On the studies of Microdrile Oligochaeta and Aeolosomatidae (Annelida) in China: brief history and species checklist

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Abstract

The centurial history of studies on Microdrile Oligochaeta and Aeolosomatidae in China is roughly divided into three stages, with research interests changing from freshwater taxa to all groups including terrestrial and marine forms. A total of 246 species representing 9 families and 77 genera (5 species and 1 genus of these are Aeolosomatidae) have been hitherto recorded from the country, and a checklist of species and distributions is given in Appendix. Although many regions are not yet investigated, the fauna appears to have a general pattern, i.e., it is similar to the Holarctic one in the North, but close to the Oriental one in the South. In the future, studies should focus on faunistics first, and then extend to phylogenetic and biogeographical work on this basis.

Introduction

Studies of Microdrile Oligochaeta in China have a history of about one hundred years. However, there is no review dealing with all groups including Branchiobdellida and Aeolosomatidae (the latter now regarded as polychaetes, but included here for the traditional reason) having been published. To provide an overview of microdrile knowledge in the country, this paper presents an account of the research history and summarizes the faunal information. In addition, a prospect of future work is discussed at the end.

Brief history

According to the researchers and their studies, we roughly divide the history into three stages:

The first stage (1900-1950) is characterized by the pioneer work on freshwater oligochaetes by Chen and others. As the earliest record, Stephenson (1909) recorded one species, Branchiura sowerbyi, from Lake Taihu in east China. The most comprehensive work in this period was conducted by Chen (1940). Collecting mainly from waters along the lower Changjiang (Yangtze) River near Nanjing, he gave a detailed account of 40 species and discussed their faunal relations. Meanwhile, Yamaguchi (1940) described 17 species including 5 branchiobdellidans from northeast China.

The second stage (1950-1990) is characterized by Liang’s work on freshwater oligochaetes and Liu’s work on branchiobdellidans. Under the guidance of Prof. Chen, Liang (1958) published his first paper on oligochaetes. Since then, he reported 55 freshwater species mainly from the basins of the Changjiang, Heilongjiang (Amur) and Tarim Rivers (Liang, 1958, 1962, 1963, 1964, 1979, 1987), and described one glacial enchytraeid from Tibet (Liang et al., 1979). In addition, he estimated the production of one species (Liang, 1984). Other contributions to freshwater fauna include the records of 35 species from the Heilongjiang Basin near the border between China and the former
Soviet Union by Sokol’skaya (1958, 1961) and Timm (1991), the descriptions of two species from the Zhujiang (Pearl) River by Erseus & Qi (1985), and the records of over 20 species from various localities by Brinkhurst et al. (1990). With regard to branchiobdellids, Liu described 17 species, mainly from northeast China (Liu, 1964, 1984; Liu & Zhang, 1964; Liu & Zhang, 1983), and Liang (1963) reported two aberrant species, which are the only members of the order hosted in shrimps (most other branchiobdellids are from astacoidean crayfishes).

The third stage (1990-present) is characterized by studies on all groups of microdriles. While continuing work on taxonomy and ecology of freshwater worms (Liang & Xie, 1997; Wang & Liang, 1997; Liang et al., 1998; Wang & Liang, 2001; Cui & Wang, 2005), Chinese researchers started studying terrestrial Enchytraeidae under the supervision of Prof. Liang, and described 41 species mainly from the middle Changjiang Basin, as well as northeast and southwest China (Liang & Xie, 1992; Wang et al., 1999, 2000; Xie et al., 1999 a-b; Xie et al., 2000a-d; Xie & Rota, 2001; Xie et al., 2001; Chen & Xie, 2006; Chen et al., 2006). Additionally, Mezzanotte (in press) investigated freshwater fauna of Guizhou, Xu et al (1989) described one enchytraeid species from a plant (Angelica sinensis). In terms of marine oligochaetes, Erseus made great contributions. With collaborators, he described 74 species from Hong Kong (Erseus, 1984, 1990, 1992a-b, 1997; Zhou & Erseus, 2003), 16 species from Jiaozhou Bay (Erseus et al., 1990), 5 species from Taiwan Island (Erseus & Hsieh, 1997), and 25 species from Hainan Island (Wang & Erseus, 2001, 2003, 2004). Besides taxonomy, several papers on food com positions, productions, energetics, and community patterns were also published (Yan, 1998, 1999; Sundberg et al., 1992; Erseus & Diaz, 1997; Gong, 2002; Wang & Liang, 2002; Liu et al., 2006, Liu & Wang, 2007).

