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Taxonomic revisions to the differentiating diatom groups for water quality evaluation and some comments for taxa with new designations

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水質判定のための識別珪藻群の分類学的改訂および新名称を与えた幾つかの分類群について

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Abstract

Differentiating diatom groups, which were proposed for water quality evaluation of Japanese-type river (Kobayasi & Mayama 1989), are nomenclaturally revised. New names were designated for 32 taxa among Group A and Group B taxa. Taxonomic comments are described in some species, including a new combination, *Craticula molestiformis* (Hustedt) Mayama.

Key index words

Craticula molestiformis comb. nov., diatoms, differentiating diatom groups, taxonomy, water quality evaluation.

Introduction

For the last decade, diatom genera have proliferated by establishment of new genera and revival of synonymous genera from earlier times. Though many comments have been made regarding this situation (e.g. Kociolek 1996, Lange-Bertalot 1997a, Mann 1997 and Round 1996, 1997), the evaluations of these genera are still open to argument. Kobayasi and Mayama (1989) proposed a practicable water quality evaluation method for Japanese-type rivers using differentiating diatom groups, in which 10 taxa were classified into Group A and 64 taxa into Group B based on their distribution patterns in relation to the relative frequency and BOD. According to recent progress of diatom taxonomy, the users of this method, who are usually not taxonomists, also should accept new names for these taxa, if the names represent their correct ranks and positions in systematics. It is desirable that all genera be well studied on not only valve structure, which was produced as a result of living activity, but also organelle and living activity itself. However, actually only a few genera were documented in detail (e.g. Mann 1989, Mann & Stickle 1991). Every genus established recently has its unique criteria distinguishable from others, but they sometimes do not appear eminently on the valve structure. For correct evaluation of these genera, it is necessary to accumulate much information from various viewpoints. In this paper, the differentiating diatom groups, Groups A and B, are updated and some taxonomic notes are described.

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Results and Discussion

The lists of the Group A (Table 1) and Group B taxa (Table 2) are revised based on many taxonomic and nomenclatural reports published after the proposal of Kobayasi and Mayama (1989). Diatom species and the number of these species belonging to each group are not changed but many different names listed below are accepted.

***Achnanthidium exiguum* (Grunow) Czarnecki**, 11th Diatom Symposium, 157. 1994.

Basionym : *Stauroneis exilis* Kützing
Synonym : *Achnanthes exigua* Grunow

***Achnanthidium saprophilum* (H. Kobayasi & Mayama) Round & Bukhtiyarova**, Diat. Res. **11** : 349. 1996.
Basionym : *Achnanthes minutissima* var. *saprophila* H. Kobayasi & Mayama

Achnanthidium saprophila as spelled by Round and Bukhtiyarova (1996) was an orthographical error provided in ICBN (Greuter *et al*. 1994).

***Aulacoseira alpigena* (Grunow) Krammer**, Nova Hedwigia **52** : 93. 1991.
Basionym : *Melosira distans* var. *alpigena* Grunow

***Aulacoseira ambigua* (Grunow) Simonsen**, Bacillaria **2** : 56. 1979.
Basionym : *Melosira crenulata* var. *ambigua* Grunow
Synonym : *Melosira ambigua* (Grunow) O. Müller

***Aulacoseira granulata* (Ehrenberg) Simonsen**, Bacillaria **2** : 58. 1979.
Basionym : *Gallionella granulata* Ehrenberg
Synonym : *Melosira granulata* (Ehrenberg) Ralfs

***Bacillaria paxillifer* (O. F. Müller) Hendey**, J. R. Microsc. Soc. **71** : 74. 1951.
Basionym : *Vibrio paxillifer* O. F. Müller
Synonym : *Bacillaria paradoxa* J. F. Gmelin

Well-known *B. paradoxa* was an illegitimate name.

