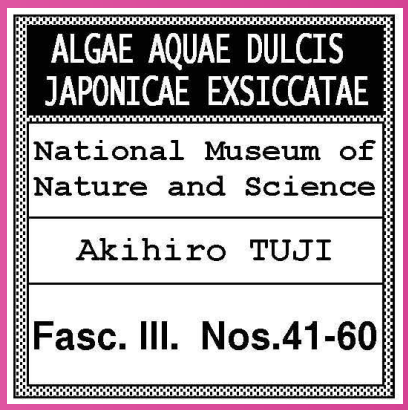
ALGAE AQUAE DULCIS JAPONICAE EXSICCATAE III

Published by
National Museum of Nature and Science
Tsukuba, JAPAN

Edited by
Akihiro Tuji

Microalgal Herbarium
Department of Botany
National Museum of Nature and Science
4-1-1, Amakubo, Tsukuba, Ibaraki
305-0005 JAPAN
tuji@kahaku.go.jp



28 Dec. 2010

PREFACE

This exsiccata set, made from Japanese freshwater micro-algal specimens, is issued by the National Museum of Nature and Science. This third fascicle comprises 20 slides.

I make this fascicle using the culture strains. It is one of a trial for me for making a useful exsiccata set. These culture strains were isolated by me from the various places using the pipette method, and d medium (Tuji 2000: J. Phycol. 36: 659-661), which is, modified WC medium. Because of the difficulty of maintain diatom culture strains for long time, most of these strains have been died.

The study using culture strains is important for the understanding of morphological variation of diatom species, though many strain have abnormal forms in the end of culture periods. The molecular analyses for these strains have also done. It will publish these moleclar data in future papers.

If there is any problems experienced using this exsiccata, please contact me. I will send another slide. I am always pleased to receive any comments and suggestions.

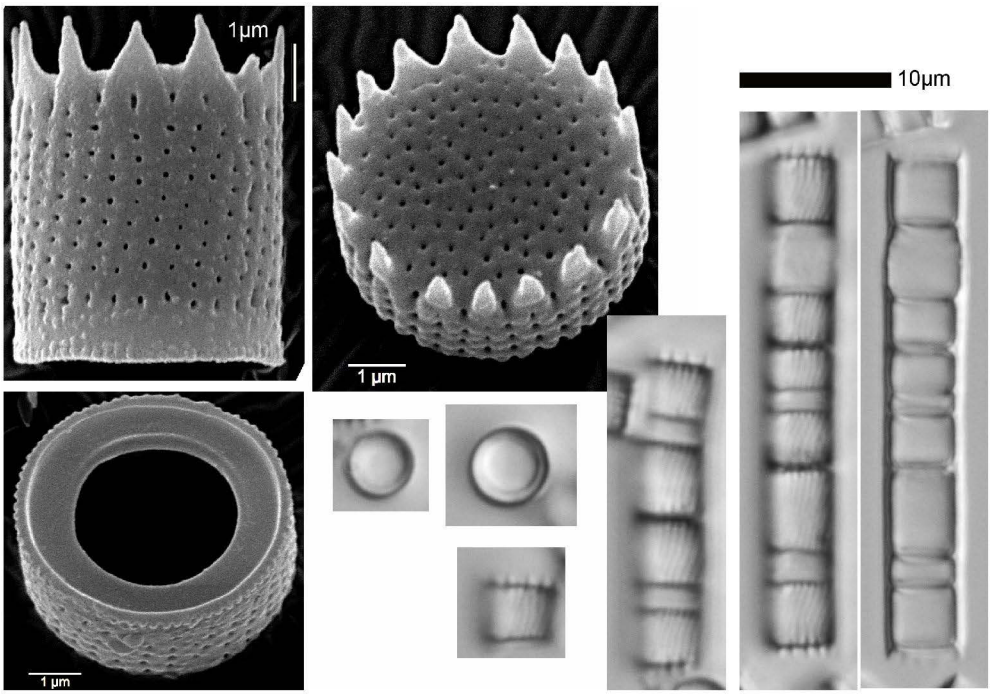
CITATION

Tuji, A. 2010. Algae Aquae Dulcis Japonicae Exsiccatae. Fasc. III. nos. 41-60. 17pp. National Museum of Nature and Science, Tsukuba.

Nos. 41.
Prepared from TNS-AL-56487 in TNS.
This culture strain was prepared from the sample (TNS-AL-56374 in TNS).
Lake Kitaura, Ibaraki Pref. Coll. A. Tuji 13/3/08.

Aulacoseira pusilla (F.Meister) Tuji et Houki, Bull. Natn. Sci. Mus. Tokyo ser. B. **30**: 38. 2004.
▼*Melosira pusilla* F.Meister, Arch. Hydrobiol. **8**: 306. *pl. IV. f. 2.* 1913.
Synonym: *Aulacoseira subborealis* (Nygaard) Denys, Muylaert & Krammer, Nova Hedw. 77: 410.
Type locality: Lake Suwa, Nagano Pref., Japan.
Lectotype: A slide numbered “A3/61” with Meister’s label in BRM, designated by Tuji et Houki, Bull. Natn. Sci. Mus. Tokyo ser. B 30: 38. f. 55-60. 2004.
SEM examination: Tuji & Houki, Lake Biwa Study Monogr. 7: 33. pl. 11. f. 1. pl. 12. f. 1-2. 2001.

Mantle height / valve diameter ratio are variable in this strain. This ratio may no be good character for the identification of *Aulacoseira* species.



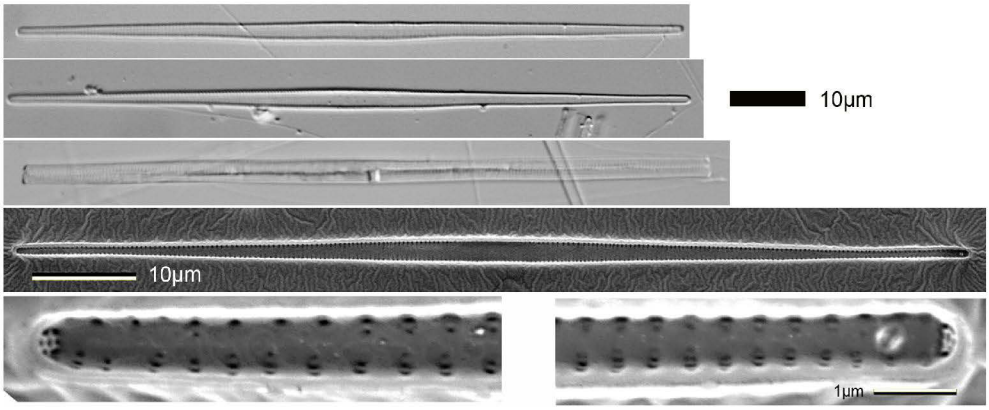
Nos. 42.
Prepared from TNS-AL-56488 in TNS. This culture strain was prepared from the sample (TNS-AL-56374 in TNS). Lake Kitaura, Ibaraki Pref. Coll. A. Tuji 13/3/08.