**Species and distributions**

A total of 246 species, representing 9 families and 77 genera of Microdrile Oligochaeta and Aeolosomatidae, have been hitherto recorded from China (Table 1), and the detailed distributions are listed in Appendix. With regard to the species abundance in different habitats, freshwater oligochaetes rank first, being 49.6% of the total, marine ones second, being 36.2%, and terrestrial ones least, being 17.9% (Table 1). In terms of the species abundance in different regions, Fig.1 shows that most inland taxa are known from eastern regions, especially central China, but few from western regions such as the Qinghai-Xizang (-Tibet) Plateau, and that marine species are largely known from the South China Sea, especially Hong Kong. Probably, the richness differences among habitat groups and among regions are largely biased by where efforts have been made, yet they may reflect biogeographical patterns to a considerable extent.

The fauna of freshwater oligochaetes in China as a whole is most similar to that of the Holarctic, but the South has more Oriental taxa (Wang & Liang, 1997). It should be noted that a recent study has shown that deep lakes in southwest China are rich in endemic species (Cui & Wang, 2005). Concerning terrestrial enchytraeids, the whole fauna appears closer to that of the Southern Hemisphere, but this is probably due to the fact that our studies were concentrated to the Changjiang Basin. When more localities have become investigated, it is likely that the terrestrial enchytraeid fauna will show the same pattern as freshwater oligochaetes. The marine fauna appears more unique,

**Table 1. Number of taxa of Microdrile Oligochaeta and Aeolosomatidae known from China**

<table>
<thead>
<tr>
<th>Higher taxa</th>
<th>Freshwater</th>
<th>Marine</th>
<th>Terrestrial</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>G</td>
<td>S</td>
<td>G</td>
<td>S</td>
</tr>
<tr>
<td>Oligochaeta</td>
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</tr>
<tr>
<td>Haplotaxida</td>
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<tr>
<td>Haplotaxida</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Tubificida</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enchytraeida</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Naididae</td>
<td>20</td>
<td>58</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Tubificida</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rhacodrilinae</td>
<td>4</td>
<td>7</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Tubificida</td>
<td>8</td>
<td>22</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>Telmatodrilinae</td>
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<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Phallodrilinae</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>23</td>
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<td>Limnodriloidinae</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>Lumbriculida</td>
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<tr>
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<td>2</td>
<td>2</td>
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<td>-</td>
</tr>
<tr>
<td>Branchiobdellida</td>
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<tr>
<td>Branchiobdellida</td>
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<td>17</td>
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<td>-</td>
</tr>
<tr>
<td>Xironodrilida</td>
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<td>1</td>
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<td>-</td>
</tr>
<tr>
<td>Cardinophilida</td>
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<td>1</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Polychaeta</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aeolosomatida</td>
<td>1</td>
<td>5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>122</td>
<td>26</td>
<td>89</td>
</tr>
</tbody>
</table>