***Craticula accomoda* (Hustedt) D. G. Mann**, in Round *et al*., The Diatoms. 666. 1990.
Basionym : *Navicula accomoda* Hustedt

***Craticula molestiformis* (Hustedt) Mayama comb. nov.**
Basionym : *Navicula molestiformis* Hustedt, Expl. Parc Natl. Albert. Mission Damas (1935-1936) **8** : 86. pl. 5. fig. 9. 1949.
Synonym : *Navicula twymaniana* R. E. M. Archibald

Striae strictly parallel, uniseriate and consisting of small areolae occluded by ricae at their internal apertures (Figs 1, 2). The areolae and the frets separating them are aligned longitudinally. Externally the raphe branches end straight at the center (Fig. 2). The valve inside was not observed in this study. However, judging from TEM photographs of *N. twymaniana* shown by Schoeman & Archibald (1977), it seems to have neither a thickened raphe-sternum on the primary side of the valve nor a plicate raphe system. The cingulum observed consisted of nine narrow copulae (Fig. 2).

The thickened longitudinal elements, which are formed by the aligned frets in *Craticula cuspidata* (Mann & Stickle 1991), are not formed here and the valve face view is similar to that in the SEM photograph of *Craticula accomoda* (Mayama in Idei *et al.* 1998, as *Navicula accomoda*). In *Craticula* described by Round *et al*. (1990) and Mann & Stickle (1991), the external central raphe endings are expanded and turned slightly towards the primary side, but that of *C. molestiformis* is simple and straight (Fig. 2). The central raphe endings similar to those of *C. molestiformis* are seen in *Craticula riparia* (Hustedt) Lange-Bertalot, *Craticula accomodiformis* Lange-Bertalot, *Craticula vixnegligenda* Lange-Bertalot (Lange-Bertalot 1993) as well as *C. accomoda* (Mayama in Idei *et al*. 1998).

Cyclostephanos invisitatus* (M. H. Hohn & Hellerman) E. C. Theriot *et al. Diat. Res. **2** : 256. 1987.
Basionym : *Stephanodiscus invisitatus* M. H. Hohn & Hellerman

***Diadesmis confervacea* Kützing**, Kies. Bacill. Diat. 109. 1844.
Synonym : *Navicula confervacea* Kützing

***Eolimna minima* (Grunow) Lange-Bertalot**, Biblioth. Diatomol. **38** : 153. 1998.
Basionym : *Navicula minima* Grunow

Eolimna martinii W. Schiller & Lange-Bertalot, the type of genus *Eolimna*, is a fossil diatom, so that a description regarding plastids is impossible. Therefore, Schiller & Lange-Bertalot (1997) and Moser *et al*. (1998) defined *Eolimna* by only frustule structure and discussed its difference from *Sellaphora*, though they did not deny the significance of the plastids. *Eolimna minima* shows some similarity to *Sellaphora seminulum* in the valve shape and size when observed with a light microscope. A single H-shaped plastid

Table 1. Comparison between current and former taxonomic designations in the differentiating diatom group A.

New taxonomic designations (Group A taxa)	Taxonomic designations and figure numbers in Kobayasi & Mayama (1989)
1. *Achnanthidium saprophilum* (H. Kobayasi & Mayama) Round & Bukhtiy.	*Achnanthes minutissima* var. *saprophila* H. Kobayasi & Mayama (figs 1-4)
2. *Eolimna minima* (Grunow) Lange-Bert.	*Navicula minima* Grunow (figs 12, 13)
3. *Gomphonema parvulum* Kütz.	*Gomphonema parvulum* Kütz. (figs 5, 6)
4. *Luticola goeppertiana* (Bleisch) D. G. Mann	*Navicula goeppertiana* (Bleisch) H. L. Sm. (figs 10, 11)
5. *Mayamaea atomus* (Kütz.) Lange-Bert.	*Navicula atomus* (Kütz.) Grunow (figs 7-9)
6. *Navicula veneta* Kütz.	*Navicula veneta* Kütz. (figs 17, 18)
7. *Nitzschia tubicola* Grunow	*Nitzschia gandersheimiensis* Krasske (figs 19, 20)
8. *Nitzschia palea* (Kütz.) Grunow	*Nitzschia palea* (Kütz.) Grunow (figs 21, 22)
9. *Pinnularia braunii* var. *amphicephala* (Mayer) Hust.	*Pinnularia braunii* var. *amphicephala* (Mayer) Hust. (figs 23, 24)
10. *Sellaphora seminulum* (Grunow) D. G. Mann	*Navicula seminulum* Grunow (figs 14-16)
Note: Give a saprobic value of 4 to the taxa of this group, but give 3.25 to *N. veneta*, and 3.25 to *Luticola goeppertiana* only at fresh waters.	