Synedra filiformis Grunow in Cleve & Grunow, Kongl. Svenska-Vetensk. Akad. Handl. **17:** 160. *pl. 6. f. 116.* 1880.

This strain is very closed to *Fragilaria gracilis* Östrup. However the form of apical pore field and punctae are differ from the type specimen of *F. gracilis* examined by Tuji (2007). F. gracilis is usually found in low electric conductivity water such as moor. The locality of this strain, L. Kitaura, is freshwater – brackish and ecology is very different.

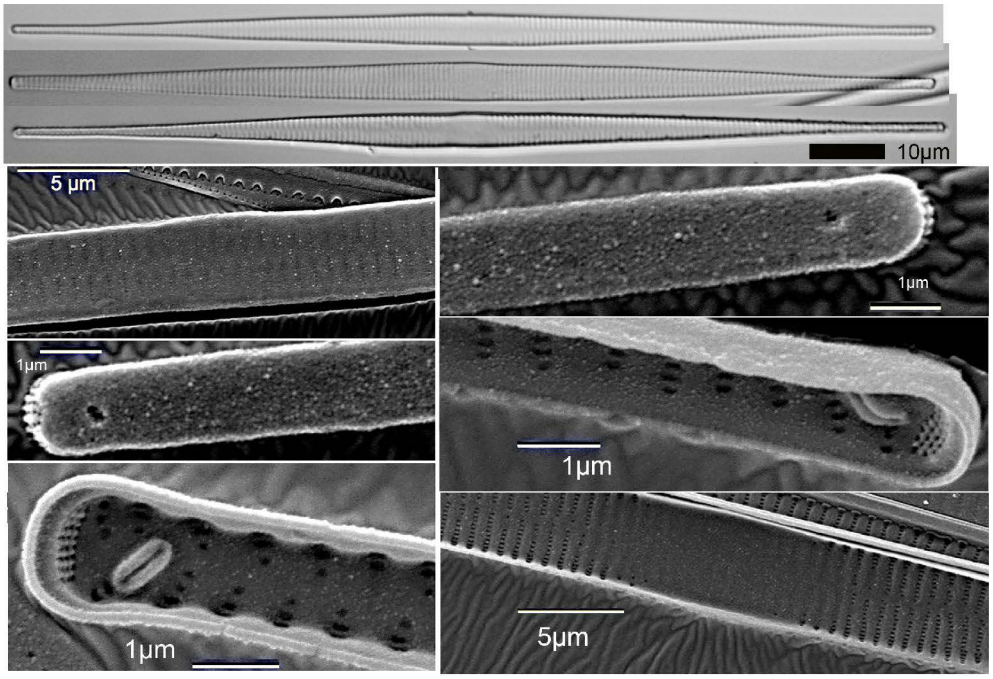
I have not examined the type material for *S. filiformis*, and the information of this taxon is very limited because of very narrow width and fine striae. The identification might have some problem.

One rimoportula is found per a valve, and this strain should be includes genus *Fragilaria*. We need more work on the taxonomy of this taxon.



Nos. 43.
Prepared from TNS-AL-56489 in TNS. This culture strain was prepared from the sample (TNS-AL-56374 in TNS). Lake Kitaura, Ibaraki Pref. Coll. A. Tuji 13/3/08.

Ulnaria acus (Kützing) M.Aboal in Aboal, Alvarez-Cobelas, Cambra & Ector, Diat. Monogr. 4: 105. 2003
Basionym: *Synedra acus* Kützing, Kieselsch. Bacill. *p. 68. p. 15. f. 7.* 1844.

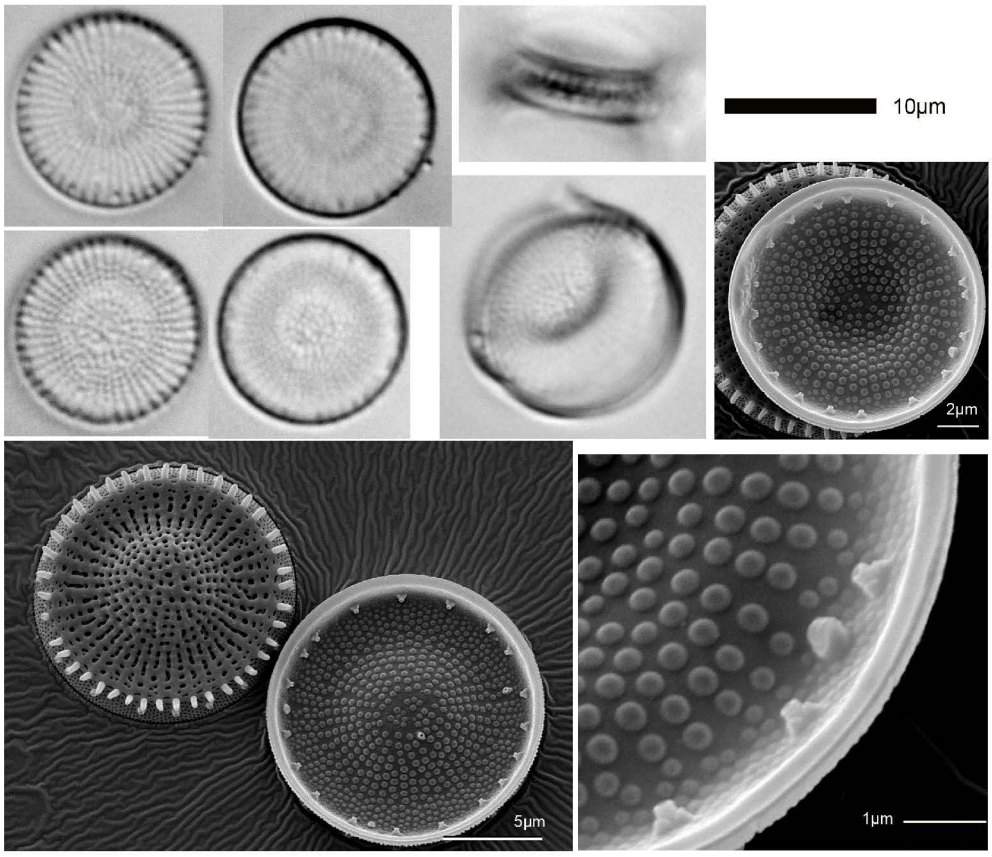


Nos. 44.
Prepared from TNS-AL-56493 in TNS.
This culture strain was prepared from the sample (TNS-AL-56364 in TNS).
Lake Cyuzenji, Tochigi Pref. Coll. A. Tuji 29/ii/08.

Stephanodiscus cf. *akanensis*

This strain is closed to *S. akanensis* Tuji. However, the form of rimportulae and spines seems to be different. *S. akanensis* is found only in L. akan, and this strain may be new taxon.

