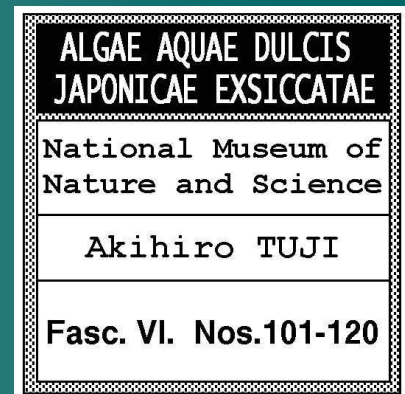


ALGAE AQUAE DULCIS JAPONICAE EXSICCATAE VI

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06 May 2014

PREFACE

This exsiccata set, made from Japanese freshwater micro-algal specimens, is issued by the National Museum of Nature and Science. This sixth fascicle comprises 20 slides, following first to fifth fascicles (Tuji, 2007, 2009, 2010, 2012, 2013). The primary set resides at Microalgal Herbarium in TNS.

This fascicle is made using culture strains isolated from Japanese fresh water habitat by A. Tuji at the micro-algal laboratory, National Museum of Nature and Science. The molecular examination of these strains, has been done by us.

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

CITATION

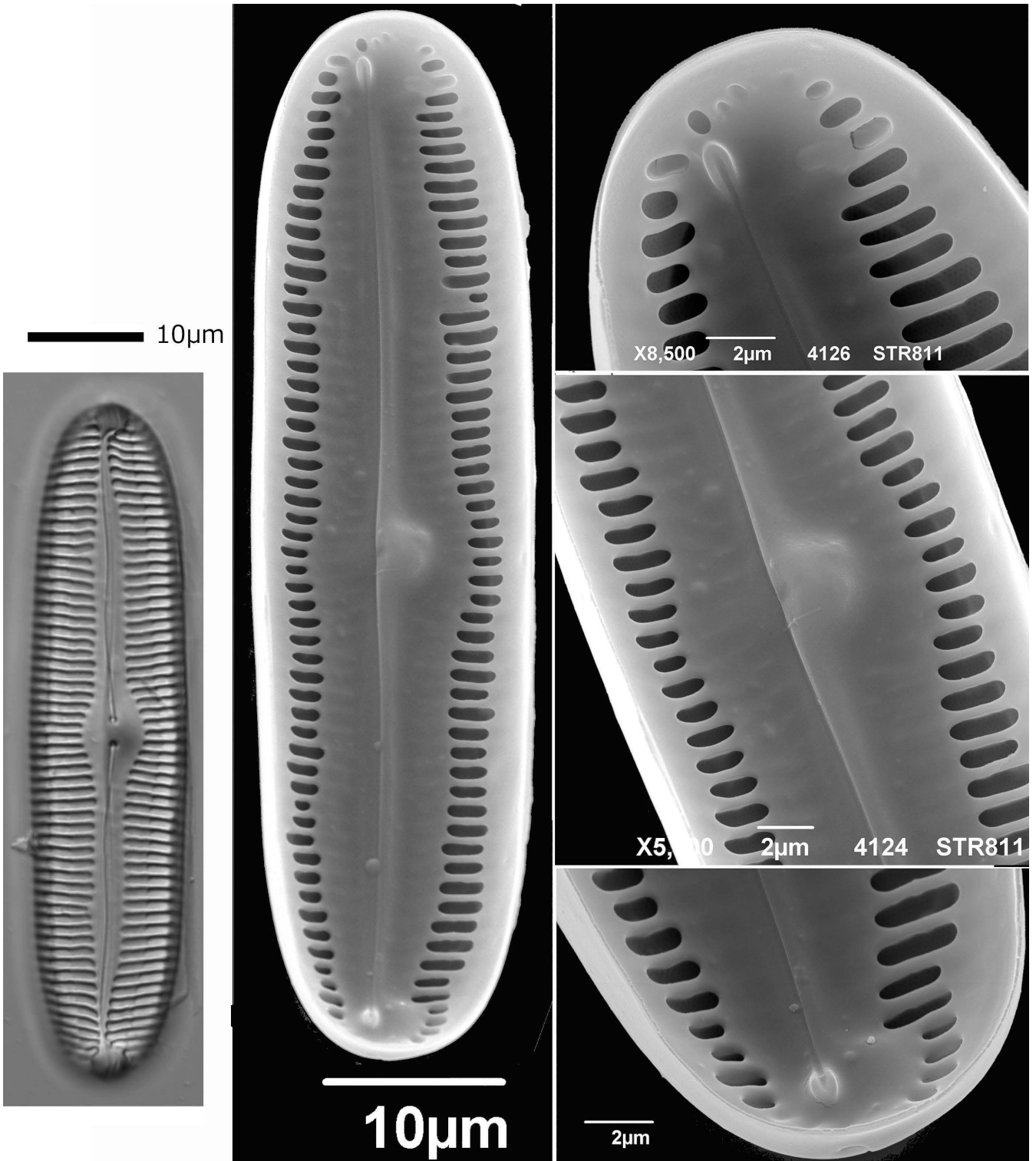
Tuji, A. 2014. Algae Aquae Dulcis Japonicae Exsiccatae. Fasc. VI. Nos. 101-120. 25pp. National Museum of Nature and Science, Tsukuba.

Nos. 101.

Prepared from strain Ak811 (voucher specimens: TNS-AL-61811 in TNS). This culture strain was prepared from TNS-AL-57849 in TNS. River Araizawa, Yuza, Yamagata Pref. Coll. A. Tuji, 23/vii/2012.

Pinnularia socialis (Palmer) Hust. in Schmidt et al., Atlas Diat. *pl.* 294. *f.* 28. 1913.

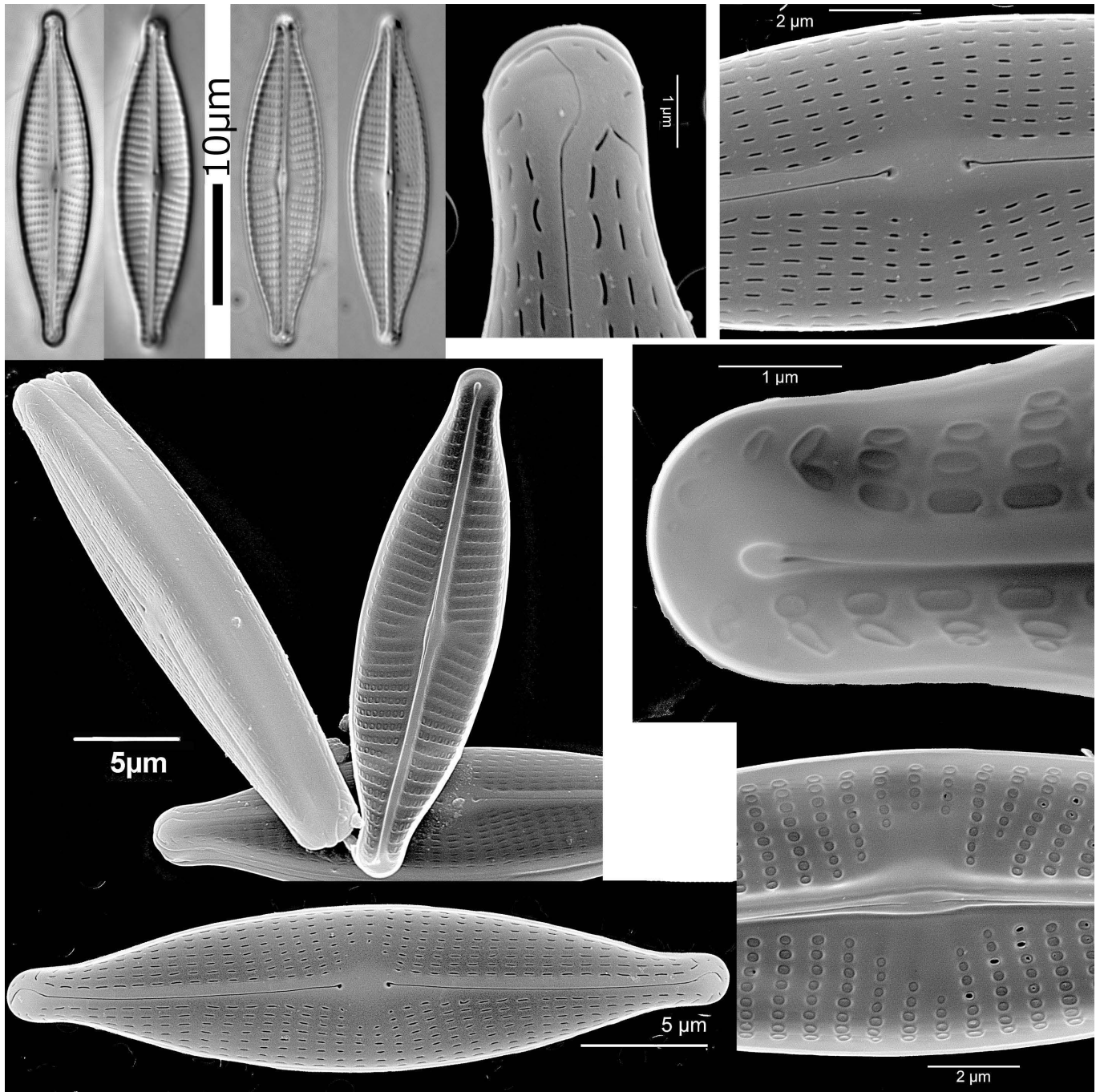
Basionym: *Navicula socialis* Palmer, Proc. Acad. Natl. Sci. Phil. **62**: 460. *pl.* 35. 1910.



Nos. 102.

Prepared from strain Ak884 (voucher specimens: TNS-AL-61884 in TNS). This culture strain was prepared from TNS-AL-57729 in TNS. Kain-tei, Imperial palace, Tokyo Pref. Coll. A. Tuji, 13/iii/2013.

Navicula cryptocephala Kütz., Bacill. 95. pl. 3. f. 20, 26. 1844.