during interphase is one of the definitive characteristics of the genus *Sellaphora* (Mann 1989), and naturally *S. seminulum* also possesses this characteristic, which was seen in some figures (Geitler 1932, as *Navicula seminulum* and Cox 1996). The plastid of *E. minima* was illustrated as *Navicula minima* by Cox (1996) and she drew a cell with two plate-like plastids. She also illustrated *Eolimna subminuscula* (as *Navicula subminuscula*) and showed also two plate-like plastids. Her figures indicate a possibility that "two plastids per single cell" is also one of the definitive characteristics of *Eolimna*. As Moser *et al*. (1998) mentioned, there are some genera composed of taxa with various numbers of plastids, e. g. *Pleurosigma*, however, it is the fact that there are many genera, in which the number of plastids is constant. Further observations of plastids in the other *Eolimna* species will ensure the correct evaluation for this genus.

***Eolimna subminuscula* (Manguin) Lange-Bertalot & W. Schiller**, Biblioth. Diatomol. **38**: 154. 1998.
Basionym : *Navicula subminuscula* Manguin

***Fallacia pygmaea* (Kützing) Stickle & D. G. Mann**, in Round *et al*., The Diatoms. 668. 1990.
Basionym : *Navicula pygmaea* Kützing

***Fallacia tenera* (Hustedt) D. G. Mann**, in Round *et al*., The Diatoms. 669. 1990.
Basionym : *Navicula tenera* Hustedt

***Fistulifera saprophila* (Lange-Bertalot & Bonik) Lange-Bertalot**, Arch. Protistenkd. **148**: 73. 1997.
Basionym : *Navicula saprophila* Lange-Bertalot & Bonik

Cox (1996) illustrated two plate-like plastids in single cells of *F. saprophila* and *Fistulifera pelliculosa* (Kützing) Lange-Bertalot under the names of *N. saprophila* and *Navicula pelliculosa* Kützing, respectively.

Hippodonta capitata* (Ehrenberg) Lange-Bertalot *et al. Iconogr. Diatomol. **4**: 254. 1996.
Basionym : *Navicula capitata* Ehrenberg