This taxon is also similar to *Stephanodiscus mongolicus* M.B. Edlund, N. Soninkhishig & R.M. Williams in Edlund, Williams & Soninkhishig, and they may have same origin.

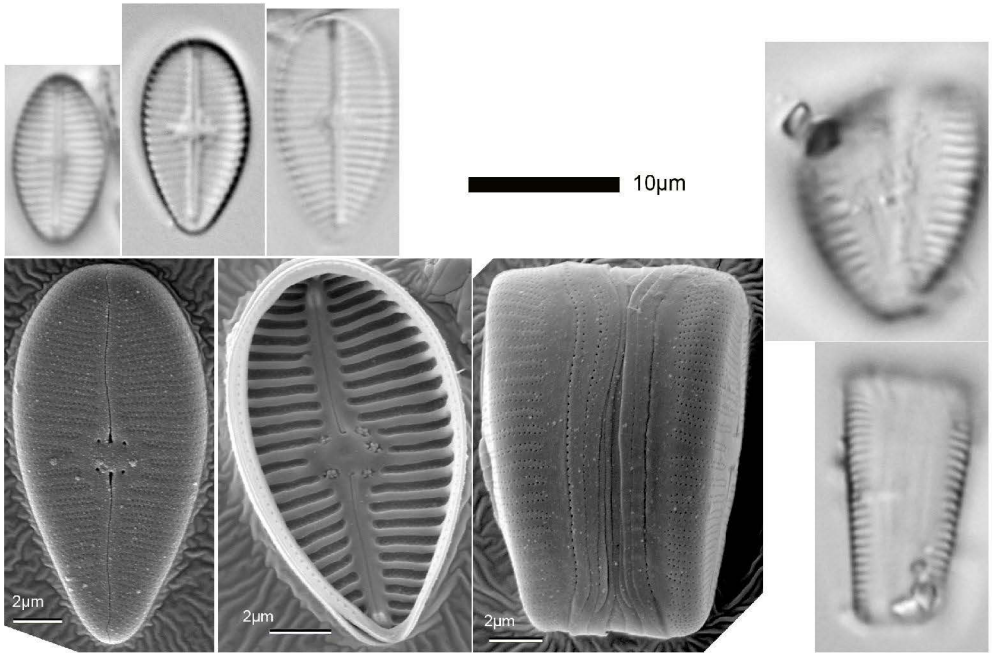


Nos. 45.
Prepared from TNS-AL-56498 in TNS.
This culture strain was prepared from TNS-AL-56464 in TNS.
Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08.

Gomphoneis okunoi Tuji, Bull. Natn. Sci. Mus. Tokyo ser. B. 31: 92-95. pl. *12. f. 1-10. pl. 13. f. 1-4. pl. 14. f. 1-5.* 2005.
Synonym: *Gomphonema tetrastigmatum* sensu Okuno, Diat. Elektr. Mikr. 9: 36–37. 1974.
Gomphoneis tetrastigmata sensu T.Ohtsuka, Diat. 18: 32. f. 77–80. 2002.

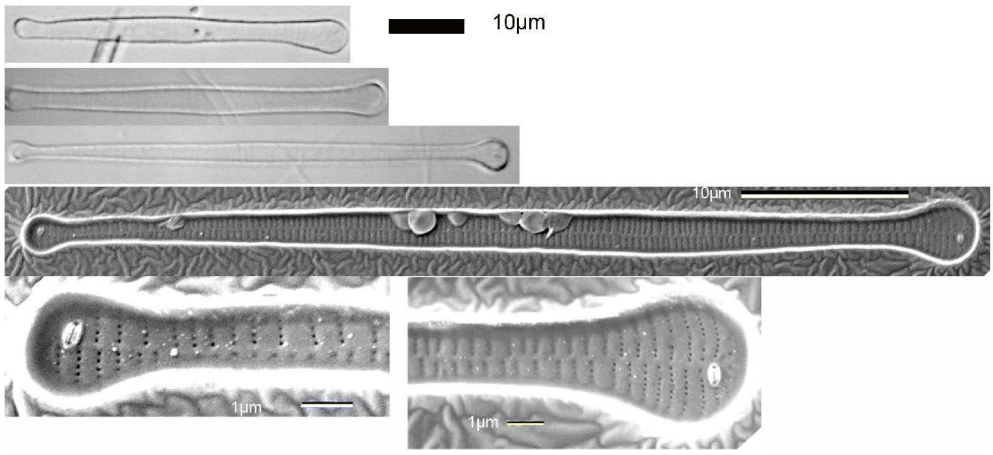
Holotype: A slide numbered TNS-AL-54241sc in TNS.
Ecology: Commonly found in less polluted rivers and lakes (xenosaprobic to oligosaprobic in saprobic level) and regarded as saproxenous taxon and prefers low temperatures (Tuji 2005). pH-circumneutral.

Species from oligotrophic water bodies are very difficult to make culture strains. These species require much silica and carbon dioxides. The culture of this species is also difficult, and growth rate is very low.



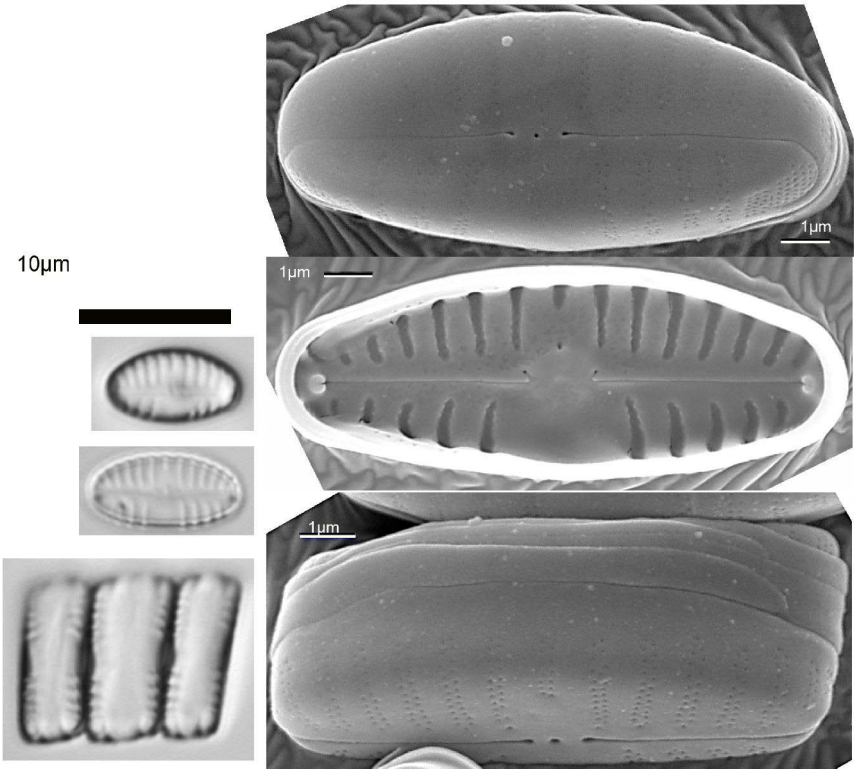
Nos. 46.
Prepared from TNS-AL-56499 in TNS. This culture strain was prepared from TNS-AL-56463 in TNS. Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08.