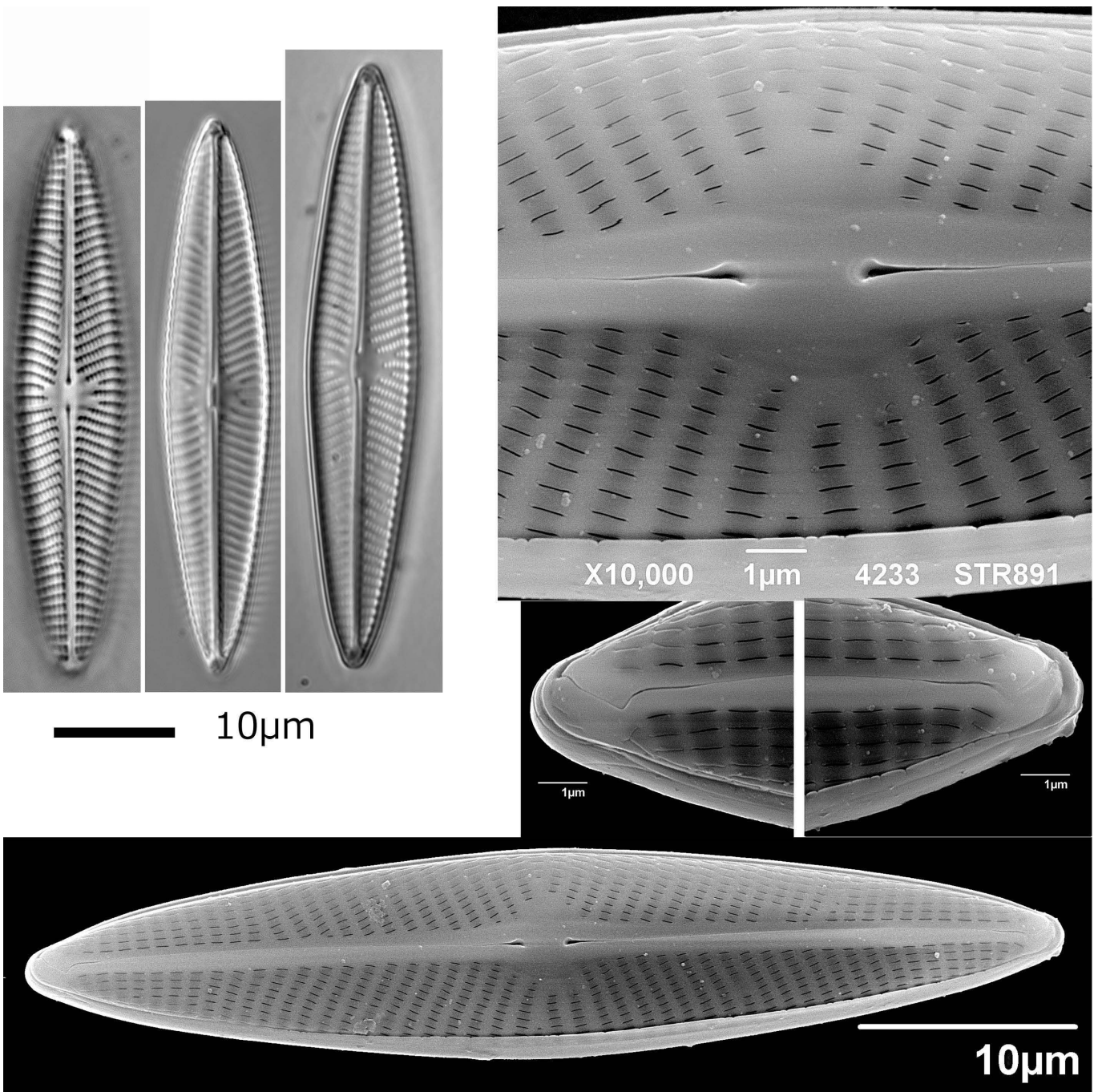
Nos. 103.

Prepared from strain Ak891 (voucher specimens: TNS-AL-61891 in TNS). This culture strain was prepared from TNS-AL-57758 in TNS. Lake Yogo, Shiga Pref., Coll. A. Tuji, 12/iii/2013.

Navicula nipponica (Skvortsov) Lange-Bert., Biblioth. Diatomol. **27**: 126. 1993.

Basionym: *Navicula radiosa* f. *nipponica* Skvortzov, Philipp. J. Sci. **61**: 273. pl. 2. f. 2; pl. 3. f. 20. 1936.

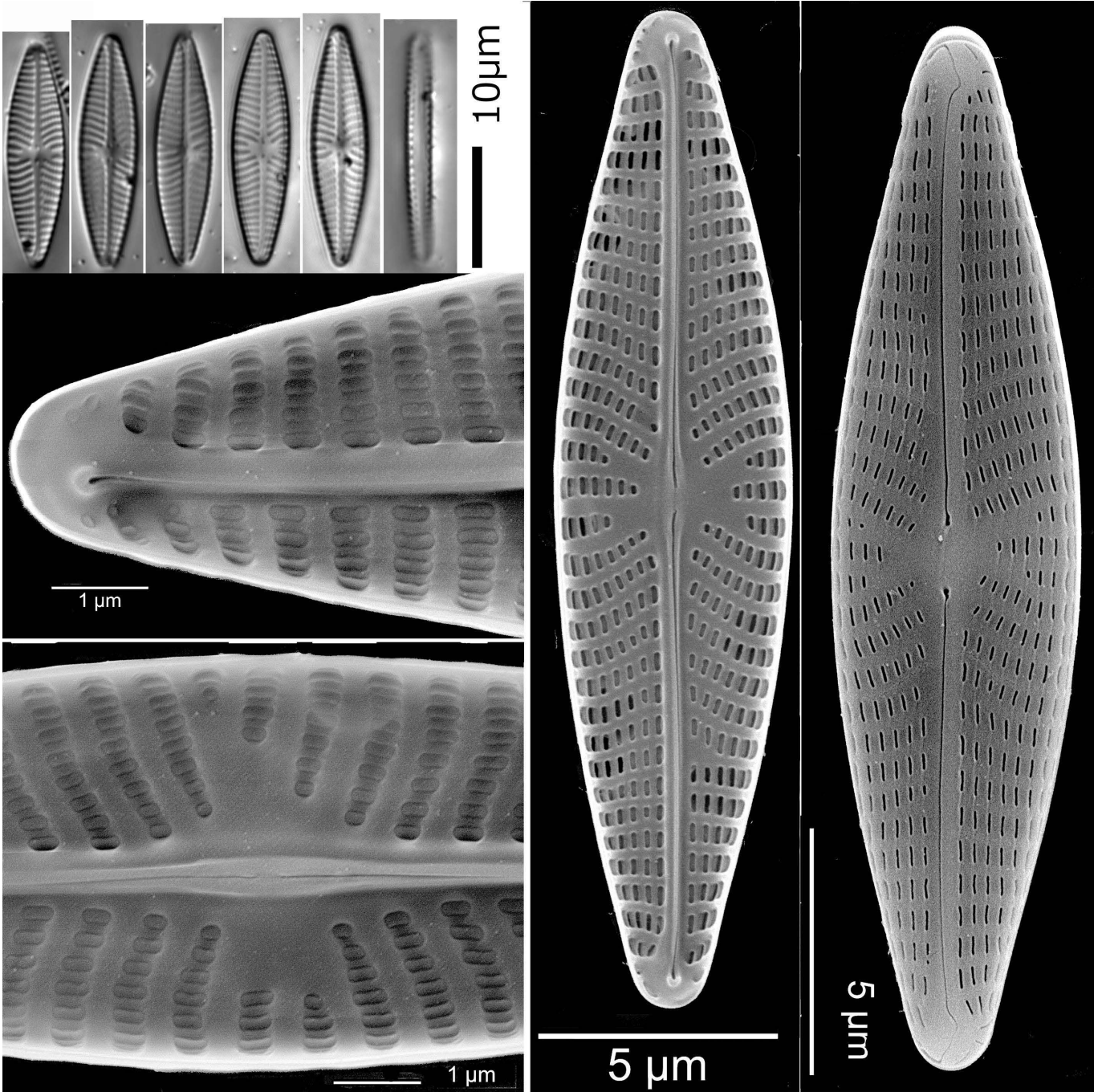
Lectotype (designated by Tuji 2006 followed Ohtsuka & Tuji 2002): slide 30000143 in Lake Biwa Museum, Kusatsu, Shiga Prefecture, Japan. The raw material is also housed in TNS.



Nos. 104.

Prepared from strain Ak853 (voucher specimens: TNS-AL-61853 in TNS). This culture strain was prepared from TNS-AL-57811 in TNS. A spring at Hateruma Isl., Okinawa Pref. Coll. A. Tuji, 2/ix/2012.

Navicula veneta Kütz., Bacill. 95. pl. 30. f. 76. 1844.

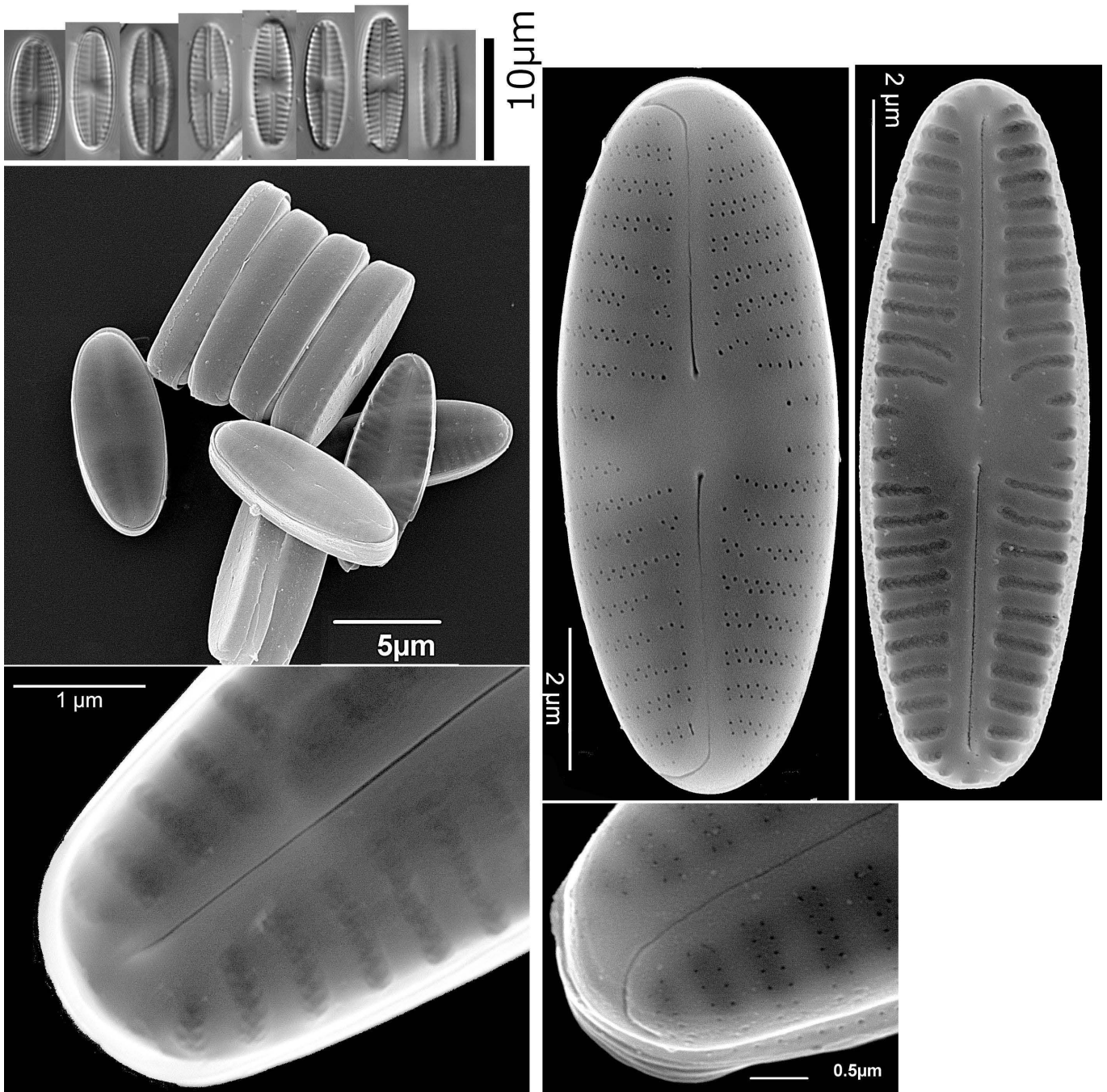


Nos. 105.