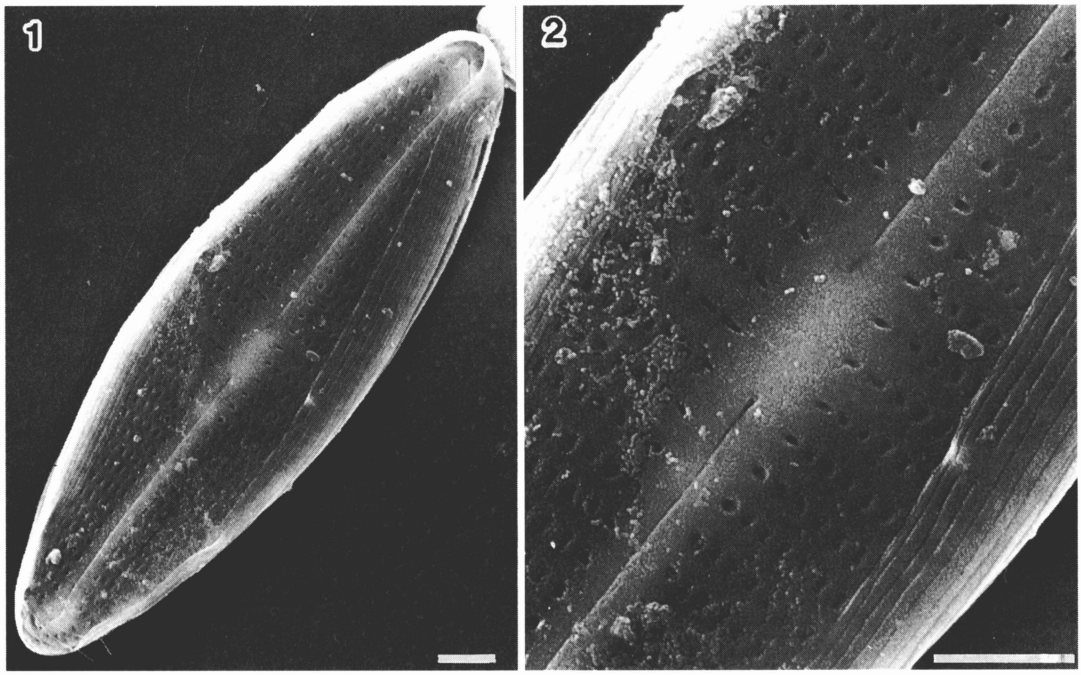
The major differences between *Hippodonta* and *Navicula sensu stricto* are concentrated in and around the raphe system. Characteristics other than the raphe system resemble more or less those of *Navicula sensu stricto*. *Hippodonta* has the raphe endings without prominently curved terminal fissures and the raphe-sternum without thickening on the primary side of the valve. Ex-

Table 2. Comparison between current and former taxonomic designations in the differentiating diatom group B.

New taxonomic designations (Group B taxa)	Taxonomic designations and figure numbers in Kobayasi & Mayama (1989)
1. *Achnanthes brevipes* var. *intermedia* (Kütz.) Cleve	*Achanthes brevipes* var. *intermedia* (Kütz.) Cleve (figs 25, 26)
2. *Achnanthidium exiguum* (Grunow) Czarn.	*Achnanthes exigua* Grunow (figs 29, 30)
3. *Amphora acutiuscula* Kütz.	*Amphora acutiuscula* Kütz. (figs 33, 34)
4. *Amphora coffeaeformis* C. Agardh	*Amphora coffeaeformis* C. Agardh (figs 35, 36)
5. *Amphora luciae* Cholnoky	*Amphora luciae* Cholnoky (figs 37, 38)
6. *Amphora submontana* Hust.	*Amphora submontana* Hust. (figs 39, 40)
7. *Amphora* sp.	*Amphora* sp. (figs 41, 42)
8. *Aulacoseira alpigena* (Grunow) Krammer	*Melosira distans* var. *alpigena* Grunow (figs 74, 75)
9. *Aulacoseira ambigua* (Grunow) Simonsen	*Melosira ambigua* (Grunow) O. Müll. (figs 72, 73)
10. *Aulacoseira granulata* (Ehrenb.) Simonsen	*Melosira granulata* (Ehrenb.) Ralfs (figs 76, 77)
11. *Bacillaria paxillifer* (O. F. Müll.) Hendey	*Bacillaria paradoxa* Gmelin (figs 43, 44)
12. *Craticula accomoda* (Hust.) D. G. Mann	*Navicula accomoda* Hust. (figs 78, 79)
13. *Craticula molestiformis* (Hust.) Mayama	*Navicula molestiformis* Hust. (figs 90, 91)
14. *Cyclostephanos invisitatus* (M. H. Hohn & Hellerman) E. C. Ther. *et al.*	*Stephanodiscus invisitatus* M. H. Hohn & Hellerman (figs 150, 151)