Asterionella formosa Hassall, Diat. Wat. Suppl. Inh. London. *p. 68. pl. 6. f. 20.* 1850.



Nos. 47.
Prepared from TNS-AL-56500 in TNS. This culture strain was prepared from TNS-AL-56464 in TNS. Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08

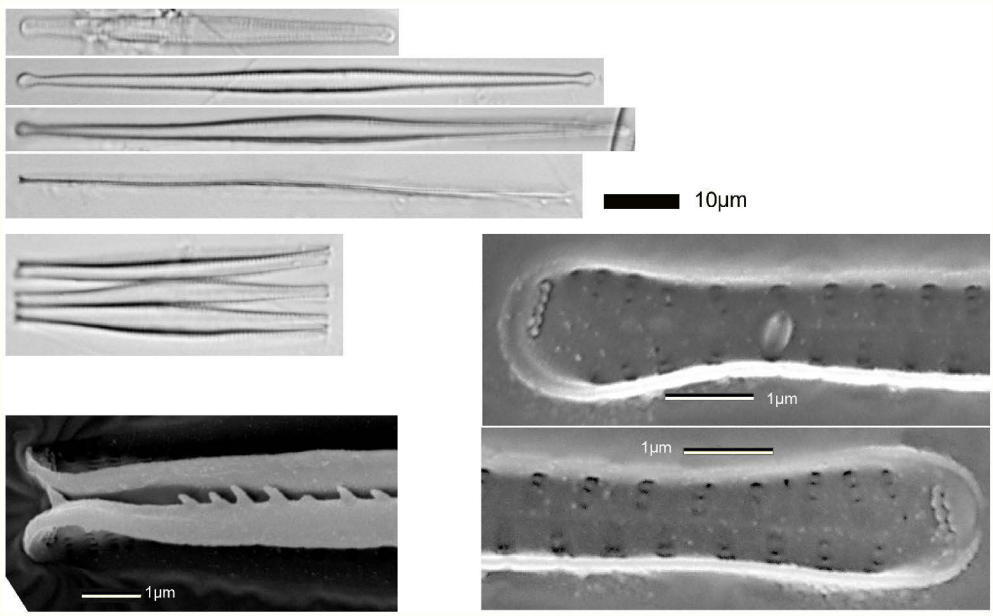
Reimeria sinuata (Gregory) Kociolek & Stoermer, Syst. Bot. **12**: 457-458. 1987.
Basionym: *Cymbella sinuata* Gregory, Quart. J. Micros. sci. new. ser. **4**: 4. *pl. 1. f. 17.* 1856.



Nos. 48.
Prepared from TNS-AL-56501 in TNS. This culture strain was prepared from TNS-AL-56463 in TNS. Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08.

Fragilaria crotonensis Kitton, Hardw. Sci-Goss. **5**: 110. f. 81. 1869.

One rimoportula exists per a valve. Very narrow apical pore field exists at each apex.
This species complex includes several morphological type in Japan and may be divided to several taxa.

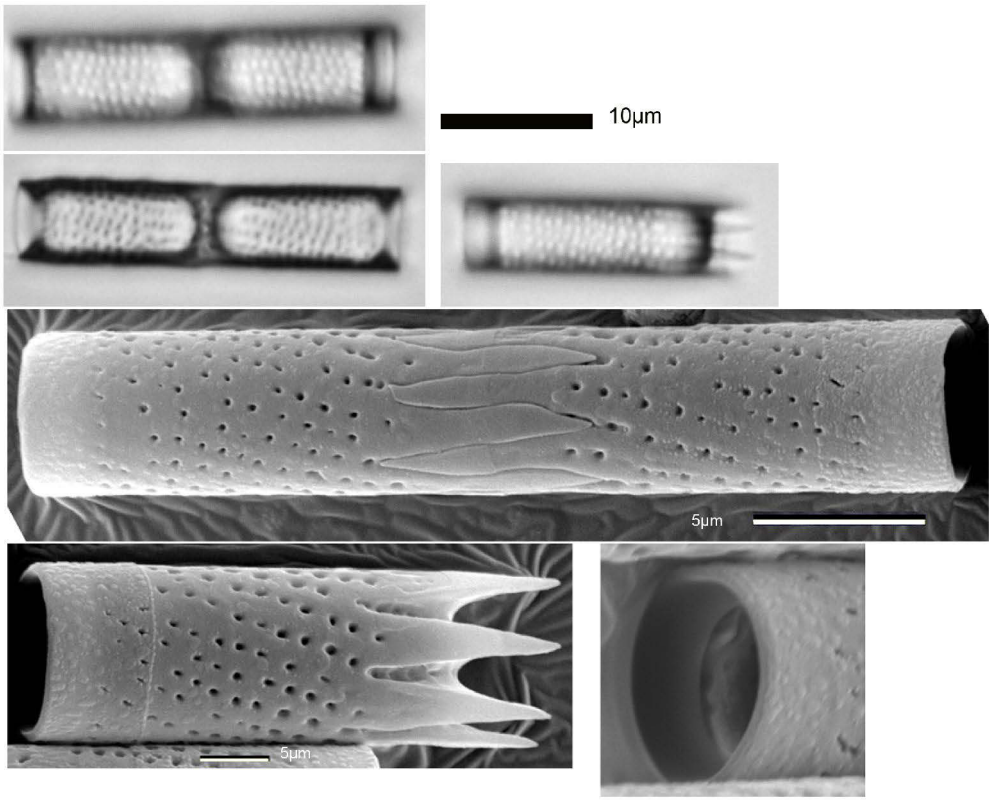


Nos. 49.
Prepared from TNS-AL-56494 in TNS. This culture strain was prepared from TNS-AL-56364 in TNS. Lake Cyuzenji, Tochigi Pref. Coll. A. Tuji 29/ii/08.

Aulacoseira subarctica var. longispina (Hust.) Tuji et Houki, Bull. Nat. Sci. Mus. ser. B. **30**: 38-39. 2004.
Basionym: *Melosira longispina* Hust. in Huber-Pestalozzi, Phytopl. Susw. **2**: 388. *pl. 115, f. 469a*. 1942.

Lectotype (designated in Simonsen 1987): A/2/21 in the Hustedt collection (BRM), figs. 460/1–3 in Simonsen (1987).
Type locality: Lake Cyuzenji, Tochigi Prefecture, Japan.