Abbreviations: G—genera, S—Species. Although Naididae and Tubificidae are now regarded as a single family (Erseus & Gustavsson, 2002), the present paper keeps them separate for the traditional reason.
Figure 1. Species numbers of Microdrile Oligochaeta and Aeolosomatidae known from different regions of China. Zoogeographical divisions of the inland sensu Zhang (1999): R1, Northeast China; R2, North China; R3, Meng-Xin; R4, Qinghai-Xizang; R5, Southwest China; R6, Central China; R7, South China. Abbreviations of provinces: AH, Anhui; FJ, Fujian; GD, Guangdong; GS, Gansu; GX, Guangxi, GZ, Guizhou; HAN, Hainan; HB, Hubei; HEB, Hebei; HEN, Henan; HL, Heilongjiang; HH, Hunan; JI, Jilin; JS, Jiangsu; JL, Jilin; JX, Jiangxi; LN, Liaoning; NM, Neimenggu; NX, Ningxia; QH, Qinghai; SC, Sichuan; SD, Shandong; SN, Shaanxi; SX, Shanxi, TW, Taiwan; XJ, Xinjiang; XZ, Xizang; YN, Yunnan; ZJ, Zhejiang

with nearly half of the species known only from China. Yet, a more general conclusion would be premature, since the marine oligochaetes are still fragmentarily known in the world, also in China as well as its adjacent regions.

**Future work**

Although great progress has been made in faunistics, microdrile research in China still needs to be significantly upgraded. Collections have so far been largely concentrated to the Changjiang Basin and the coast of Hong Kong, and thus the effort should be extended to other areas, especially hotspots of diversity and endemism, e.g. the Qinghai-Xizang Plateau, southwest China, and the tropical seas. Considering that many regions are not yet investigated, we should still focus on taxonomy in the near future, and then conduct phylogenetic and biogeographical work step by step on this basis.

**Acknowledgements**

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**References**


Appendix: List of Microdrile Oligochaeta and Aeolosomatidae hitherto recorded from China

OLIGochaeta

HAPLOTAXIDAE

1. Haplotaxis Hoffmeister, 1843
   1) Haplotaxis gordioides (Hartmann, 1821)

ENCHYTAEIDAE

2. Achaeta Vejdovsky, 1877
   2) Achaeta brevivasa Graefe, 1980
   3) Achaeta indica Prabhoo, 1960
   4) Achaeta parva Nielsen et Christensen, 1961

3. Hemienchytraeus Cernosvitov, 1935
   5) Hemienchytraeus bifurcarus Nielsen et Christensen, 1959
   6) Hemienchytraeus plantetosus Xie, Wang et Liang, 1999
   7) Hemienchytraeus stephensoni (Cognetti, 1927)
   8) Hemienchytraeus loksan Dózsa-Farkas, 1989
   9) Hemienchytraeus brachytheicus Xie, Wang et Liang, 1999
   10) Hemienchytraeus theae Nielsen et Christensen, 1961

4. Fridericia Michaelsen, 1889
   11) Fridericia carmichaeli Stephenson, 1915
   12) Fridericia alba Moore, 1895
   13) Fridericia unisetosa Xie, Liang et Wang, 2000
   14) Fridericia multisegmentata Wang, Xie et Liang, 1999
   15) Fridericia paraunisetosa Xie, Liang et Wang, 2000
   16) Fridericia bulboides Nielsen et Christensen, 1959
   17) Fridericia callosa (Eisen, 1878)
   18) Fridericia bulbosa (Rosa, 1887)
       Distribution: Terrestrial. Sichuan.
   19) Fridericia nanningensis Xie, Liang et Wang, 2001
   20) Fridericia chongqingensis Xie, Liang et Wang, 1999
       Distribution: Terrestrial. Guangxi, Sichuan.
   21) Fridericia maculata Issel, 1905
       Distribution: Terrestrial. Sichuan.
   22) Fridericia paroniana Issel, 1904
       Distribution: Terrestrial. Sichuan.

5. Isosetosa Xu, Zhang et Jiang, 1989 [= Fridericia? see Schmelz, 2003]
   23) Isosetosa minxianensis Xu, Zhang et Jiang, 1989

6. Enchytraeus Henle, 1837
   24) Enchytraeus athecatus Wang, Xie et Liang, 1999
   25) Enchytraeus christenseni Dózsa-Farkas, 1992
   26) Enchytraeus chooyangensis Xie, Liang et Wang, 2000
   27) Enchytraeus kincaidi Eisen, 1904

7. Mesenchytraeus Eisen, 1878
   28) Mesenchytraeus sp. (spp. ?)

8. Sinenchytraeus Liang et Hsu, 1979
   29) Sinenchytraeus glacialis Liang et Hsu, 1979
       Distribution: Freshwater (glacier). Xizang.