15. *Cyclotella atomus* Hust.	*Cyclotella atomus* Hust. (figs 45, 46)
16. *Cyclotella cryptica* Reimann *et al.*	*Cyclotella cryptica* Reimann *et al.* (figs 47, 48)
17. *Cyclotella meneghiniana* Kütz.	*Cyclotella meneghiniana* Kütz. (figs 49, 50)
18. *Cyclotella stelligera* (Ehrenb.) Cleve & Grunow var. *stelligera*	*Cyclotella stelligera* (Ehrenb.) Cleve & Grunow (figs 51, 52)
19. *Cyclotella stelligera* var. *tenuis* Grunow	*Cyclotella stelligera* var. *tenuis* Grunow (figs 53, 54)
20. *Cymbella microcephala* Grunow	*Cymbella microcephala* Grunow (figs 55-57)
21. *Diadesmis confervacea* Kütz.	*Navicula confervacea* Kütz. (figs 82, 83)
22. *Eolimna subminuscula* (Manguin) Lange-Bert. & W. Schiller	*Navicula subminuscula* Manguin (figs 105-107)
23. *Fallacia pygmaea* (Kütz.) Stickle & D. G. Mann	*Navicula pygmaea* Kütz. (figs 98, 99)
24. *Fallacia tenera* (Hust.) D. G. Mann	*Navicula tenera* Hust. (figs 108, 109)
25. *Fistulifera saprophila* (Lange-Bert. & Bonik) Lange-Bert.	*Navicula saprophila* Lange-Bert. & Bonik (figs 102-104)
26. *Fragilaria vaucheriae* (Kütz.) J. B. Petersen	*Fragilaria vaucheriae* (Kütz.) J. B. Petersen (figs 68, 69)
27. *Gomphonema pseudoaugur* Lange-Bert.	*Gomphonema pseudoaugur* Lange-Bert. (figs 70, 71)
28. *Hippodonta capitata* (Ehrenb.) Lange-Bert. *et al.*	*Navicula capitata* Ehrenb. (figs 80, 81)
29. *Lemnicola hungarica* (Grunow) Round & Basson	*Achnanthes hungarica* (Grunow) Grunow (figs 31, 32)
30. *Luticola ventricosa* (Kütz.) D. G. Mann	*Navicula neoventricosa* Hust. (figs 94, 95)
31. *Mayamaea excelsa* (Krasske) Lange-Bert.	*Navicula excelsa* Krasske (figs 84, 85)
32. *Navicula gregaria* Donkin	*Navicula gregaria* Donkin (figs 86, 87)
33. *Navicula recens* (Lange-Bert.) Lange-Bert.	*Navicula margalithii* Lange-Bert. (figs 88, 89)
34. *Navicula odiosa* J. H. Wallace	*Navicula odiosa* J. H. Wallace (figs 92, 93)
35. *Navicula salinarum* Grunow	*Navicula salinarum* Grunow (figs 100, 101)