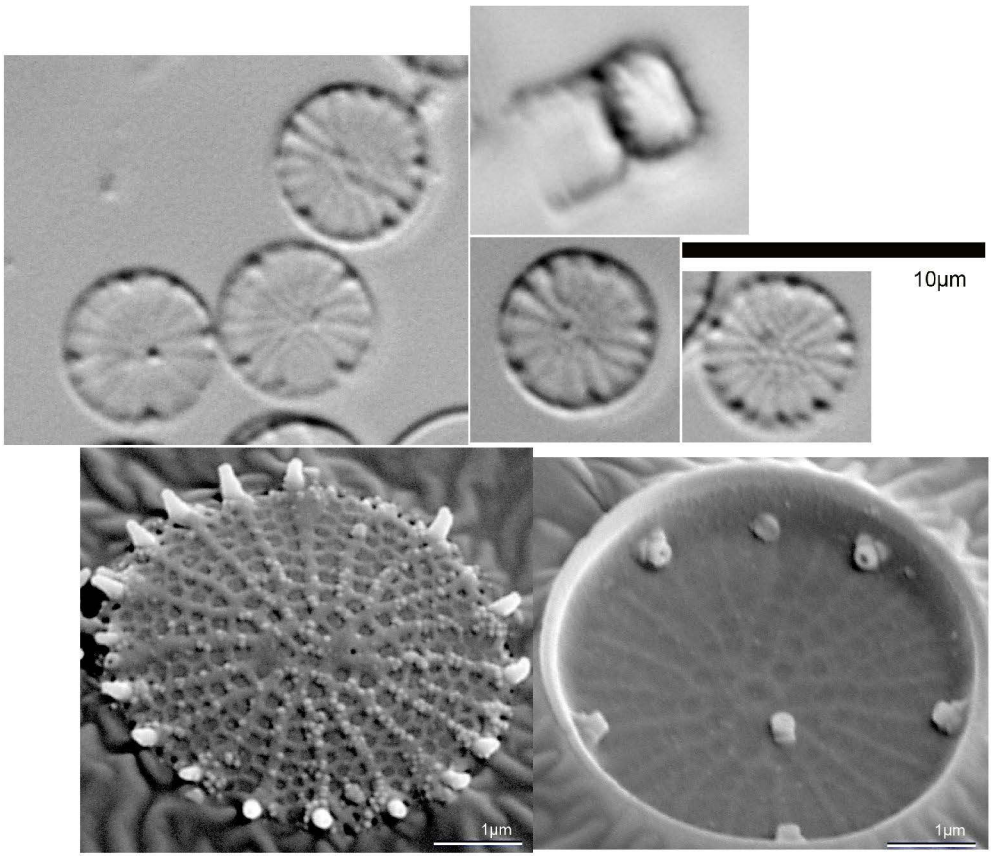
This is endemic taxa to Lake Cyuzenji. It is one of *Aulacoseira subarctica* species complex (Tuji & Houki 2004).



Nos. 50.
Prepared from TNS-AL-56511 in TNS. This culture strain was prepared from TNS-AL-56364 in TNS. Lake Cyuzenji, Tochigi Pref. Coll. A. Tuji 29/ii/08.

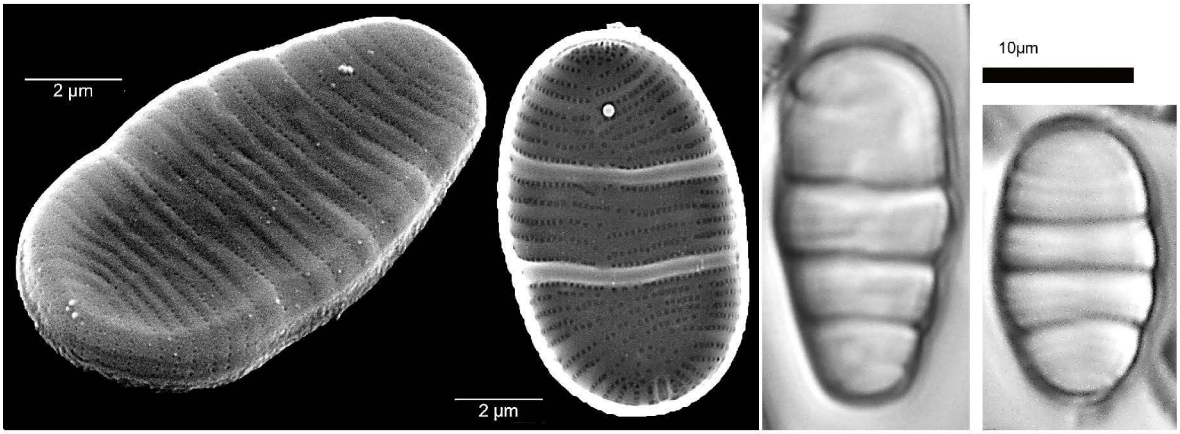
Stephanodiscus minutulus (Kütz.) A.Cleve et J.D.Möller, Diatoms. part VI, No. 300. 1882. Basionym: *Cyclostella minuta* Kütz. Bacill. p. 50. *pl. 2. f. 3.* 1844.

The ultra-structure of Japanese specimens using SEM, were reported by Tuji & Houki (2001). This strain is agree with the description of Tuji & Houki (2001).



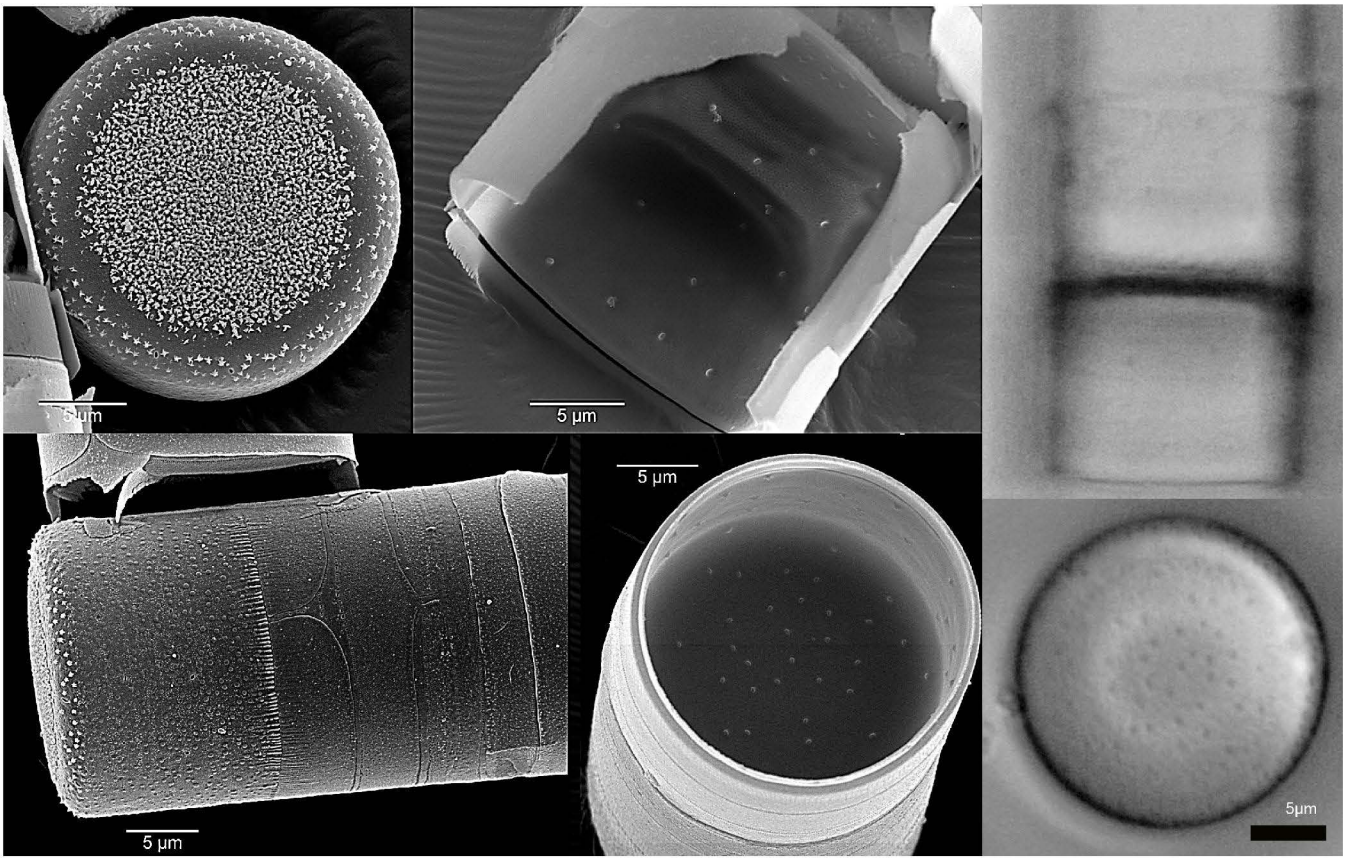
Nos. 51.
Prepared from TNS-AL-56514 in TNS.
This culture strain was prepared from TNS-AL-56465 in TNS. Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08.