9. Bryodrilus Ude, 1892
   30) Bryodrilus parvus Nurminen, 1970
   31) Bryodrilus macroheca Xie, Liang et Wang, 2000
   32) Bryodrilus longifistulatus Xie, Liang et Wang, 2000
   33) Bryodrilus fascistriatus Chen et Xie, 2006

10. Henlea Michaelsen, 1889
    34) Henlea perpusilla Friend, 1911
    35) Henlea ventricularis (d’Udekem, 1854)
        Distribution: Terrestrial. Xizang.

11. Lumbricillus Orsted, 1844
    36) Lumbricillus sp. (spp. ?)

12. Stephensoniella Černovitov, 1934
    37) Stephensoniella marina (Moore, 1902)
        Distribution: Brackish-water, marine. Hong Kong.
    38) Stephensoniella sterreri (Lasserre et Erseus, 1976)
        Distribution: Marine. Hong Kong, Jiaozhou Bay.

13. Grania Southern, 1913

* Localities given are provincial in general (see Fig.1).
14. Hemifridericia Nielsen et Christensen, 1959

42) Hemifridericia parva Nielsen et Christensen, 1959

15. Marionina Michaelsen, 1889

43) Marionina sacculata Xie et Rota, 2001

47) Marionina levithecus Erséus, 1990
   Distribution: Marine. Hong Kong, Jiaozhou Bay.

49) Marionina nevisensis Righi et Kanner, 1979
   Distribution: Marine. Hong Kong, Jiaozhou Bay.

50) Marionina coetosaes Erséus, 1990
   Distribution: Marine. Hong Kong, Jiaozhou Bay.

51) Marionina vancouverensis Coates, 1980
   Distribution: Brackish-water, marine. Hong Kong.

16. Cernosvitovia Nielsen et Christensen, 1959

52) Cernosvitovia atrata (Bretschger, 1903)

17. Oconnorella Rota, 1995

53) Oconnorella changbaishanensis (Xie, Liang et Wang, 2000)

54) Oconnorella cheni Chen, Xie et He, 2006

55) Oconnorella globula Chen, Xie et He, 2006

NAIDIAE

18. Chaetogaster von Baer, 1827

56) Chaetogaster diastrophus (Gruithuizen, 1828)

57) Chaetogaster langi Bretschger, 1896

58) Chaetogaster diaphanus (Gruithuizen, 1828)

19. Aulophorus Schmarda, 1861

61) Aulophorus tonkinensis (Vejedovsky, 1894)

62) Aulophorus pectinatus Stephenson, 1931
   Distribution: Freshwater. Guizhou, Jiangsu.

63) Aulophorus furcatus (Müller, 1773)

64) Aulophorus varians Liang, 1958

65) Aulophorus flabelliger Stephenson, 1913

66) Aulophorus heptabranchionus Liang, 1958 (=Aulophorus flabelliger? see Brinkhurst & Jamieson, 1971)
   Distribution: Freshwater. Hubei, Jiangsu.

20. Dero Oken, 1815

67) Dero obtusa d'Udekem, 1855

68) Dero nivea Aiyer, 1930

69) Dero dorsalis Ferronière, 1899

70) Dero digitata (Müller, 1773)

71) Dero trifida Loden, 1979

21. Branchiodrilus Michaelsen, 1900

72) Branchiodrilus semperi (Bourne, 1890)

73) Branchiodrilus hortensis (Stephenson, 1910)

22. Uncinais Levinsen, 1884

74) Uncinais uncinata (Orsted, 1842)
   Distribution: Freshwater. Heilongjiang, Qinghai, Xinjiang.
23. *Paranais* Czerniaevsky, 1880
   75) *Paranais frici* Hrabě, 1941
       Distribution: Freshwater, brackish-water, marine.
       Guangdong, Guizhou, Hebei, Henan, Hong Kong, Hunan, Jiangsu, Jiangxi, Zhejiang.
   76) *Paranais litoralis* (Müller, 1784)
       Distribution: Freshwater, brackish-water, marine. Hong Kong, Qinghai.
   77) *Paranais plema* Ernéus, 1992
       Distribution: Brackish-water. Hong Kong.