Prepared from strain Ak915 (voucher specimens: TNS-AL-61915 in TNS). This culture strain was prepared from TNS-AL-57726 in TNS. Kain-tei, Imperial palace. Coll. A. Tuji, 18/iii/2013.

Sellaphora seminulum (Grunow) D.G.Mann, Brit. Phycol. J. **24**: 2. 1989.

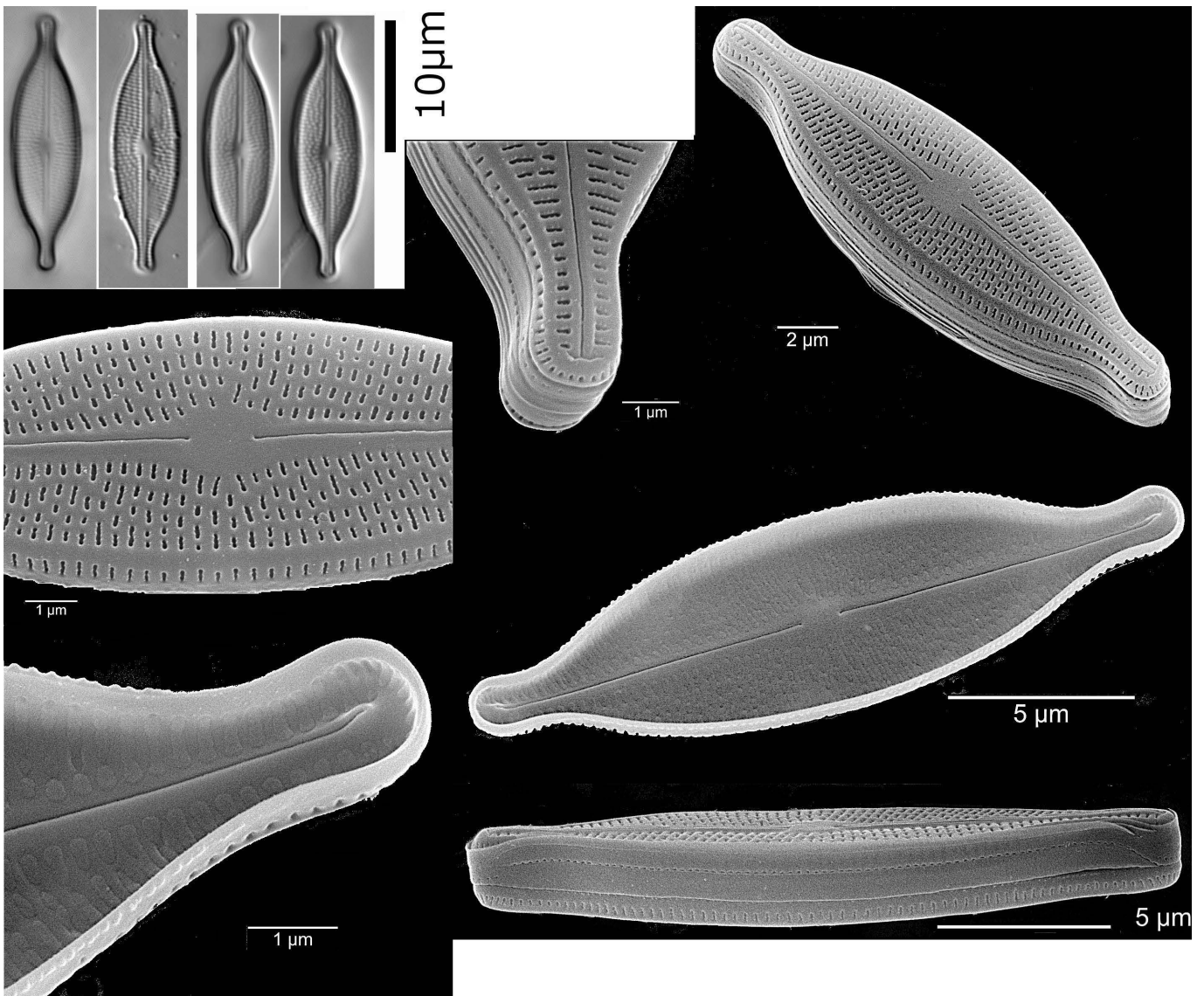
Basionym: *Navicula seminulum* Grunow, Verh. K.-K. Zool.-Bot. Ges. Wien **10**: 552, pl. 2. f. 2. 1860.



Nos. 106.

Prepared from strain Ak857 (voucher specimens: TNS-AL-61857 in TNS). This culture strain was prepared from TNS-AL-57829 in TNS. Sokobaru reservoir, Ishigaki Isl., Okinawa Pref. Coll. A. Tuji, 21/ix/2012.

Anomoeoneis microcephala A. Berg, Ark. Bot. **32A(1)**: 12. pl. 3. f. 125. 1945.

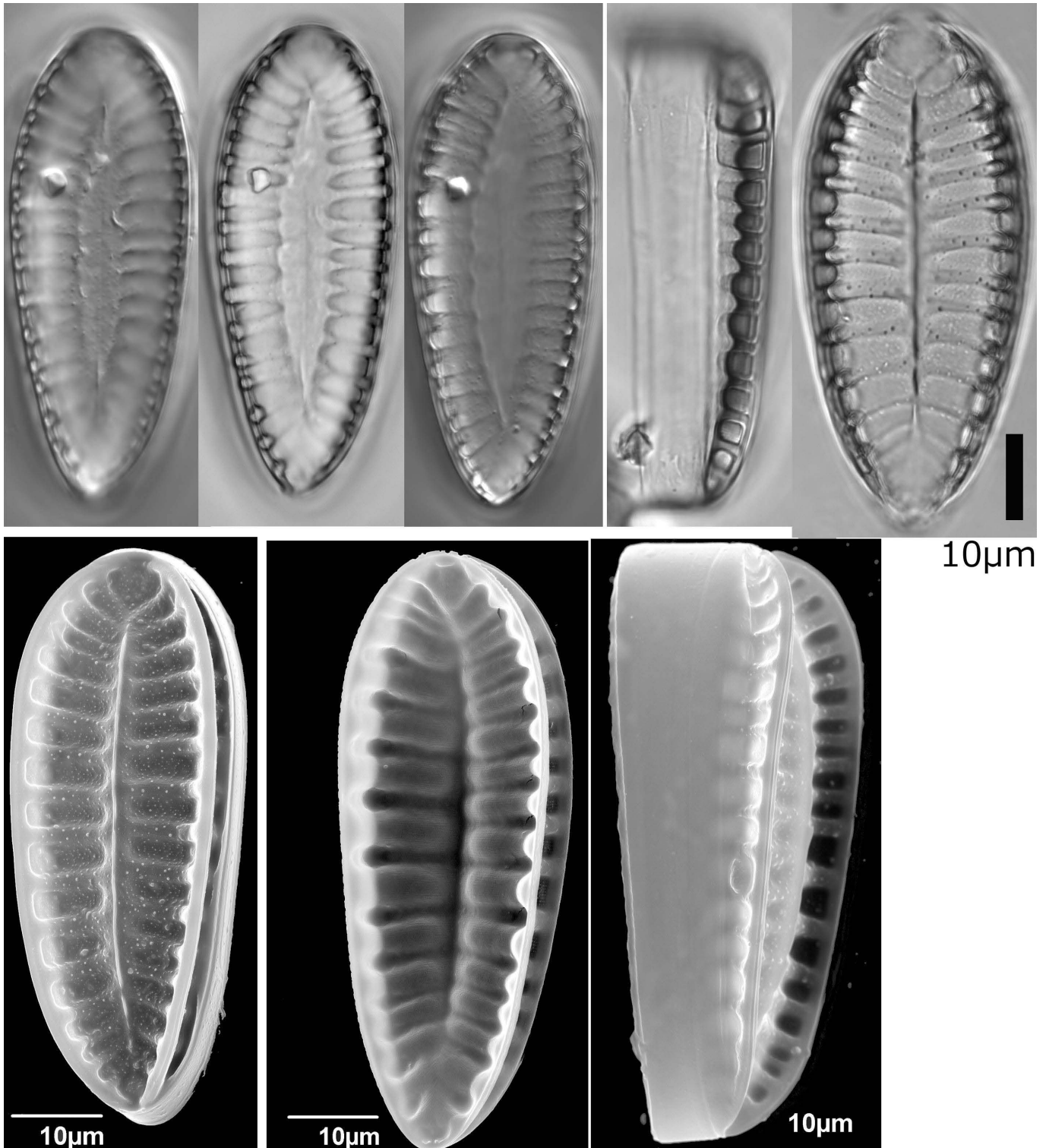


Nos. 107.

Prepared from strain Ak810 (voucher specimens: TNS-AL-61810 in TNS). This culture strain was prepared from TNS-AL-xxx in TNS. River Araizawa, Yuza, Yamagata Pref. Coll. A. Tuji, 23/vii/2012.

Surirella robusta var. *tenera* (W.Greg.) Van Heurck, Synopsis Diat. Belg. 187. 1885.

Basionym: *Surirella tenera* W.Greg., Quart. J. Microsc. Sci. new ser. London 4: 11. pl. 1. f. 38. 1856