Meridion circulare (Greville) Agardh, Consp. Crit. Diat. p. 40. 1831.
Basionym: *Echinella circularis* Greville, Scott. Crypt. Flora pl. 35. 1823.



Nos. 52.
Prepared from TNS-AL-56519 in TNS.
This culture strain was prepared from TNS-AL-56465 in TNS. Lake Biwa, Shiga Pref. Coll. A. Tuji 19/iii/08.

Melosira varians Agardh, Flora **2**: 628. 1827.



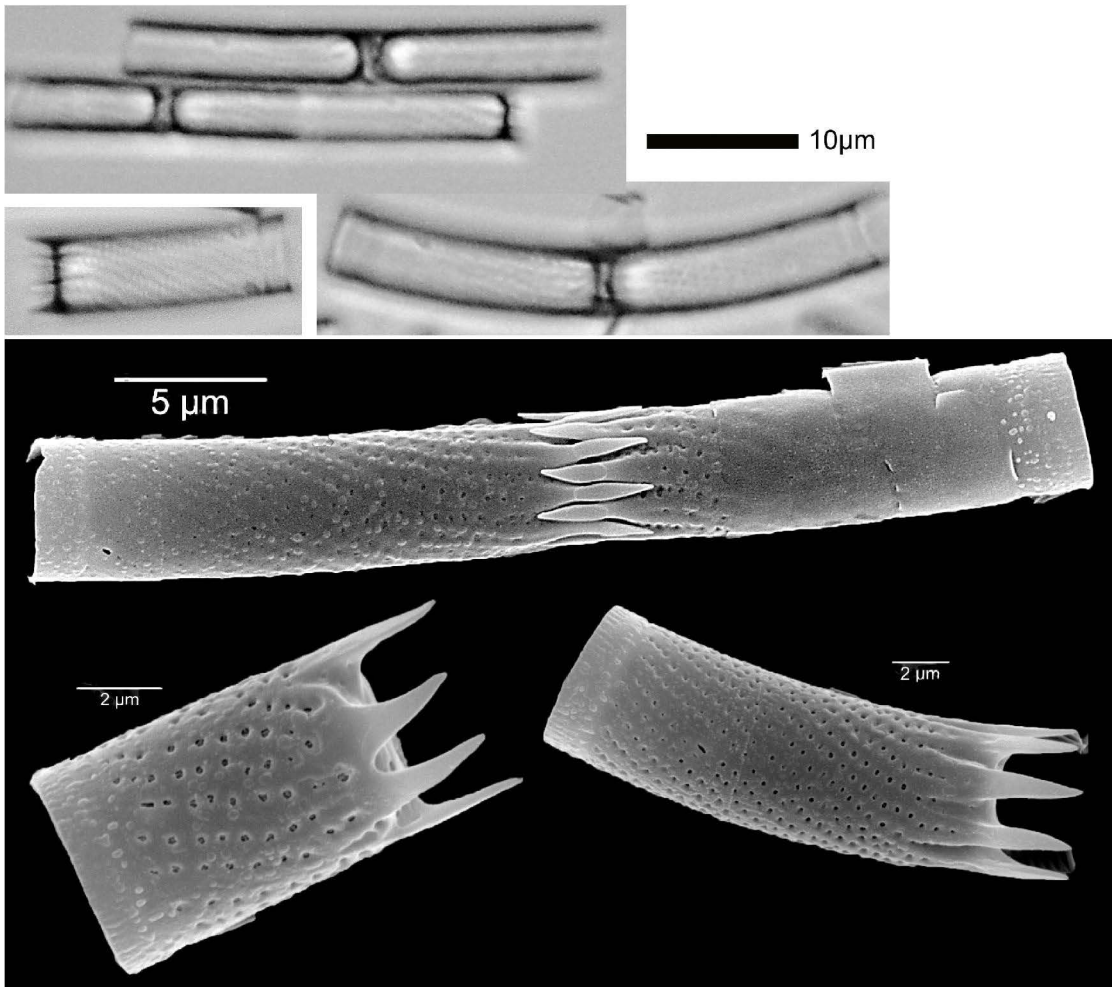
Nos. 53.
Prepared from TNS-AL-56521 in TNS. This culture strain was prepared from TNS-AL-56348 in TNS. Lake Yuno, Tochigi Pref. Coll. A. Tuji 28/ii/08.

Aulacoseira subarctica var. tenuis (Hust.) Tuji et Houki, Bull. Nat. Sci. Mus. ser. B. **30**: 39. 2004.
Basionym: *Melosira longispina* var. *tenuis* Hust. in Huber-Pestalozzi, Phytopl. Susw. **2**: 339. *pl. 115, f. 469b.* 1942.

Lectotype (designated in Simonsen 1987): A/2/22 in the Hustedt collection (BRM), Figs. 460/4, 5 in Simonsen (1987).