24. *Amphichaeta* Tauber, 1879
   78) *Amphichaeta asiatica* Liang, 1958

25. *Haemonais* Bretscher, 1900
   79) *Haemonais waldvogeli* Bretscher, 1900
   80) *Stephensoniana trivandrana* (Aiyer, 1926)

26. *Stephensoniana* Cernosvitov, 1938
   81) *Bratislavia Košel*, 1976
       Distribution: Freshwater. Xinjiang.
   82) *Bratislavia unidentata* Harman, 1973

27. *Pristina* Ehrenberg, 1828
   83) *Pristina sima* (Marcus, 1944)
   84) *Pristina changtuensis* (Liang, 1964)
   85) *Pristina osborni* (Walton, 1906)
   86) *Pristina acuminata* Liang, 1958
   87) *Pristina jenkinae* (Stephenson, 1931)
   88) *Pristina aequidens* (Liang et Xie, 1997)
   89) *Pristina breviseta* Bourne, 1891
   90) *Pristina biserrata* Chen, 1940
       Distribution: Freshwater. Hubei, Jiangsu, Sichuan.
   91) *Pristina longiseta* Ehrenberg, 1828
   92) *Pristina aequiseta* Bourne, 1891
   93) *Pristina proboscidea* Beddard, 1896
   94) *Pristina synclites* Stephens, 1925

29. *Slavina* Vejdovsky, 1883
   95) *Slavina appendiculata* (d'Udekem, 1855)

30. *Ripistes* Dujardin, 1842
    96) *Ripistes parasita* (Schmidt, 1847)

31. *Arcteonais* Piguet, 1928
    97) *Arcteonais lomondi* (Martin, 1907)

32. *Stylaria* Lamarck, 1816
    98) *Stylaria fosicularis* Leidy, 1852
   99) *Stylaria lacustris* (Linnaeus, 1767)

33. *Piguetiella* Sperber, 1939
    100) *Piguetiella denticulata* Liang et Xie, 1997

34. *Specaria* Sperber, 1939
    101) *Specaria josinae* (Vejdovsky, 1883)

35. *Vejdovskyella* Michaelsen, 1903
    102) *Vejdovskyella simplex* Liang, 1958

36. *Nais* Müller, 1773
    103) *Nais barbata* Müller, 1773
         Distribution: Freshwater. Xinjiang.
    104) *Nais simplex* Piguet, 1906
    105) *Nais behningi* Michaelsen, 1923
    106) *Nais variabilis* Piguet, 1906
    107) *Nais pardinus* Piguet, 1906
         Distribution: Freshwater. Anhui, Changjiang River,
Nais communis Piguet, 1906

Nais breitscheri Michaelsen, 1899

Nais elinguis Müller, 1773
Distribution: Freshwater, brackish-water. Guizhou, Hunan, Jiangxi, Xinjiang.

Nais inflata Liang, 1963

Allonais Sperber, 1948

Allonais pectinata (Stephenson, 1910)

Allonais paraguayensis (Michaelsen, 1905)

Allonais gwaliorensis (Stephenson, 1920)

Branchiura Beddard, 1892

Branchiura sowerbyi Beddard, 1892

Bothrioneurum Stolc, 1888

Bothrioneurum grandisetosum Wang, Xie et Liang, 2000

Bothrioneurum vejdoskyanum Stolc, 1886

Bothrioneurum iris Beddard, 1901

Paupidrilus Erséus, 1990

Paupidrilus breviductus Erséus, 1990
Distribution: Marine. Hong Kong.