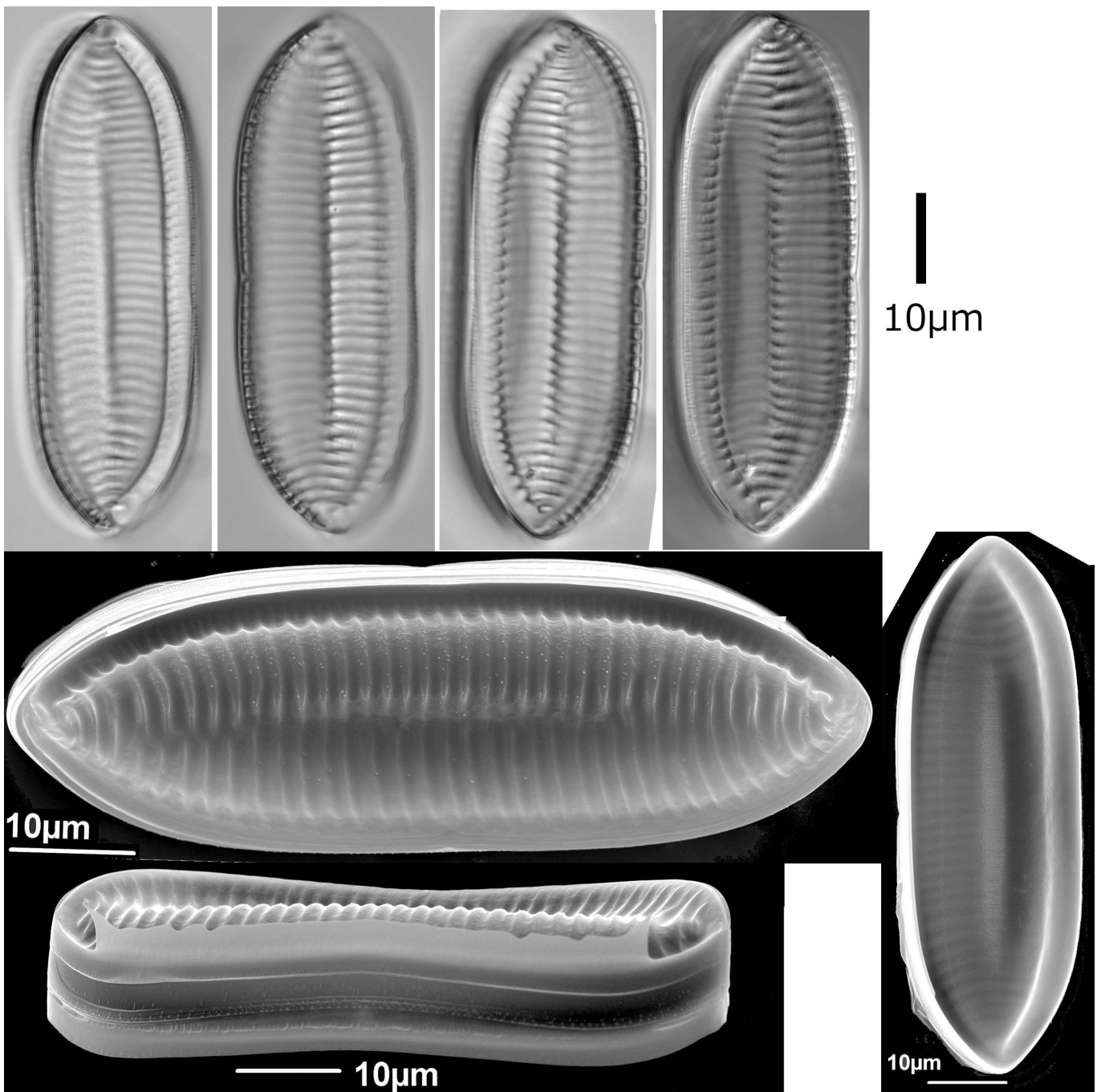


Nos. 108.

Prepared from strain Ak866 (voucher specimens: TNS-AL-61866 in TNS). This culture strain was prepared from TNS-AL-57819 in TNS. Fall of Kanpire, Iriomote Isl., Okinawa Pref. Coll. A. Tuji, 25/ix/2012.

Nitzschia tryblionella var. *littoralis* (Grunow in Cleve & Grunow) Grunow in Van Heurck, Synopsis 172. pl. 59. f. 1-3. 1881.

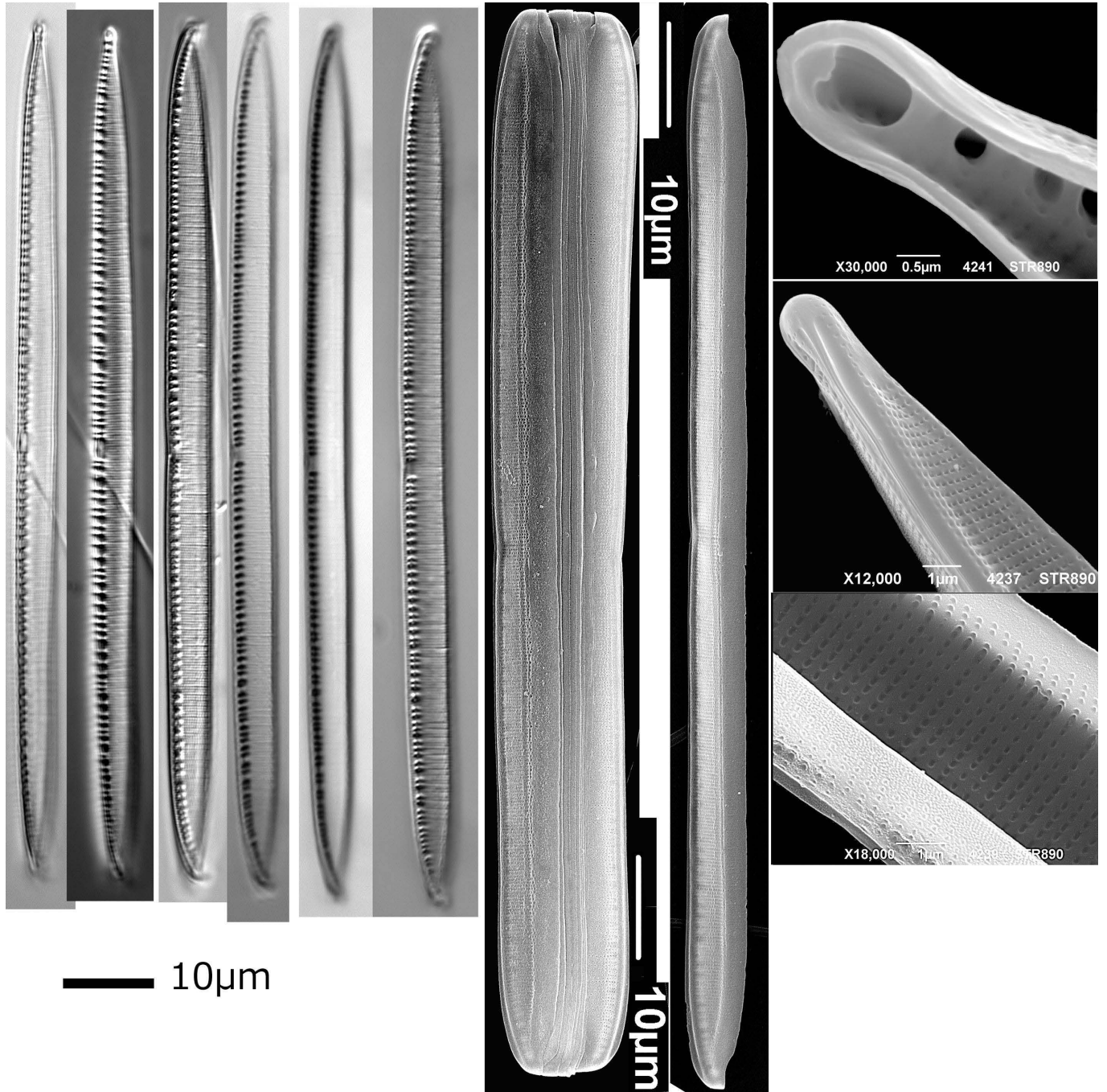
Basionym: *Nitzschia littoralis* Grunow in Cleve & Grunow, K. Svenska Vet. Akad. Handl. [ser. 4], 17(2): 75. 1880.



Nos. 109.

Prepared from strain Ak890 (voucher specimens: TNS-AL-61890 in TNS). This culture strain was prepared from TNS-AL-57745 in TNS. Kita-Komatsu, Lake Biwa, Shiga Pref. Coll. A. Tuji, 10/iii/2013.

Nitzschia tenuis W. Sm., Brit. Diat. 40. pl. 13. f. 111. 1853.

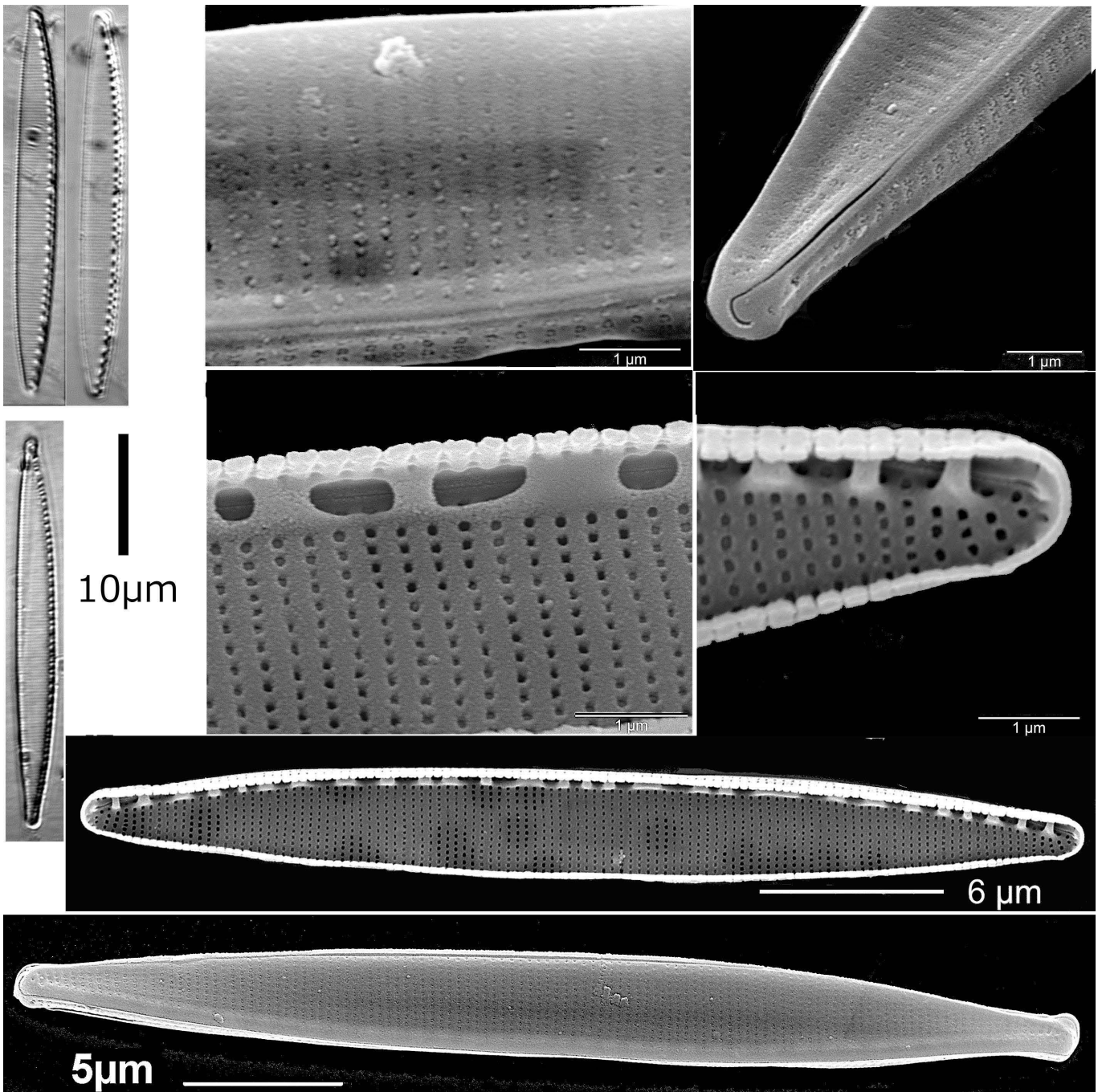


Nos. 110.

Prepared from strain Ak805 (voucher specimens: TNS-AL-61805 in TNS). This culture strain was prepared from TNS-AL-57853 in TNS. Semi hot spring, Yamagata Pref. Coll. A. Tuji, 24/vii/2012.

Nitzschia palea var. *debilis* (Kütz.) Grunow in Cleve & Grunow, K. Svenska Vet. Akad. Handl. [ser. 4], 17(2): 96. 1880.

Basionym: *Synedra debilis* Kütz., Bacill. 65. pl. 3, f. 45. 1844.

