon was not a scaphopod and was probably referable to the Hyolitha.

Pyrgopolo Montfort, 1808: 394-396.
**Type species.** — *Pyrgopolo mosae* Montfort, 1808; original designation. Cretaceous. Maastricht, Netherlands.
**Remark.** — Pilsbry & Sharp (1898: 246) stated that the “irregular growth and two-layered structure of these shells is conclusive evidence that they belong to the Serpulid worms”.

Quasidentaliiidae Chistikov, 1975: 19.
Family for *Quasidentalium*. Also used as superfam- 
family taxon Quasidentalioidea (Chistikov 1975: 19).
**Remark.** — *Quasidentalium* was excluded from the phylum Mollusca by Yochelson (1999).

Quasidentalium Shimansky, 1974: 135 [Russian], 126 [English].
**Type species.** — *Quasidentalium opiparium* Shimansky, 1974, by original designation. [Carboniferous of Russia].
**Remark.** — Palmer (1986: 397) suggested that this taxon “is probably neither a scaphopod nor even closely related to the class”. Yochelson (1999) rejected the alleged molluscan nature of the type species *Quasidentalium opiparum* and placed it in the taxon Coleolidae (phylum incertiae sedis).

Spirodentalium Walcott, 1890: 271.
**Type species.** — *Spirodentalium osceola* Walcott, 1890; by original designation. Upper Cambrian. Osceola Mills, Wisconsin, USA.
**Remark.** — Pilsbry & Sharp (1898: 247) concluded that the shell sculpture “is radically unlike any form known to belong to the Scaphopoda, and the genus can scarcely be admitted to be molluscan without more evidence than the wretchedly preserved specimen yet known affords. It may belong to the Vermes, or to the ancient group of so-called Pteropoda”. Yochelson (1987) concluded that this taxon was actually an
TABLE 1. — Classification of Recent Scaphopoda (from Scarabino 1995; modified by Steiner 1998, 1999). Family taxa are in phylogenetic order, and genera are in alphabetic order.

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open-coiled gastropod, which he referred to the Euomphaloidea.


**Type species.** — *Throopella typa* Greger, 1933, by monotypy [Upper Devonian of USA].

**Remark.** — Of doubtful scaphopod affinities; Emerson (1962: 480) and Starobogatov (1974: 8) excluded this taxon from the Scaphopoda.

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The publication dates for books and articles published in journals have been verified, to the greatest extent possible, by reference to bound journal volumes and to compilations of publication dates for certain journals. The publication dates for the following works are based upon these sources: Sacco’s *I mollusci dei terrani terziari del Piemonte* (Marshall 1991); *Journal de Conchylologie* (Fischer-Piette 1937; Winckworth 1936); *Manual of Conchology* (Vanatta 1927); *The Nautilus* (Coan & Harasewych 1993); *Proceedings (and Transactions) of the Zoological Society of London* (Duncan 1937); *Bulletin (and Proceedings) of the United States National Museum* (Anonymous 1947; 1971).


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