Monopylephorus Levinsen, 1884

Monopylephorus parvus Ditlevsen, 1904
Distribution: Brackish-water, marine. Hong Kong.

Monopylephorus rubroniveus Levinsen, 1884
Distribution: Brackish-water. Jiaozhou Bay, Taiwan.

Monopylephorus limosus (Hatai, 1898)

Heronidrilus Erséus et Jamieson, 1981

Heronidrilus hutchingiae Erséus, 1990
Distribution: Marine. Hong Kong.

Heronidrilus bihamisetosus Erséus et Jamieson, 1981
Distribution: Marine. Hong Kong, Jiaozhou Bay.

Heronidrilus fastigatus Erséus et Jamieson, 1981
Distribution: Marine. Hong Kong.

Heterodrilus Pierantoni, 1902

Heterodrilus uniformis Wang et Erséus, 2003
Distribution: Marine. Hainan.

Heterodrilus virilis Erséus, 1992
Distribution: Marine. Hong Kong.

Heterodrilus cheniuanus Wang et Erséus, 2003
Distribution: Marine. Hainan.

Heterodrilus radus Wang et Erséus, 2003
Distribution: Marine. Hainan.

Heterodrilus keenani Erséus, 1981
Distribution: Marine. Hainan, Hong Kong.

Ainudrilus Finogenova, 1982

Ainudrilus paucisetosus Wang et Erséus, 2003
Distribution: Marine. Hainan, Hong Kong (?).

Ainudrilus geminus Erséus, 1990
Distribution: Marine. Hong Kong.

Ainudrilus taitamensis Erséus, 1990
Distribution: Marine. Hong Kong.

Ainudrilus lutulentus (Erséus, 1984)
Distribution: Marine, brackish-water. Hainan, Hong Kong, Jiaozhou Bay.

Ainudrilus gibsoni Erséus, 1990
Distribution: Marine. Hong Kong.

Ainudrilus semicapillatus Zhou et Erséus, 2003
Distribution: Marine. Hong Kong.

Rhyacodrilus Bretscher, 1901

Rhyacodrilus sinicus (Chen, 1940)

Rhyacodrilus stephesoni Cernovitov, 1941
Distribution: Freshwater (?), terrestrial. Xizang, Zhejiang.

Rhyacodrilus riabuschinskii Michaelsen, 1929

Rhizodrilus Smith, 1900

Rhizodrilus russus Erséus, 1990
Distribution: Marine. Hong Kong.

Tubificinae Eisen, 1885

Tubifex Lamarck, 1816

Tubifex tubifex (Müller, 1774)
48. *Spirosperma* Eisen, 1879
142) *Spirosperma ferox* (Eisen, 1879)
143) *Spirosperma nikolskyi* (Lastockin et Sokolskaya, 1953)
144) *Spirosperma apapillatus* (Lastockin et Sokolskaya, 1953)

49. *Chenidrilus* Liang et Xie, 1997
145) *Chenidrilus asiaticus* (Chen, 1940)

50. *Limnodrilus* Claparède, 1862
146) *Limnodrilus amblysetus* Brinkhurst, Qi et Liang, 1990
   Distribution: Freshwater. Changjiang River, Xiangjiang River (Changsha).
147) *Limnodrilus hoffmeisteri* Claparède, 1862
148) *Limnodrilus grandisetosus* Nomura, 1932
149) *Limnodrilus udekemianus* Claparède, 1862
150) *Limnodrilus helveticus* Piguet, 1913
   Distribution: Freshwater. Heilongjiang, Qinghai, Xinjiang.
151) *Limnodrilus paramblysetus* Wang et Liang, 2001
   Distribution: Freshwater. Mid-lower Changjiang River.
152) *Limnodrilus claparedeianus* Ratzel, 1868

51. *Ilyodrilus* Eisen, 1879
153) *Ilyodrilus templetioni* (Southern, 1909)

52. *Tubificoides* Lastockin, 1937
154) *Tubificoides imaginalis* Brinkhurst, 1985
   Distribution: Marine. Hong Kong.