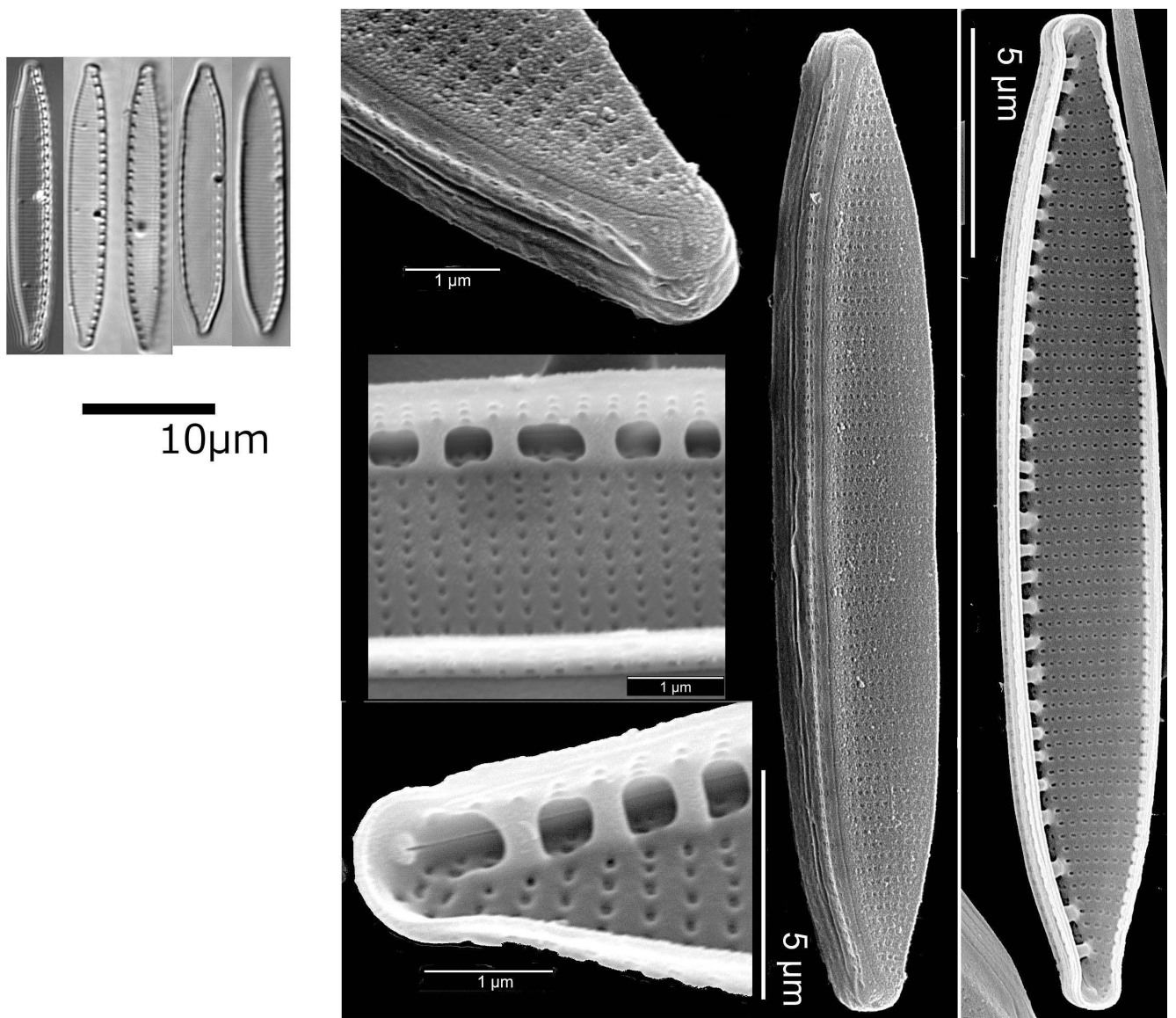


Nos. 111.

Prepared from strain Ak937 (voucher specimens: TNS-AL-61937 in TNS). This culture strain was prepared from sample 1305-St9, Lake Kasumigaura, Ibaraki Pref. Coll. Megumi Nakagawa, 8/v/2013.

Nitzschia fruticosa Hust., Abh. Naturw. Ver. Bremen **34**: 349. f. 81-82. 1957.

This taxon made star-like colony, and has a planktonic habitat. It is common in many Japanese lakes and reservoirs including Lake Kasumigaura. It was confused with *N. holsatica* Hust., however, *N. fruticosa* was more large than *N. holsatica*.

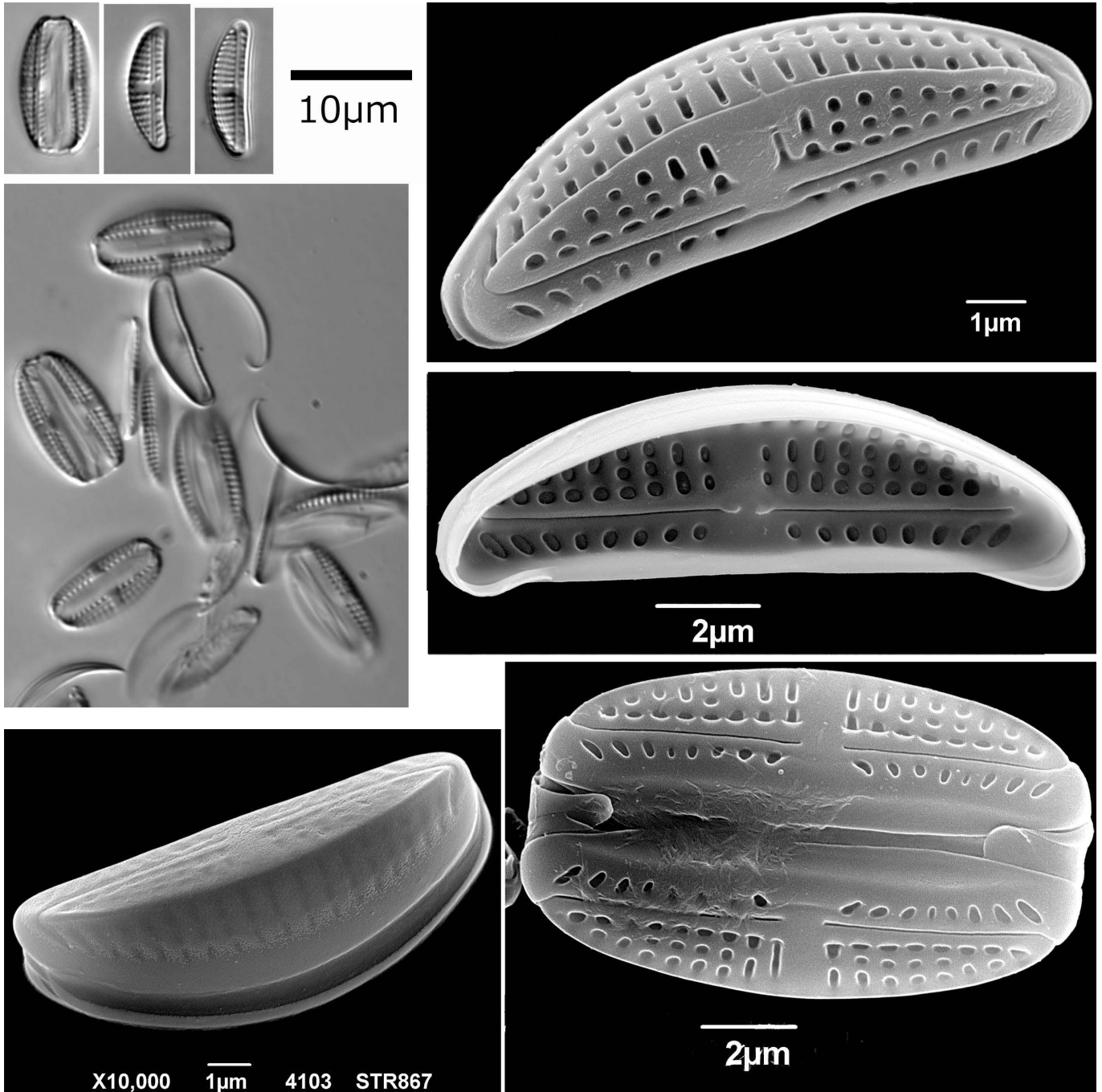


Nos. 112.

Prepared from strain Ak112 (voucher specimens: TNS-AL-61112 in TNS). This culture strain was prepared from the culture bottle of *Cladophora* sp. Tateyama maintained in National Museum of Nature and Science.

Amphora pediculus (Kütz.) Grunow in Schmidt et al., Atlas Diat. pl. 26. f. 99. 1875.

Basionym: *Cymbella pediculus* Kütz., Bacill. 80. pl. 5. f. 8. pl. 6. pl. 7. 1844.



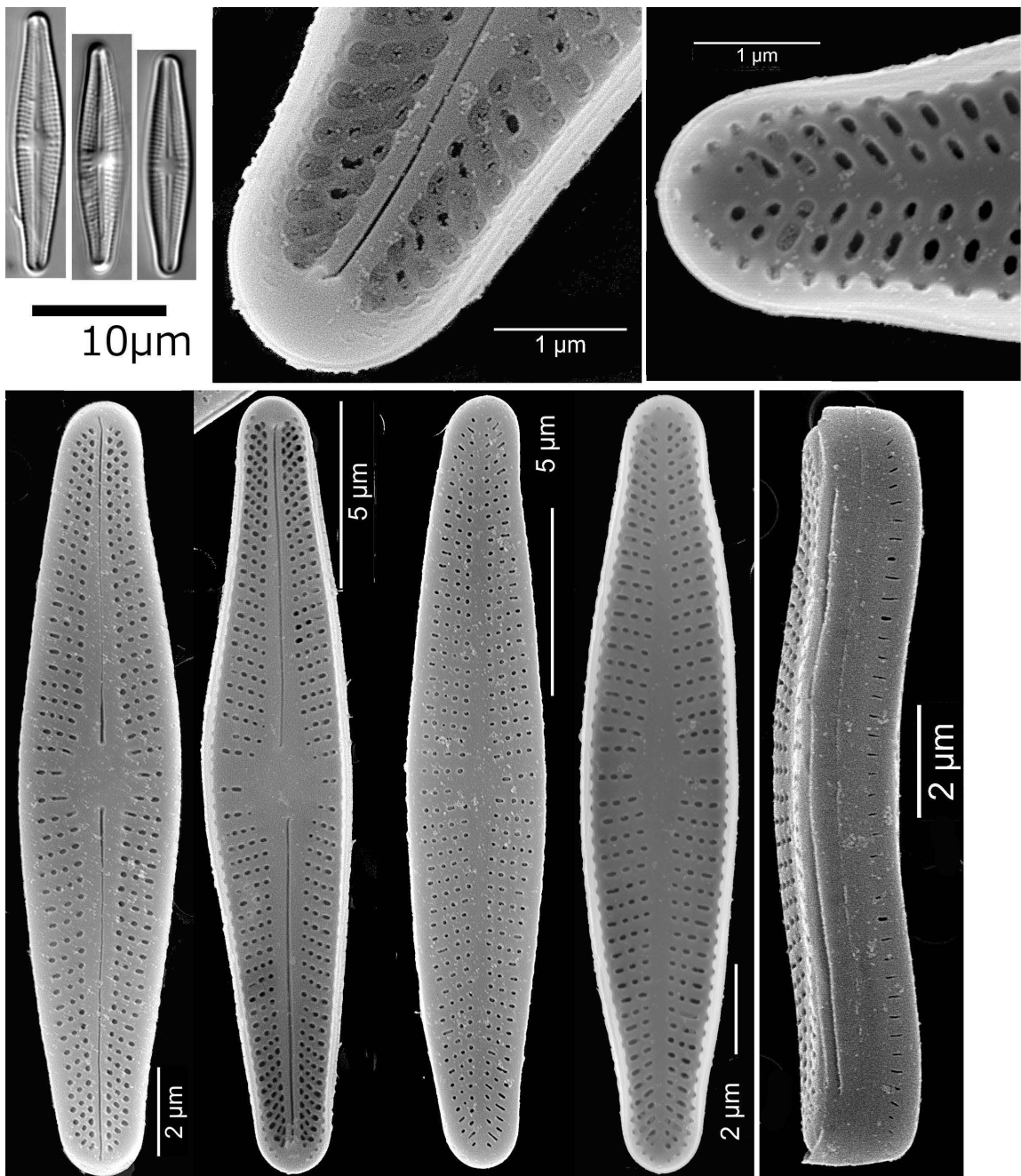
Nos. 113.

