

# Unrecorded species of Korean ciliates (Protozoa, Ciliophora) discovered through the project of “Discovery of Korean Indigenous Species” (2006-2010)

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In this list-format paper, we present unrecorded species of Korean ciliates (phylum Ciliophora). All species were selected from the final reports of the project: “Discovery of Korean Indigenous Species”. This project has been carried out to discover and record various Korean indigenous species since 2006 and is funded by the National Institute of Biological Resources (NIBR). Among the various species, ciliates were a major taxon that was highlighted in this project as a speciose group categorized under Protozoa. This paper contains reports of 38 ciliates (8 classes, 16 orders, 23 families, and 34 genera) observed in Korea during the initial five years of the project (2006-2010).

Keywords: Korea, National Institute of Biological Resources (NIBR), new records

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## INTRODUCTION

Since 2006, the National Institute of Biological Resources (NIBR) has carried out a project entitled “Discovery of Korean Indigenous Species” to discover and record various species. The phylum Ciliophora (ciliates) was a major taxon highlighted in this project as a speciose group categorized under Protozoa.

During the first five years (2006-2010) of this project, 77 new or unrecorded ciliate species were discovered (Ministry of Environment, 2007; NIBR, 2008; 2009; 2010; 2011). Among these, 39 species have been reported in various academic journals, while 38 reports remain to be published. In this paper, these 38 unpublished species reports (8 classes, 16 orders, 23 families, and 34 genera) were prepared for publication in a list format.

### List of Korean Ciliates

Thirty-eight Korean ciliates have been listed from the reports of the “Discovery of Korean Indigenous Species”

project from 2006-2010. Taxonomic classification follows Lynn (2008).

Phylum Ciliophora Doflein, 1901  
Class Karyorelictea Corliss, 1974  
Order Loxodida Jankowski, 1980  
Family Loxodidae Bütschli, 1889  
Genus *Loxodes* Ehrenberg, 1830

#### 1. *Loxodes rostrum* (Müller, 1773) Ehrenberg, 1830

**Material examined.** Gura-ri, Hwawon-eup, Dalseong-gun, Daegu, South Korea.

**Identifiers.** Ji Hye Kim, Youn Seung Kang, and Mann Kyoon Shin.

Class Heterotrichea Stein, 1859  
Order Heterotrichida Stein, 1859  
Family Condylostomatidae Kahl in Doflein and Reichenow, 1929

Genus *Condylostoma* Bory de St. Vincent, 1824

## 2. *Condylostoma magnum* Spiegel, 1926

**Material examined.** Hangdong7-ga, Jung-gu, Incheon, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Genus *Linostomella* Aescht in Foissner, Berger and Schaumberg, 1999

## 3. *Linostomella vorticella* (Ehrenberg, 1838) Aescht in Foissner, Berger and Schaumberg, 1999

**Material examined.** Munjuk-ri, Cheongnyang-myeon, Ulju-gun, Ulsan, South Korea.

**Identifiers.** Youn Seung Kang and Mann Kyoon Shin.

Family Folliculinidae Dons, 1914

Genus *Eufolliculina* Hadzi, 1951

## 4. *Eufolliculina uhligi* Mulisch and Patterson, 1983

**Material examined.** Daun-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Genus *Folliculinopsis* Fauré-Fremiet, 1936

## 5. *Folliculinopsis producta* (Wright, 1859) Faure-Fremiet, 1936

**Material examined.** Daun-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Class Spirotrichea Bütschli, 1889

Subclass Hypotrichia Stein, 1859

Order Euplotida Small and Lynn, 1985

Family Aspidiscidae Ehrenberg, 1838

Genus *Aspidisca* Ehrenberg, 1830

## 6. *Aspidisca steini* (Buddenbrock, 1920) Kahl, 1932

**Material examined.** Yeongho-ri, Hwawon-myeon, Haenam-gun, Jeollanam-do, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Family Euplotidae Ehrenberg, 1838

Genus *Euplotes* Ehrenberg in Hemprich and Ehrenberg, 1831

## 7. *Euplotes balteatus* (Dujardin, 1841) Kahl, 1932

**Material examined.** Seongnam-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon, Youn Seung Kang, and Mann Kyoon Shin.