53. *Teneridrilus* Holmquist, 1985
155) *Teneridrilus mastix* (Brinkhurst, 1978)

54. *Aulodrilus* Bretscher, 1899
156) *Aulodrilus americanus* Brinkhurst et Cook, 1966
157) *Aulodrilus pectinatus* Ayer, 1928
158) *Aulodrilus pigueti* Kowalevski, 1914
159) *Aulodrilus plurisetus* (Piguet, 1906)
160) *Aulodrilus japonicus* Yamauchi, 1953
161) *Aulodrilus limnobius* Bretscher, 1899

55. *Potamothrix* Vejdovsky et Marzec, 1902
162) *Potamothrix bedoti* Piguet, 1913
   Distribution: Freshwater. Hubei, Yunnan.
163) *Potamothrix scleropenis* Cui et Wang, 2005
   Distribution: Freshwater. Yunnan (Fuxian Lake).

56. *Telmatodrilinae* Eisen, 1885
164) *Telmatodrilus vejdovskyi* Eisen, 1879
   Distribution: Freshwater. Changjiang River (Jiangsu), Hubei.

57. *Bathydrilus* Cook, 1970
165) *Bathydrilus edwardsi* Erséus, 1984
   Distribution: Marine. Hong Kong.
166) *Bathydrilus ampliductus* Erséus, 1997
   Distribution: Marine. Hainan.

58. *Aktedrilus* Knöllner, 1935
167) *Aktedrilus sinensis* Erséus, 1984
   Distribution: Marine. Hainan.
168) *Aktedrilus cuneus* Erséus, 1984
   Distribution: Marine. Hainan.
169) *Aktedrilus parvithecatus* Erséus, 1978
   Distribution: Marine. Hainan, Hong Kong.
170) *Aktedrilus floridensis* Erséus, 1980
   Distribution: Marine. Hainan, Hong Kong.
171) *Aktedrilus yiboi* Wang et Erséus, 2001
   Distribution: Marine. Hainan.
172) *Aktedrilus cavus* Erséus, 1990
   Distribution: Marine. Hong Kong.
173) *Aktedrilus parviprostatus* Erséus, 1980
   Distribution: Marine. Hong Kong.
174) *Aktedrilus locyi* Erséus, 1980
59. **Jamiesoniella Erséus, 1981**

- **Uniporodrilus Erséus, 1992**
  - Distribution: Marine. Hainan, Hong Kong.

60. **Gianius Erséus, 1992**

61. **Pectinodrilus Erséus, 1992**

- **Doliodrilus brachyductus Wang et Erséus, 2004**
  - Distribution: Marine. Hong Kong.

62. **Pectinodrilus Erséus, 1992**

- **Doliodrilus bisaccus Wang et Erséus, 2004**
  - Distribution: Brackish-water. Hainan.

63. **Uniporodrilus Erséus, 1979**

- **Pectinodrilus hoihaensis Erséus, 1992**
  - Distribution: Marine. Hong Kong.

64. **Duridrilus Erséus, 1983**

- **Doliodrilus diverticulatus Erséus, 1985**
  - Distribution: Brackish-water, marine. Jiaozhou Bay.

65. **Doliodrilus Erséus, 1984**

- **Doliodrilus tener Erséus, 1992**
  - Distribution: Marine. Hainan, Hong Kong.

66. **Thalassodrilides Brinkhurst et Baker, 1979**

- **Thalassodrilides garwitschi (Hrabé, 1971)**
  - Distribution: Marine. Hong Kong.

67. **Smithsonidrilus Brinkhurst, 1966**

- **Smithsonidrilus irregularis (Erséus, 1983)**
  - Distribution: Brackish-water. Hainan.

68. **Limnodriloides Pierantoni, 1903**

- **Limnodriloides macinnesi Erséus, 1990**
  - Distribution: Marine. Hainan, Hong Kong.