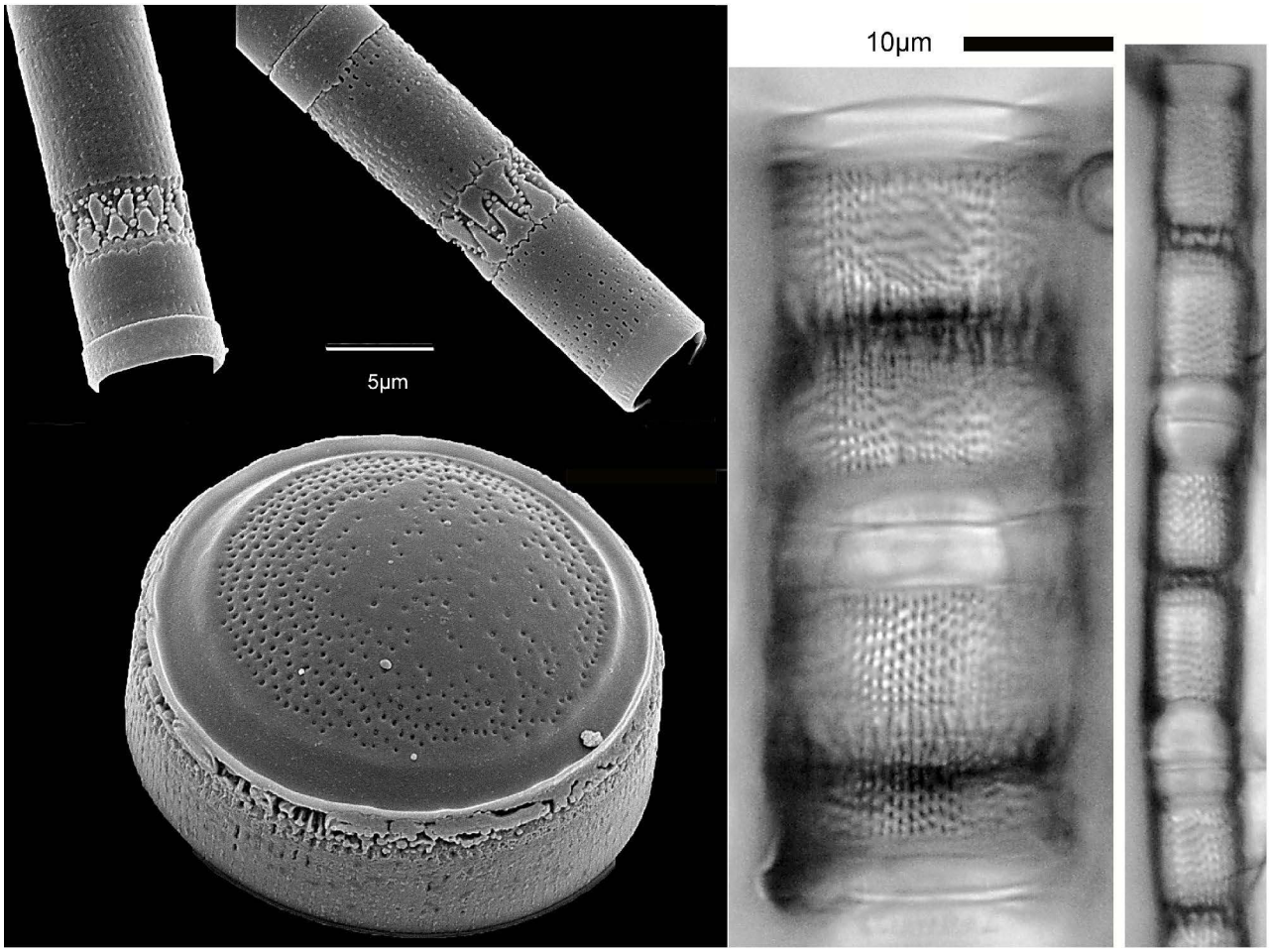
Type locality: Lake Yuno, Tochigi Prefecture, Japan.

This is endemic taxa to Lake Cyuzenji. It is one of *Aulacoseira subarctica* species complex (Tuji & Houki 2004).



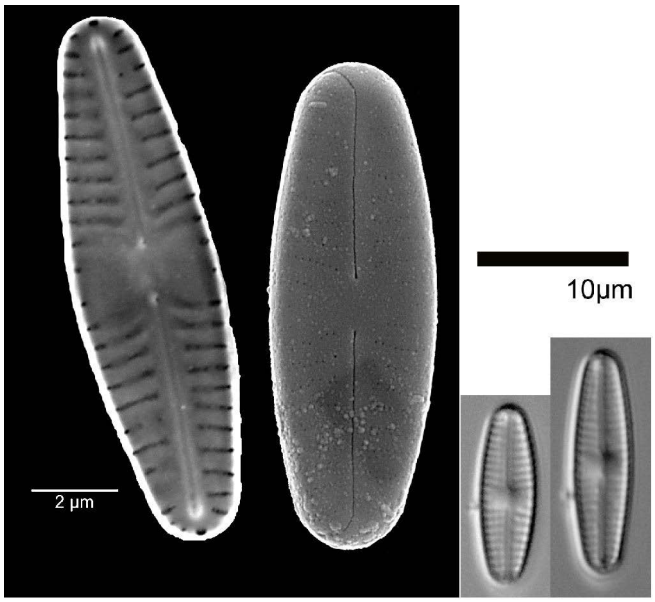
Nos. 54.
Prepared from TNS-AL-56524 in TNS.
Nos. 55.
Prepared from TNS-AL-56525 in TNS.
Both culture strains were prepared from TNS-AL-56301 in TNS. Lake Shirarutoro, Hokkaido Pref. Coll. A. Tuji 16/xii/06.

Aulacoseira italica *(*Ehrenb.) Simonsen, Bacill. 2: 60. 1979.
Basionym: *Gaillonella italica* Ehrenb. Infusionsth. p. 171. *pl. 10. f. 6.* 1838.



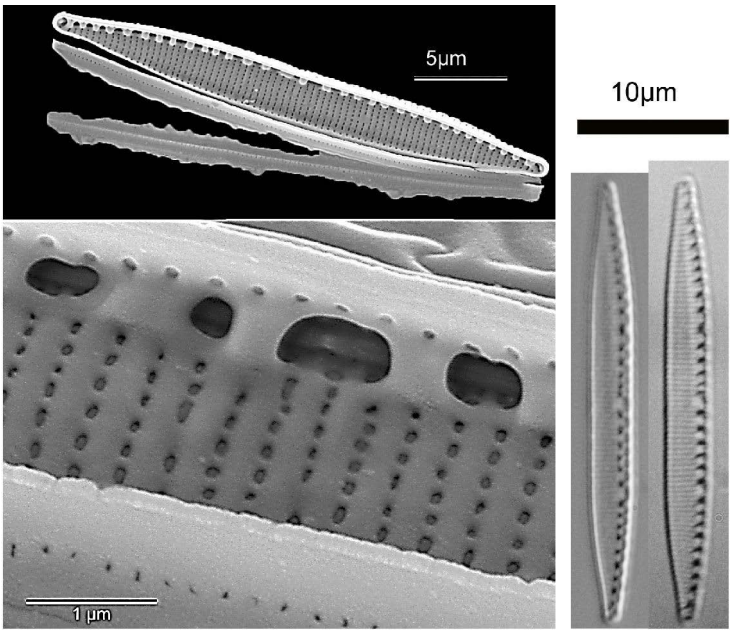
Nos. 56.
Prepared from TNS-AL-56527 in TNS. This culture strain was prepared from TNS-AL-56301 in TNS. Lake Shirarutoro, Hokkaido Pref. Coll. A. Tuji 16/xii/06.