## 8. *Euplotes crassus* Dujardin, 1842

**Material examined.** Hajeo-ri, Ganggu-myeon, Yeongdeok-gun, Gyeongsangbuk-do, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

## 9. *Euplotes rariseta* Curds, West and Dorahy, 1974

**Material examined.** Hangdong7-ga, Jung-gu, Incheon, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Subclass Stichotrichia Small and Lynn, 1985

Order Stichotrichida Fauré-Fremiet, 1961

Family Amphisiellidae Jankowski, 1979

Genus *Hemiamphisiella* Foissner, 1988

## 10. *Hemiamphisiella terricola* Foissner, 1988

**Material examined.** Daehyeon-ri, Seokpo-myeon, Bonghwa-gun, Gyeongsangbuk-do, South Korea.

**Identifiers.** Youn Seung Kang and Mann Kyoon Shin.

Family Kahliellidae Tuffrau, 1979

Genus *Engelmanniella* Foissner, 1982

## 11. *Engelmanniella mobilis* (Engelmann, 1862) Foissner, 1982

**Material examined.** Hyangho-ri, Jumunjin-eup, Gangneung-si, Gangwon-do, South Korea.

**Identifiers.** Eun Sun Lee, Youn Seung Kang, and Mann Kyoon Shin.

Family Keronidae Dujardin, 1840

Genus *Kerona* Müller, 1786

## 12. *Kerona pediculus* (Müller, 1773) Blochmann, 1886

**Material examined.** Geumsa-ri, Geumsa-myeon, Yeosu-si, Gyeonggi-do, South Korea.

**Identifiers.** Ji Hye Kim, Youn Seung Kang, and Mann Kyoon Shin.

Order Sporadotrichida Fauré-Fremiet, 1961

Family Oxytrichidae Ehrenberg, 1830

Genus *Oxytricha* Bory de St. Vincent in Lamouroux, Bory de St. Vincent and Deslongchamps, 1824

**13. *Oxytricha opisthomuscorum* Foissner, Blatterer, Berger and Kohmann, 1991**

**Material examined.** Geumsa-ri, Geumsa-myeon, Yeosu-si, Gyeonggi-do, South Korea.

**Identifiers.** Youn Seung Kang and Mann Kyoong Shin.

Genus *Tetmemena* Eigner, 1999

**14. *Tetmemena vorax* (Stokes, 1885) Eigner, 1999**

**Material examined.** Munjuk-ri, Cheongnyang-myeon, Ulju-gun, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoong Shin.

Incertae sedis in order Sporadotrichida  
Genus *Bistichella* Berger, 2008

**15. *Bistichella buitkampii* (Foissner, 1982) Berger, 2008**

**Material examined.** Aewol-eup, Jeju-si, Jeju-do, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoong Shin.

Genus *Heterourosomoida* Singh and Kamra, 2015

**16. *Heterourosomoida lanceolata* (Shibuya, 1930) Singh and Kamra, 2015**

**Material examined.** Ganghwa-gun, Incheon, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Subclass Oligotrichia Bütschli, 1887  
Order Strombidiida Petz and Foissner, 1992  
Family Strombidiidae Fauré-Fremiet, 1970  
Genus *Strombidium* Claparède and Lachmann, 1859

**17. *Strombidium crassulum* (Leegaard, 1915) Kahl, 1932**

**Material examined.** Taehwa-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoong Shin.

Genus *Limnostrombidium* Krainer, 1995

**18. *Limnostrombidium pelagicum* (Kahl, 1932) Krainer, 1995**

**Material examined.** Aewol-eup, Jeju-si, Jeju-do, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoong Shin.

Class Armophorea Lynn, 2004  
Order Armophorida Jankowski, 1964  
Family Caenomorphidae Poche, 1913  
Genus *Caenomorpha* Perty, 1852

**19. *Caenomorpha medusula* Perty, 1852**

**Material examined.** Namsa-myeon, Cheoin-gu, Yongin-si, Gyeonggi-do, South Korea.

**Identifier.** Mann Kyoong Shin.

Class Litostomatea Small and Lynn, 1981  
Subclass Haptoria Corliss, 1974  
Order Haptorida Corliss, 1974  
Family Homalozoonidae Jankowski, 1980  
Genus *Homalozoon* Stokes, 1890

**20. *Homalozoon vermiculare* (Stokes, 1887) Stokes, 1890**

**Material examined.** Mulgeum-eup, Yangsan-si, Gyeongsangnam-do, South Korea.

**Identifiers.** Youn Seung Kang and Mann Kyoong Shin.

Family Tracheliidae Ehrenberg, 1838  
Genus *Dileptus* Dujardin, 1841

**21. *Dileptus margaritifer* (Ehrenberg, 1833) Dujardin, 1841**

**Material examined.** Geumsa-ri, Geumsa-myeon, Yeosu-si, Gyeonggi-do, South Korea.

**Identifiers.** Eun Sun Lee and Mann Kyoong Shin.

Genus *Paradileptus* Wenrich, 1929

**22. *Paradileptus elephantinus* (Švec, 1897) Kahl, 1931**

**Material examined.** Sangbuk-myeon, Ulju-gun, Ulsan, South Korea.

**Identifier.** Mann Kyoong Shin.

Order Pleurostomatida Schewiakoff, 1896  
Family Litonotidae Kent, 1882  
Genus *Litonotus* Wrzeźniowski, 1870