36. *Navicula tripunctata* (O. F. Müll.) Bory	*Navicula tripunctata* (O. F. Müll.) Bory (figs 110, 111)
37. *Navicula trivialis* Lange-Bert.	*Navicula trivialis* Lange-Bert. (figs 112, 113)
38. *Nitzschia amphibia* Grunow	*Nitzschia amphibia* Grunow (figs 116, 117)
39. *Nitzschia filiformis* (W. Sm.) Van Heurck	*Nitzschia filiformis* (W. Sm.) Van Heurck (figs 114, 115)
40. *Nitzschia frustulum* (Kütz.) Grunow	*Nitzschia frustulum* (Kütz.) Grunow (figs 126-129)
41. *Nitzschia hantzschiana* Rabenh.	*Nitzschia hantzschiana* Rabenh. (figs 130-133)
42. *Nitzschia intermedia* Hantzsch	*Nitzschia intermedia* Hantzsch (figs 134, 135)
43. *Nitzschia nana* Grunow	*Nitzschia nana* Grunow (figs 118, 119)
44. *Nitzschia pusilla* Grunow	*Nitaschia pusilla* Grunow (figs 122, 123)
45. *Nitzschia scalpelliformis* (Grunow) Grunow	*Nitzschia scalpelliformis* (Grunow) Grunow (figs 136, 137)
46. *Nitaschia solgensis* Cleve-Euler	*Nitzschia solgensis* Cleve-Euler (figs 120, 121)
47. *Nitaschia trybrionella* var. *subsalina* (O'Meara) Grunow	*Nitzschia trybrionella* var. *subsalina* (O'Meara) Grunow (figs 124, 125)
48. *Nitzschia umbonata* (Ehrenb.) Lange-Bert.	*Nitzschia umbonata* (Ehrenb.) Lange-Bert. (figs 138, 139)
49. *Pinnularia gibba* Ehrenb.	*Pinnularia gibba* Ehrenb. (figs 140, 141)
50. *Planothidium delicatulum* (Kütz.) Round & Bukhtiy.	*Achnanthes delicatula* (Kütz.) Grunow (figs 27, 28)
51. *Pleurosigma salinarum* (Grunow) Grunow	*Pleurosigma salinarum* (Grunow) Grunow (fig. 142)
52. *Pseudostaurosira brevistriata* (Grunow) D. M Williams & Round	*Fragilaria brevistriata* Grunow (figs 58, 59)
53. *Punctastriata linearis* D. M. Williams & Round	*Fragilaria pinnata* Ehrenb. (figs 66, 67)
54. *Sellaphora pupula* (Kütz.) Mereschk.	*Navicula pupula* Kütz. (figs 96, 97)
55. *Skeletonema costatum* (Grev.) Cleve	*Skeletonema costatum* (Grev.) Cleve (figs 146, 147)
56. *Staurosira construens* Ehrenb. var. *construens*	*Fragilaria construens* (Ehrenb.) Grunow var. *construens* (figs 60, 61)
57. *Staurosira construens* var. *binodis* (Ehrenb.) P. B. Hamil.	*Fragilaria construens* var. *binodis* (Ehrenb.) Grunow (figs 62, 63)
58. *Staurosira elliptica* (Schum.) D. M. Williams & Round	*Fragilaria elliptica* Schum. (figs 64, 65)
59. *Surirella angusta* Kütz.	*Surirella angusta* Kütz. (figs 148, 149)
60. *Synedra ulna* (Nitzsch) Ehrenb.	*Synedra ulna* (Nitzsch) Ehrenb. (fig. 143)
61. *Tabularia fasciculata* (C. Agardh) D. M. Williams & Round	*Synedra fasciculata* (C. Agardh) Kütz. (figs 144, 145)
62. *Thalassiosira lacustris* (Grunow) Hasle	*Thalassiosira lacustris* (Grunow) Hasle (fig. 153)
63. *Thalassiosira faurii* (Gasse) Hasle	*Thalassiosira faurii* (Gasse) Hasle (fig. 152)
64. *Thalassiosira weissflogii* (Grunow) Fryxell & Hasle	*Thalassiosira weissflogii* (Grunow) Fryxell & Hasle (figs 154, 155)