Prepared from strain Ak882 (voucher specimens: TNS-AL-61882 in TNS). This culture strain was prepared from TNS-AL-57690 in TNS. Ninomaru pond, Imperial place, Tokyo Pref., Coll. 22/xi/2012.

Achnantheidium minutissimum (Kütz.) Czarn., Mem. Calif. Acad. Sci. 17: 157. 1994.

Basionym: *Achnanthes minutissima* Kütz., Linnaea 8: 578. f. 54. 1833.

This species was wider than previously reported. The morphological variation of this species complex is required further study.

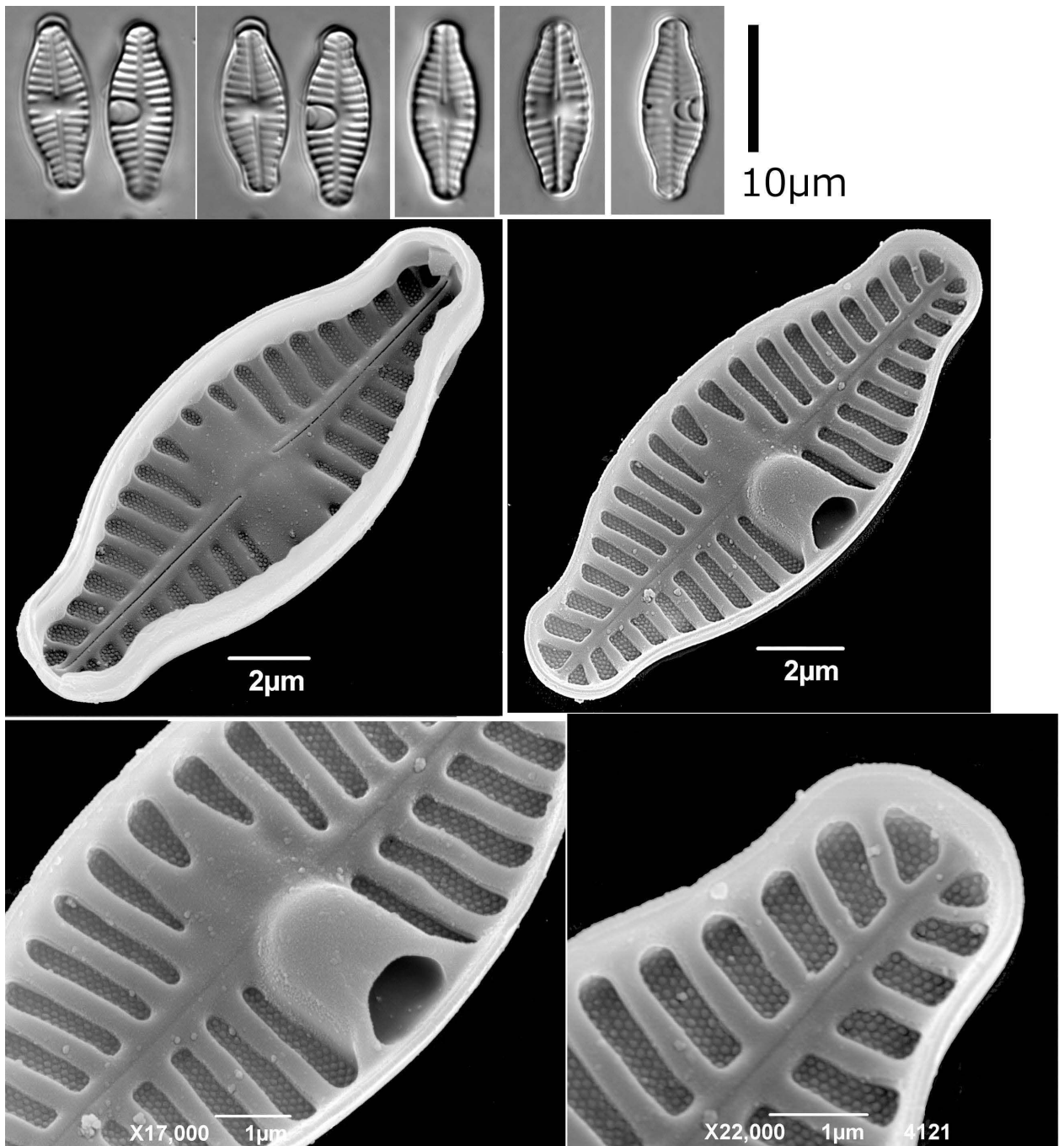


Nos. 114.

Prepared from strain Ak807 (voucher specimens: TNS-AL-61807 in TNS). This culture strain was prepared from TNS-AL-57849 in TNS. River Araizawa, Yuza, Yamagata Pref. Coll. A. Tuji, 23/vii/2012.

Planothidium rostratum (Østrup) Lange-Bert., Iconogr. diatomol. **6**: 279. 1999.

Basionym: *Achnanthes rostrata* Østrup, Bot. Tidsskrift **25**: 35. pl. 1. f. 11. 1902.



Nos. 115.

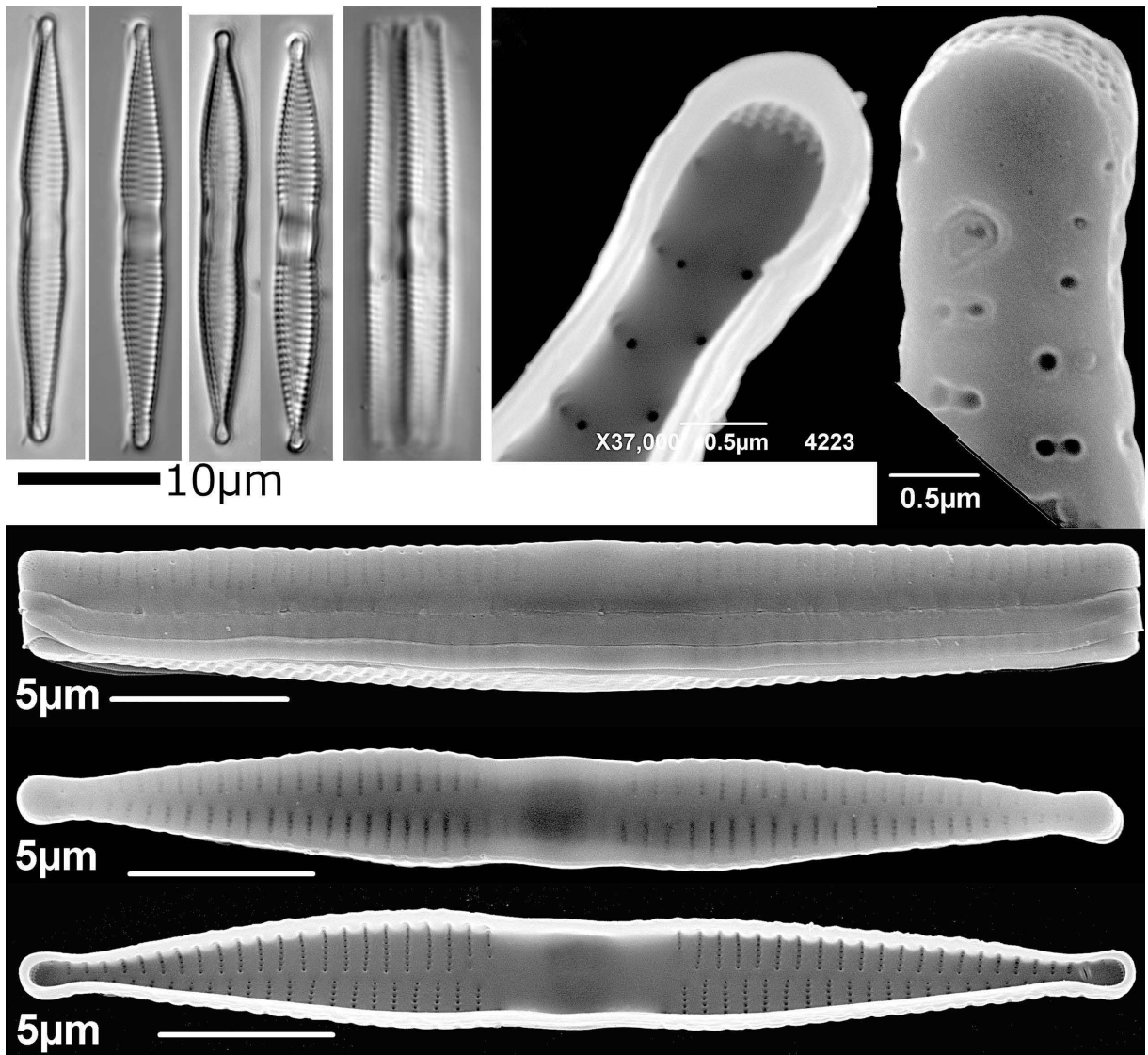
Prepared from strain Ak905 (voucher specimens: TNS-AL-61905 in TNS). This culture strain was prepared from TNS-AL-57745 in TNS. Kita-Komatsu, Lake Biwa, Shiga Pref. Coll. A. Tuji, 10/iii/2013.

Fragilaria socia (Wallace) Lange-Bert., Nova Hedw. 749. 1980.

Basionym: *Synedra socia* J.H.Wallace, Not. Nat. Acad. Nat. Sc. Philad. **331**: 1. pl. 1. f. 1. 1881.

Lectotype: A-G.C. 4036a (see Tuji & Williams 2008).

This taxon had been confused with *Synedra familiaris* Kütz. However, *S. familiaris* is not a member of *Fragilaria capucina* species complex including this taxon (Tuji & Williams 2008b).



Nos. 116.

Prepared from strain Ak895 (voucher specimens: TNS-AL-61895 in TNS). This culture strain was prepared from TNS-AL-57745 in TNS. Kita-Komatsu, Lake Biwa, Shiga Pref. Coll. A. Tuji, 10/iii/2013.

Fragilaria capitellata (Grunow) J.B.Petersen, Kongel. Danske selsk. biol. medd. **20**: 54. 1946.

Basionym: *Synedra* (*vaucheriae* var.?) *capitellata* Grunow in Van Heurck, Synopsis *pl. 40. f. 26* 1881.