Sellaphora seminulum (Grunow) D.G.Mann Brit. Phycol. 24: p.2. 1989.
Basionym: *Navicula seminulum* Grunow, Verh. Kais. König. Zool.-Bot. Ges. Wien **10**: 552. *pl.2. f. 3. pl. 4. f. 3.* 1860.



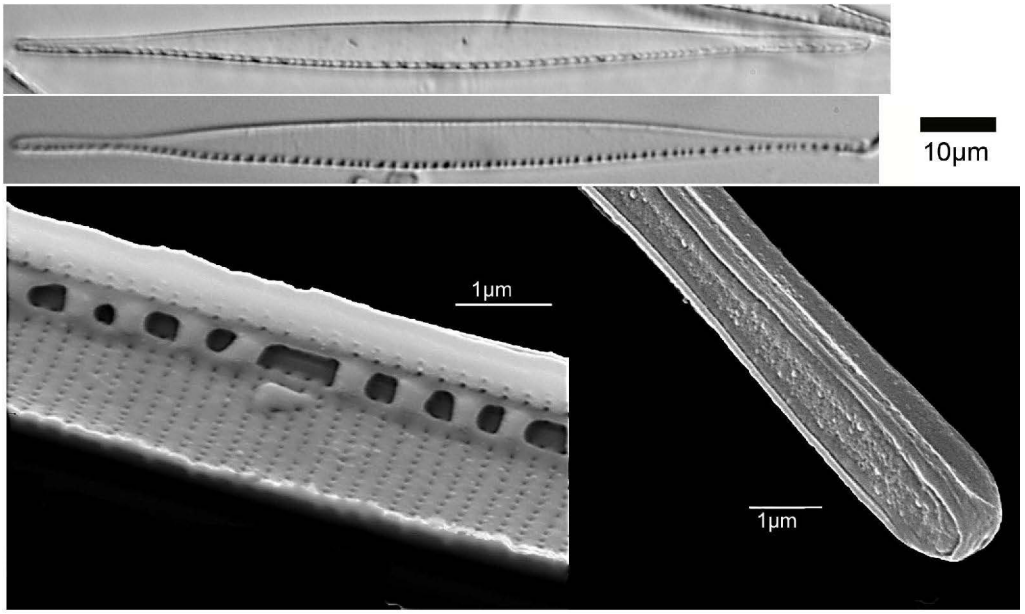
Nos. 57.
Prepared from TNS-AL-56528 in TNS. This culture strain was prepared from TNS-AL-56374 in TNS. Lake Kitaura, Ibaraki Pref. Coll. A. Tuji 13/iii/08.

Nitzschia frustrum (Kütz.) Grunow in Cleve & Grunow, Kongl. Svenska-vet. Akad. Handl. **17**: 98. 1880.
Basionym: *Synedra frustulum* Kütz. Bacill. p. 63. *pl. 30. f. 77.* 1844.



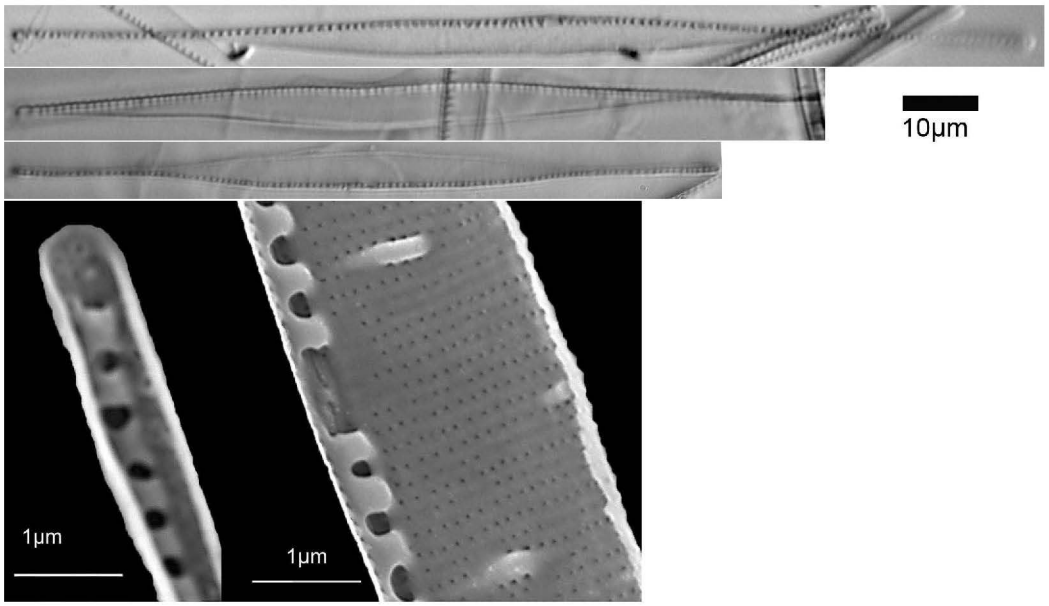
Nos. 58.
Prepared from TNS-AL-56529 in TNS. This culture strain was prepared from TNS-AL-56374 in TNS. Lake Kitaura, Ibaraki Pref. Coll. A. Tuji 13/iii/08.

Nitzschia draveillensis M.Coste & Ricard, Cryptog. Alg. **3**: 190. *pl. 2. f. 32. pl. 10. f. 70, 73-74.* 1980.



Nos. 59.
Prepared from TNS-AL-56531 in TNS. This culture strain was prepared from TNS-AL-56371 in TNS. Lake Kasumigaura, Ibaraki Pref. Coll. A. Tuji 10/iii/08.

Nitzschia draveillensis M.Coste & Ricard, Cryptog. Alg. **3**: 190. *pl. 2. f. 32. pl. 10. f. 70, 73-74.* 1980.



Nos. 60.
Prepared from TNS-AL-56594 in TNS. This culture strain was prepared from TNS-AL-56579 in TNS. Lake Shikotsu, Hokkaido Pref. Coll. A. Tuji 25/vi/08.

Staurosira elliptica (Schumann) Cleve & Möller Diatoms. Part V. No. 262. 1879.
Basionym: *Fragilaria elliptica* Schumann, Verh. K. K. Zool. -Bot. Ges. Wien 17, p. 52, *pl. 1, fig. 5.* 1867.