Note: Give a saprobic value of 2.5 to the taxa of this group, but give 1.75 to the intermediate *Nitzschia hantzschiana*, and give 1 to *Nitzschia frusturum* when occurring in fresh waters and 2.5 when occurring in bracksh waters.



Figs 1, 2. *Craticula molestiformis*. SEM. Scale bars = 1μm. **Fig. 1.** External view of a whole frustule. **Fig. 2.** Enlargement of the valve center showing linear endings of raphe branches and narrow copulae.

ternal areola openings are regularly aligned parallel to the parvalvar axis in apical mantle which is adjacent to the wide terminal area caused by lack of the terminal fissure. These characteristic states are shared by all taxa of *Hippodonta*, even tiny taxa such as *Hippodonta pseudacceptata* (H. Kobayasi) Lange-Bertalot (see Kobayasi & Mayama 1986, as *Navicula pseudacceptata* H. Kobayasi). Structures related to the raphe system have been regarded as important characteristics in systematics, because pennate systematics have been constructed on the basic idea of the raphe evolution. The light microscopic images of *Hippodonta* somewhat resemble *Navicula sensu stricto* at a glance, but they should be separated.

***Lemnicola hungarica* (Grunow) Round & Basson**, Diat. Res. **12** : 77. 1997.
Basionym : *Achnanthidium hungaricum* Grunow
Synonym : *Achnanthes hungarica* (Grunow) Grunow

It is possible to distinguish *Lemnicola* from *Planothidium* by the definition of the genus described by Round & Basson (1997). But the visible differences between the two genera are not prominent. It is important to clarify the systematic relationship between them by information from sources other than valve structure.

***Luticola goeppertiana* (Bleisch) D. G. Mann**, in Round *et al*., The Diatoms. 670. 1990.
Basionym : *Navicula mutica* var. *goeppertiana* Bleisch
Synonym : *Navicula goeppertiana* (Bleisch) H. L. Smith

***Luticola ventricosa* (Kützing) D. G. Mann**, in Round *et al*., The Diatoms. 671. 1990.
Basionym : *Stauroneis ventricosa* Kützing
Synonym : *Navicula mutica* var. *ventricosa* (Kützing) Cleve & Grunow ; *Navicula neoventricosa* Hustedt, non *Navicula ventricosa* Ehrenberg ; *Luticola mutica* var. *ventricosa* (Kützing) P. B. Hamilton

Externally the central raphe endings of *Luticola mutica* (Kützing) D. G. Mann are hooked toward the side opposite that of the stigma (Lange-Bertalot & Bonik 1978, as *Navicula mu-*

tica Kützing). This is a unique characteristic state, which is not seen in other *Luticola* species reported. The central raphe endings of *Navicula neoventricosa* are also turned toward opposite side of the stigma (Mayama & Kobayasi 1982), so that this taxon should be a different species from *L. mutica*.

***Mayamaea atomus* (Kützing) Lange-Bertalot**, Arch. Protistenkd. **148**: 71. 1997.
Basionym: *Amphora atomus* Kützing
Synonym: *Navicula atomus* (Kützing) Grunow

It is not easy to observe plastids in *Mayamaea* taxa because of their small size. Mayama & Kobayasi (1988) presented some living cells of this taxon identified as *Navicula atomus*. These photo-images were obscure, however fig. 18 showed a single plastid with a central bridge, which connects the parts along either valve side. Darley & Volcani (1972) indicated a diagram of division cycle in this species, though No. 668 culture collection at the Indiana University, which they studied, had been misidentified as *Navicula pelliculosa* (Mayama & Kobayasi 1988). The diagram was simple but showed the cell with two plastids only before cell division. Though the culture collection number was not indicated, diatom studied by Coombs *et al*. (1968, as *Navicula pelliculosa*) also seems to be *M. atomus*, as it shows two or three copulae in the sectioned thecae. If these diatoms were true *N. pelliculosa* (= *Fistulifera pelliculosa* (Brébisson) Lange-Bertalot), they must have many string-like copulae (see Lange-Bertalot 1997b). Their TEM photograph shows a single pyrenoid in the plastid.

***Mayamaea excelsa* (Krasske) Lange-Bertalot**, Arch. Protistenkd. **148**: 72. 1997.
Basionym: *Navicula excelsa* Krasske

***Navicula recens* (Lange-Bertalot) Lange-Bertalot**, Biblioth. Diatomol. **9**: 91. 1985.
Basionym: *Navicula cari* var. *recens* Lange-Bertalot
Synonym: *Navicula margalithii sensu* Kobayasi & Mayama, Kor. J. Phycol. **4**: 124. figs 88, 89. 1989.

Using SEM, Kobayasi (1996) observed many specimens of *N. recens* collected from both fresh and brackish river waters and reported that the areola structure and the areola arrangement at the valve ends are stable, but the range of variability in the valve shape and the striation is quite wide.