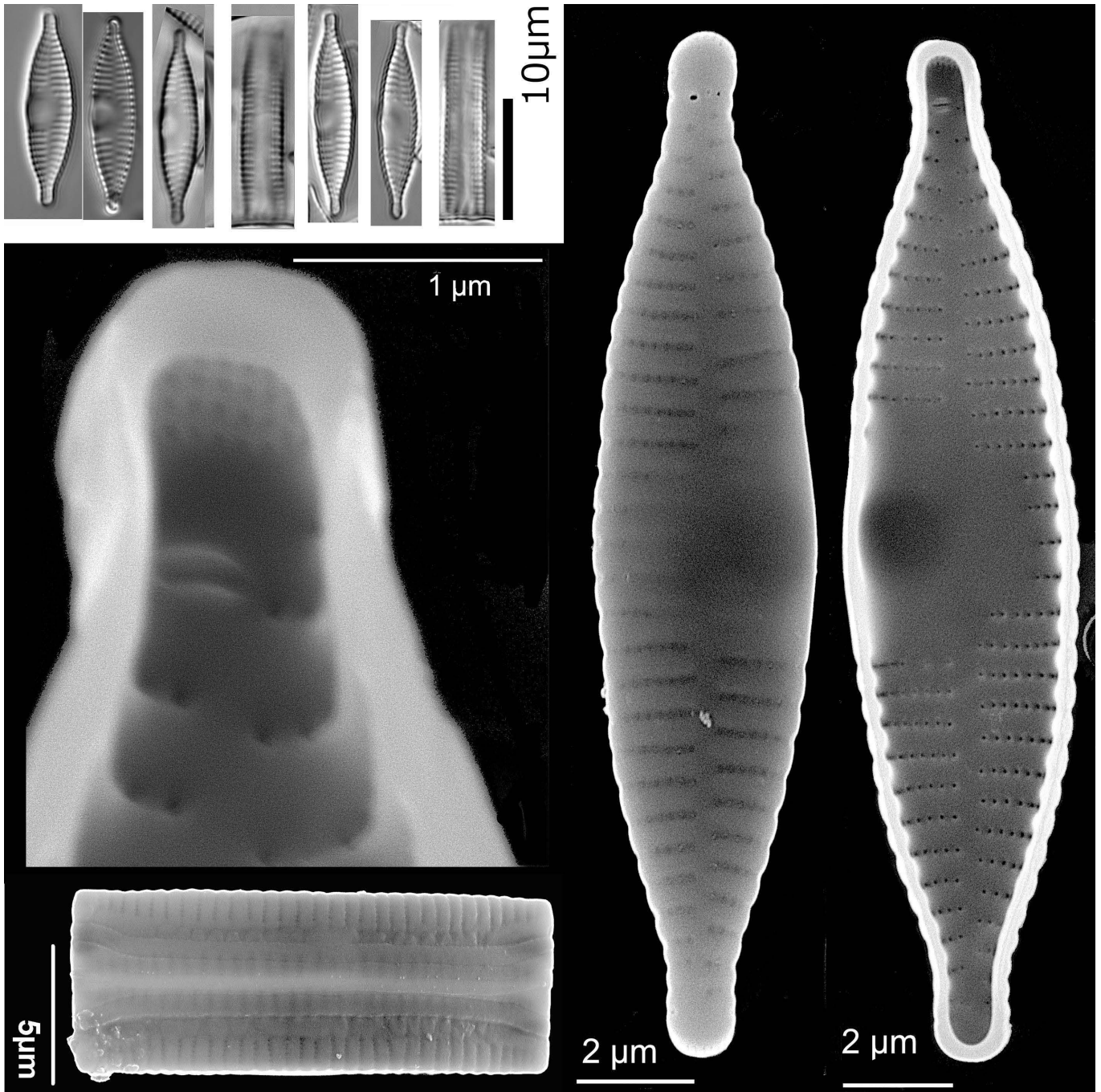
Lectotype (designated in Tuji & Williams 2008): Grunow in Van Heurck (1881): *pl. 40, f. 26 (a)*.

Epitype (designated in Tuji & Williams 2008): an individual in BM101312 in BM. England finder = 042-3.

Isoepitype material: Kützing packet 861 in BM, sheet no. 586.

Type locality: Zurich, Helvetia (Switzerland).

Nos. 116.

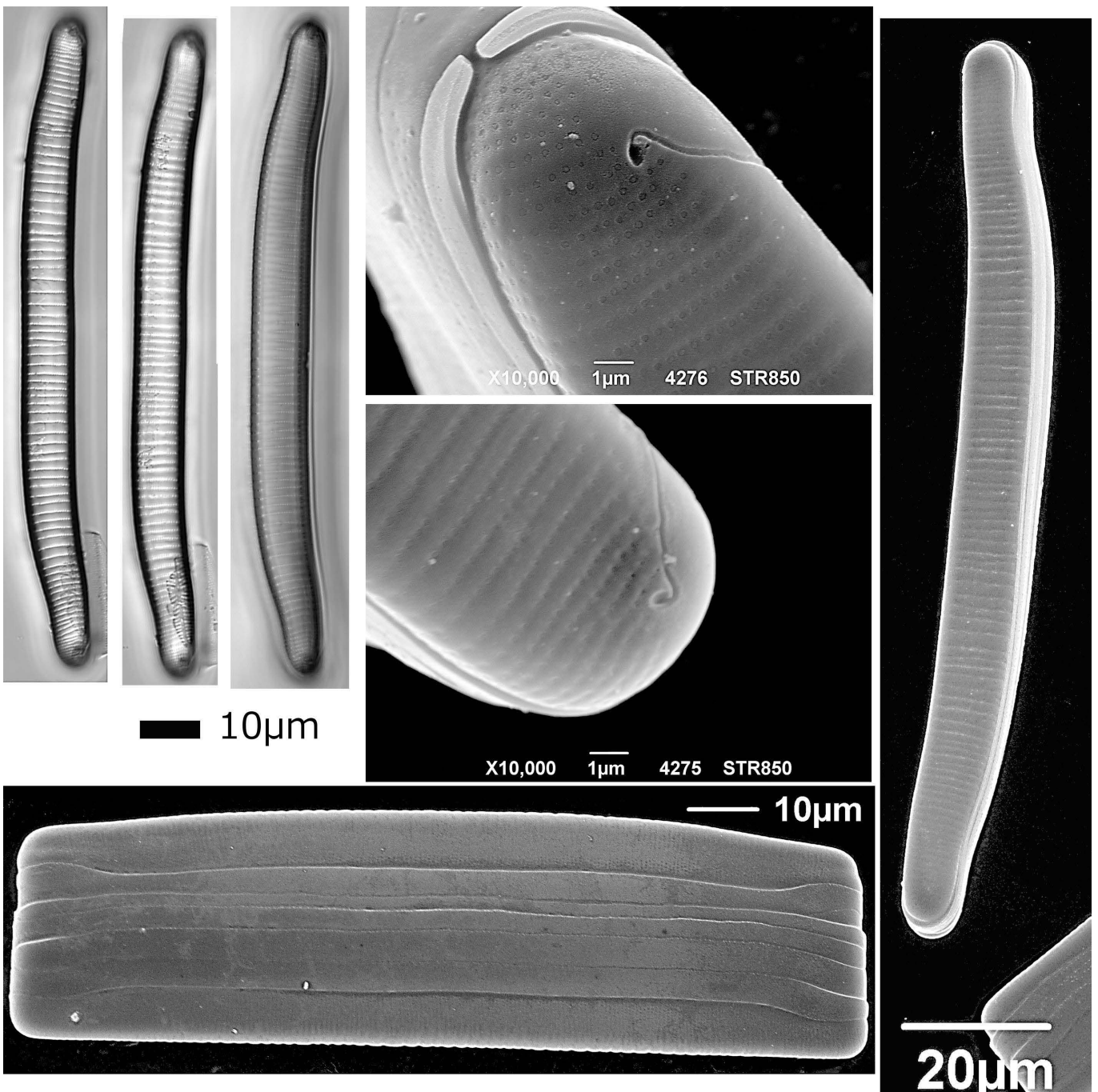


Nos. 117.

Prepared from strain Ak850 (voucher specimens: TNS-AL-61850 in TNS). This culture strain was prepared from TNS-AL-xxx in TNS. A spring in Haemida-hama, Iriomote Isl., Okinawa Pref. Coll. A. Tuji, 25/ix/2012.

Eunotia cf. *pectinalis*

This taxon is very closed to *Eunotia pectinalis* (Kütz.) Rabenh. and may include *E. pectinalis* species complex. Tuji & Williams (2005) examined the type material for *E. pectinalis*. This taxon has wider valve ends than *E. pectinalis*.

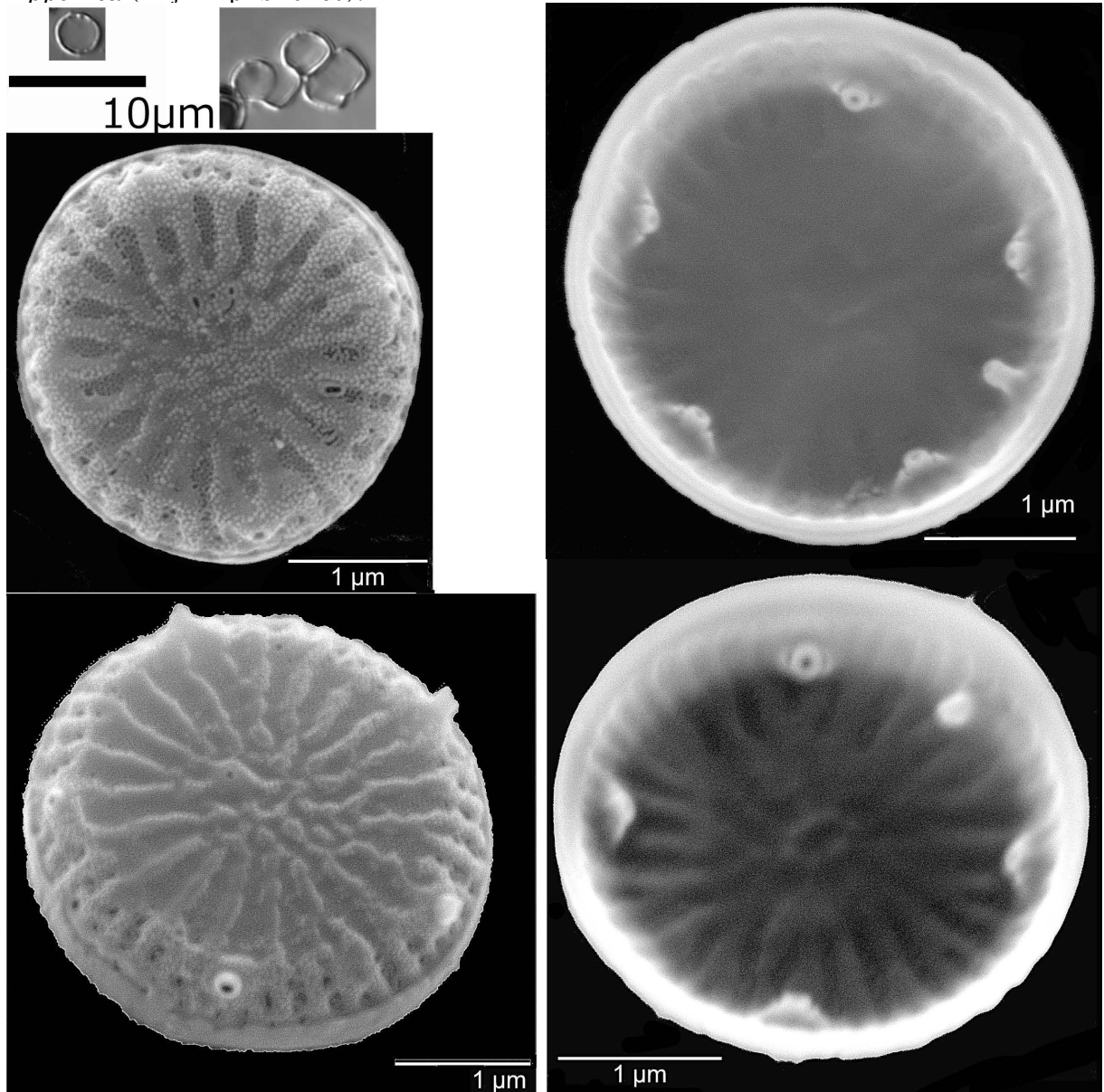


Nos. 118.