**23. *Litonotus varsaviensis* (Wrzeźniowski, 1866) Wrzeźniowski, 1870**

**Material examined.** Gangdong-myeon, Gyeongju-si, Gyeongsangbuk-do, South Korea.

**Identifier.** Mann Kyoong Shin.

Genus *Loxophyllum* Dujardin, 1841

**24. *Loxophyllum shini* Lin, Song and Li, 2007**

**Material examined.** Hangdong7-ga, Jung-gu, Incheon, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Class Phyllopharyngea de Puytorac *et al.*, 1974  
Subclass Cyrtophoria Fauré-Fremiet in Corliss, 1956  
Order Chlamyodontida Deroux, 1976  
Family Chilodonellidae Deroux, 1970  
Genus *Chilodonella* Strand, 1928

**25. *Chilodonella uncinata* (Ehrenberg, 1838) Strand, 1928**

**Material examined.** Yeonan-ri, Oedong-eup, Gyeongju-si, Gyeongsangbuk-do, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoon Shin.

Genus *Trithigmotoma* Jankowski, 1967

**26. *Trithigmotoma cucullulus* (Müller, 1786) Jankowski, 1967**

**Material examined.** Gyeong-ri, Beomseo-eup, Ulsan-gun, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

**27. *Trithigmotoma srameki* Foissner, 1988**

**Material examined.** Dong-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoon Shin.

**28. *Trithigmotoma steini* (Blochmann, 1895) Foissner, 1988**

**Material examined.** Dong-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoon Shin.

Order Dysteriida Deroux, 1976  
Family Dysteriidae Claparède and Lachmann, 1858  
Genus *Dysteria* Huxley, 1857

**29. *Dysteria derouxi* Gong and Song, 2004**

**Material examined.** Ganghwa-gun, Incheon, South Korea.

**Identifiers.** Se-Joo Kim and Gi-Sik Min.

Class Colpodea Small and Lynn, 1981  
Order Colpodida de Puytorac *et al.*, 1974  
Family Colpodidae Bory de St. Vincent, 1826

Genus *Colpoda* Müller, 1773

**30. *Colpoda steinii* Maupas, 1883**

**Material examined.** Geumgangsog-myeon, Uljin-gun, Gyeongsangbuk-do, South Korea.

**Identifiers.** Ji Hye Kim and Mann Kyoon Shin.

Genus *Corticocolpoda* Foissner, 1993

**31. *Corticocolpoda kaneshiroae* Foissner, 1993**

**Material examined.** Aewol-eup, Jeju-si, Jeju-do, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Class Oligohymenophorea de Puytorac *et al.*, 1974  
Subclass Peniculia Fauré-Fremiet in Corliss, 1956  
Order Peniculida Fauré-Fremiet in Corliss, 1956  
Family Parameciidae Dujardin, 1840  
Genus *Paramecium* Müller, 1773

**32. *Paramecium duboscqui* Chatton and Brachon, 1933**

**Material examined.** Daun-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon, Youn Seung Kang, and Mann Kyoon Shin.

Subclass Hymenostomatia Delage and Hérouard, 1896  
Order Tetrahymenida Fauré-Fremiet in Corliss, 1956  
Family Glaucomidae Corliss, 1971  
Genus *Glaucoma* Ehrenberg, 1830

**33. *Glaucoma dragescui* Corliss, 1971**

**Material examined.** Daun-dong, Jung-gu, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

**34. *Glaucoma scintillans* Ehrenberg, 1830**

**Material examined.** Gyeong-ri, Beomseo-eup, Ulsan-gun, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Subclass Peritrichia Stein, 1859  
Order Sessilida Kahl, 1933  
Family Operculariidae Fauré-Fremiet in Corliss, 1979  
Genus *Opercularia* Goldfuss, 1820

**35. *Opercularia articulata* Goldfuss, 1820**

**Material examined.** Daedae-ri, Ungchon-myeon, Ulju-gun, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Family Opisthonectidae Foissner, 1976  
Genus *Opisthonecta* Fauré-Fremiet, 1906

### 36. *Opisthonecta henneguyi* Fauré-Fremiet, 1906

**Material examined.** Namjeong-myeon, Yeongdeok-gun, Gyeongsangbuk-do, South Korea.

**Identifiers.** Eun Sun Lee, Youn Seung Kang, and Mann Kyoon Shin.

Family Vaginicolidae de Fromental, 1874  
Genus *Thuricola* Kent, 1881

### 37. *Thuricola kellicottiana* (Stokes, 1887) Kahl, 1935

**Material examined.** Daedae-ri, Ungchon-myeon, Ulju-gun, Ulsan, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

Order Mobilida Kahl, 1933  
Family Trichodinidae Claus, 1874  
Genus *Trichodina* Ehrenbeg, 1830

### 38. *Trichodina pediculus* Ehrenberg, 1831

**Material examined.** Geumsa-ri, Geumsa-myeon, Yeosu-si, Gyeonggi-do, South Korea.

**Identifiers.** Choon Bong Kwon and Mann Kyoon Shin.

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