LIMNODRILOIDINAE ERSÉUS, 1982

65. **Doliodrilus Erséus, 1984**

- **Doliodrilus tenax Erséus, 1992**
  - Distribution: Marine. Hainan, Hong Kong.

- **Doliodrilus tenuiductus Wang et Erséus, 2004**
  - Distribution: Brackish-water. Hainan.

- **Doliodrilus ciliatus Wang et Erséus, 2004**
  - Distribution: Marine. Hainan.

- **Doliodrilus adiacens Wang et Erséus, 2004**
  - Distribution: Marine. Hainan.

- **Doliodrilus brachyductus Wang et Erséus, 2004**
  - Distribution: Brackish-water. Hainan.
Tectidrilus achaetus Erséus et Qi, 1985
Distribution: Freshwater, brackish-water. Hong Kong, Zhujiang River.

LUMBRICULIDAE
70. Lumbriculus Grube, 1844
221) Lumbriculus variegatus (Müller, 1774)

71. Styloscolex Michaelsen, 1901
222) Styloscolex tetrathecus Bürow, 1931

BRANCHIOBDELLIDAE
72. Branchiobdella Odier, 1823
223) Branchiobdella orientalis Yamaguchi, 1934
224) Branchiobdella kobayashii Yamaguchi, 1934
225) Branchiobdella cheni Liu, 1964
Distribution: Hosted in Cambaroides dauricus. Liaoning.
226) Branchiobdella macropertistomium Liu et Zhang, 1983
227) Branchiobdella monodontus Liu et Zhang, 1983
Distribution: Hosted in Cambaroides dauricus. Liaoning.

73. Cirrodrilus Pierantoni, 1905
228) Cirrodrilus peristomialis (Liu et Chang, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
229) Cirrodrilus heteroglandularis (Liu et Chang, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
230) Cirrodrilus breviformis (Liu et Chang, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
231) Cirrodrilus liaoningensis (Liu et Chang, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
232) Cirrodrilus anodontus (Liu, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
233) Cirrodrilus minimus (Liu, 1964)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
234) Cirrodrilus kawamurae (Yamaguchi, 1934)
Distribution: Hosted in Cambaroides dauricus. Liaoning.
235) Cirrodrilus szczukii (Yamaguchi, 1934)
Distribution: Hosted in Cambaroides similis. Liaoning.
236) Cirrodrilus chosen (Yamaguchi, 1934)
Distribution: Hosted in Cambaroides similis. Liaoning.
237) Cirrodrilus quadriramentacularis (Liu, 1984)
Distribution: Hosted in Cambaroides schrenckii. Heilongjiang.
238) Cirrodrilus aqueiannullus (Liu, 1984)
Distribution: Hosted in Cambaroides dauricus. Liaoning.

74. Sinodrilus Gelder & Brinkhurst, 1990
239) Sinodrilus heterorchis (Liu et Zhang, 1983)
Distribution: Hosted in Cambaroides dauricus. Liaoning.

XIRONODRILIDAE
75. Holtodrilus Gelder & Brinkhurst, 1990
240) Holtodrilus truncatus Liang, 1963
Distribution: Hosted in Neocaridina denticulate sinensis. Guangdong (Shaoguan), Henan (Xichuan).

CARIDINOPHILIDAE
76. Caridinophila Liang, 1963
241) Caridinophila unidens Liang, 1963
Distribution: Hosted in Caridina yunnanensis. Yunnan (Erhai Lake).

POLYCHAETA

AEOLOSOMATIDAE
77. Aelosoma Ehrenberg 1831
242) Aelosoma headleyi Beddard, 1888
Distribution: Freshwater. Hubei, Jiangsu, Sichuan.
243) Aelosoma hemprichii Ehrenberg, 1828
Distribution: Freshwater. Hubei, Jiangsu, Sichuan, Xizang.
244) Aelosoma lucidum Chen, 1940
245) Aelosoma hyalinum Bunke, 1967
246) Aelosoma travancorense Aiyer, 1926