***Nitzschia tubicola* Grunow in Cleve & Grunow**, Kongl. Svensk. Vet. Akad. Handl. **17** (2): 97. 1880; Krammer & Lange-Bertalot, Bacill. **2/2**: 90. pl. 64. figs 1-16. 1988.
Synonym: *Nitzschia gandersheimiensis* Krasske

***Planothidium delicatulum* (Kützing) Round & Bukhtiyarova**, Diat. Res. **11**: 353. 1996.
Basionym: *Achnanthidium delicatulum* Kützing
Synonym: *Achnanthes delicatula* (Kützing) Grunow

***Pseudostaurosira brevistriata* (Grunow) Williams & Round**, Diat. Res. **2**: 276. 1987.
Basionym: *Fragilaria brevistriata* Grunow

***Punctastriata linearis* Williams & Round**, Diat. Res. **2**: 278. 1987.
Synonym: *Fragilaria pinnata sensu* Kobayasi & Yoshida, Bull. Tokyo Gakugei Univ. Sect. 4. **36**: 124. figs 30-38. 1984; *Fragilaria pinnata* var. *lancettula sensu* Kobayasi & Yoshida, Bull. Tokyo Gakugei Univ. Sect 4. **36**: 125. figs 21-29. 1984.

Williams and Round (1987) transferred *F. pinnata* Ehrenberg to *Staurosirella* based on fine structures. *P. linearis* can hardly be distinguished from *S. pinnata* (Ehrenberg) Williams & Round with light microscopy, as they appear very similar in shape, size and striation. Electron microscopy is necessary for their identification.

***Sellaphora pupula* (Kützing) Mereschkowsky**, Ann. Mag. Nat. Hist. Ser. 7. **9**: 187. 1902.
Basionym: *Navicula pupula* Kützing

***Sellaphora seminulum* (Grunow) D. G. Mann**, Br. phycol. J. **24**: 2. 1989.
Basionym: *Navicula seminulum* Grunow

Staurosira construens* Ehrenberg var. *construens, Verh. König. Preus. Akad. Wis. **1843**: 424. 1843.
Synonym: *Fragilaria construens* (Ehrenberg) Grunow var. *construens*

***Staurosira construens* var. *binodis* (Ehrenberg) P. B. Hamilton**, in Hamilton *et al*. Diat. Res. 7 : 29. 1992.
Basionym : *Fragilaria binodis* Ehrenberg
Synonym : *Fragilaria construens* var. *binodis* (Ehrenberg) Grunow

***Staurosira elliptica* (Schumann) Williams & Round**, Diat. Res. **2** : 272. 1987.
Basionym : *Fragilaria elliptica* Schumann

***Tabularia fasciculata* (Agardh) Williams & Round**, Diat. Res. **1** : 326. 1986.
Basionym : *Diatoma fasciculatum* Agardh
Synonym : *Synedra fasciculata* (Agardh) Kützing

摘　要

識別珪藻群はKobayasi & Mayama(1989)により提案された，河川の水質汚濁判定に用いる珪藻のグループである。1990年代になり，多数の新属設立と異名とされていた属の復活により，多くの珪藻種で属の組替えがおこなわれ，珪藻の分類は大きく変容している。識別珪藻群Aと識別珪藻群Bの種類について適合する新学名を検討したところ，*Navicula molestiformis* Hustedtを除く全種類について，適当と思われる学名が存在することがわかった。そこで，*Craticula molestiformis* (Hustedt) Mayamaの新組合せをおこない，識別珪藻群AとBの種類リストの改訂をおこなった。識別珪藻群Aには10分類群，Bには64分類群が割り当てられていたが，改訂による種類数の変更はなく，計32分類群の名称のみを変更をした。

新属および復活属に関し，さまざまな議論が報告されている。しかし，それらも決着にはいたらず，いまだ流動的側面が残っている。近年増えた属はいずれもその属を定義づける形質を多かれ少なかれ所持していることは事実である。しかし，その形質の量と程度には差が見られるのも事実である。いかなる属においても，生命活動の結果として作られた被殻の形態ばかりでなく，オルガネラや生命活動そのものについても研究されることが望ましいが，被殻形態以外の研究成果を伴って定義されている属はわずかしかない。情報量の乏しい属に対し，さまざまな観点からの情報を提供することが，その属の真の評価につながるはずである。本研究では幾つかの分類群に対し，被殻構造，葉緑体数，ピレノイドに関し記載を与え，若干の考察をおこなった。

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