Prepared from strain Ak839 (voucher specimens: TNS-AL-61839 in TNS). This culture strain was prepared from sample 1208-St9, Lake Kasumigaura, Ibaraki Pref. Coll. Megumi Nakagawa, 8/viii/2012.

Discostella sp. Kasumi

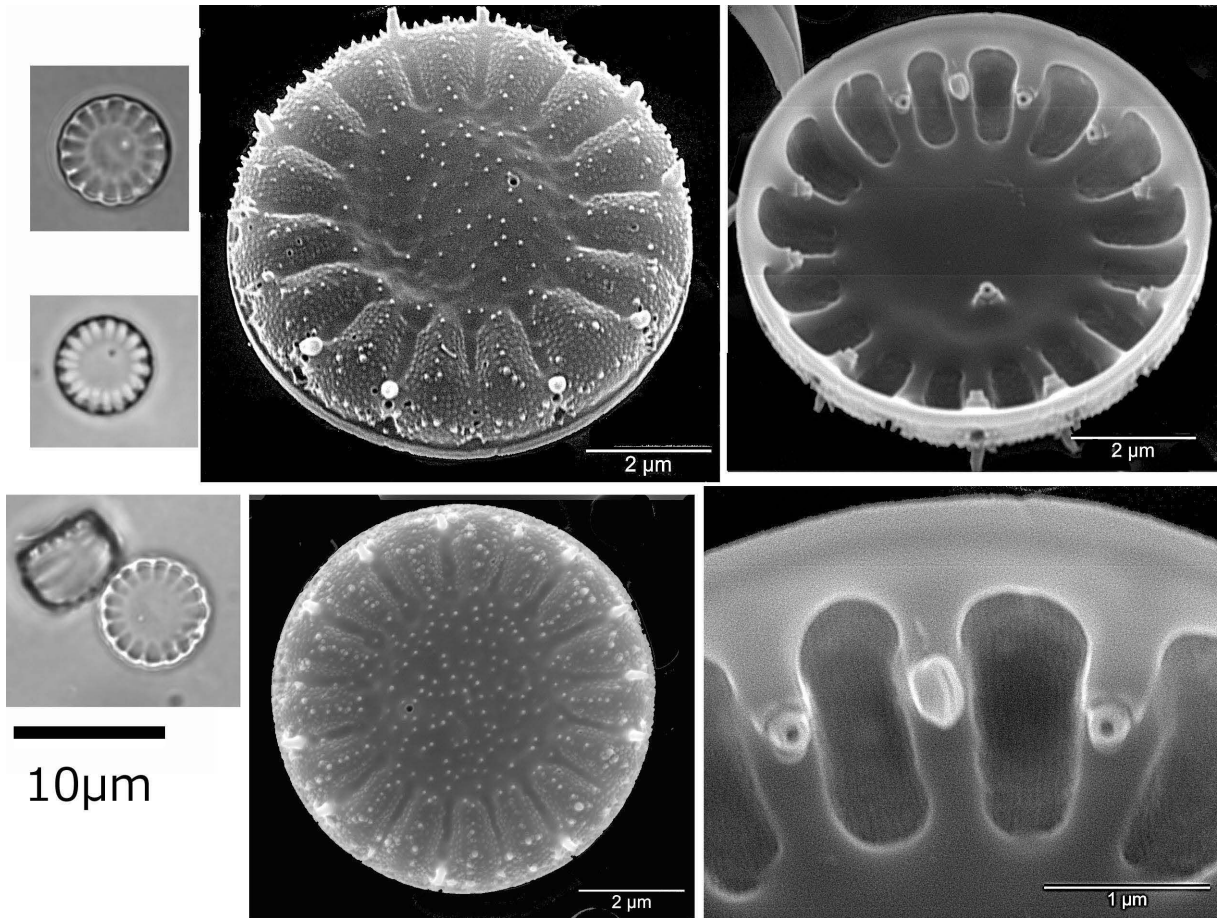
This taxon is very closed to *Discostella woltereckii*. The type material of *D. woltereckii* was examined by Tuji & Williams (2006a). The stalked rimportula on valve-mantle junction, and branched striae agree with *D. woltereckii*. However, *D. woltereckii* has clear central area, and differ from this taxon. It also closed to *Discostella nipponica* (Skvortsov) Tuji et D.M.Williams (type material was examined by Tuji & Williams 2006b), but *D. nipponica* has a sessile rimportula and clear central area, and differ from this taxon. This taxon is also distinguished by *rbcl* gene from *D. woltereckii* and *D. nipponica* (Tuji unpublished).



Nos. 119.

Prepared from strain Ak877 (voucher specimens: TNS-AL-61877 in TNS). This culture strain was prepared from TNS-AL-57761 in TNS. Nagahama port, Lake Biwa, Shiga Pref. Coll. A. Tuji, 12/iii/2013.

Cyclotella meneghiniana Kütz., Bacill. 50. pl. 30. f. 68. 1844.



Nos. 120.

Prepared from strain Ak880 (voucher specimens: TNS-AL-61880 in TNS). This culture strain was prepared from TNS-AL-57761 in TNS. Nagahama port, Lake Biwa, Shiga Pref. Coll. A. Tuji, 12/iii/2013.

Stephanodiscus binderanus (Kütz.) WilliKrieg., Pflanzenforschung **10**: 20. 1927.

Basionym: *Melosira binderana* Kütz., Bacill. *55*. pl. 2. f. 1. 1844.

Lectotype (designated in Geissler et al., 2006 by R. Jahn & H. Håkansson): [icon!] pl. 2, fig. I:1 (upper chain) in Kützing (1844).

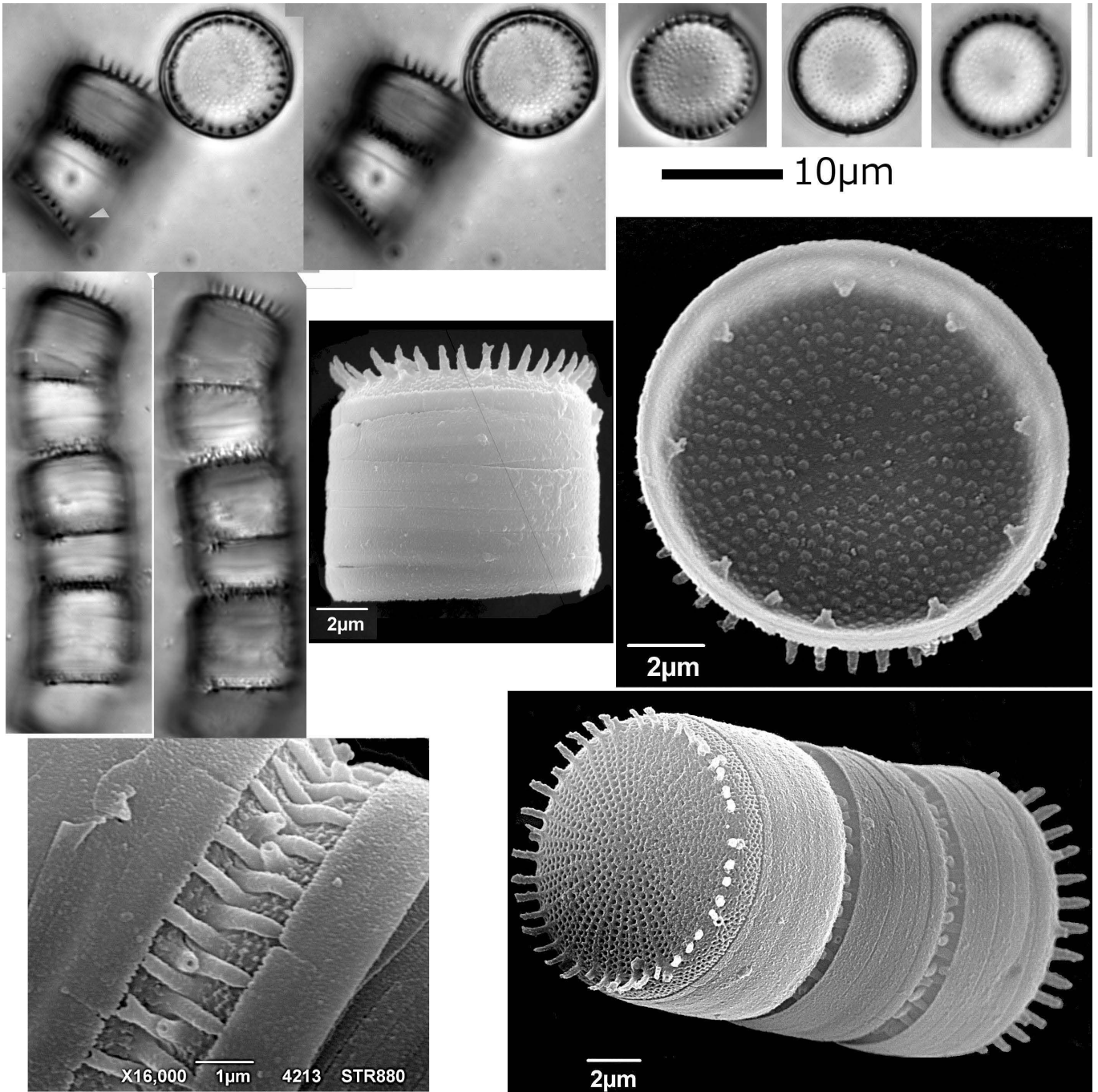
Lectotype locality: “Moorgräben bei Hamburg”, leg. F. Binder (Germany).

Epitype (designated in Geissler et al., 2006 by R. Jahn & H. Håkansson): B 400040219 (ex “Krieger 6169”; material documented in Håkansson (2002) as fig. 162, 163, 165–167).

Epitype locality: “Spree bei Berlin”(Germany), September 1924.

This taxon is very closed to *S. binderanus* var. *oestrupii* (A.Cleve) A.Cleve. The variety *oestrupii* is also known from Lake Biwa (Tuji & Houki 2001), and it might be same species. Both variety are differ in spine morphology, but very difficult to divide and need further work on these two varieties. Jahn & Håkansson in Geissler et al. (2006) designated the lectotype and epitype for this species, however they only presented the LM photograph not SEM, and the ultra-structure of spines was not examined for this designated types.

Nos. 120.



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