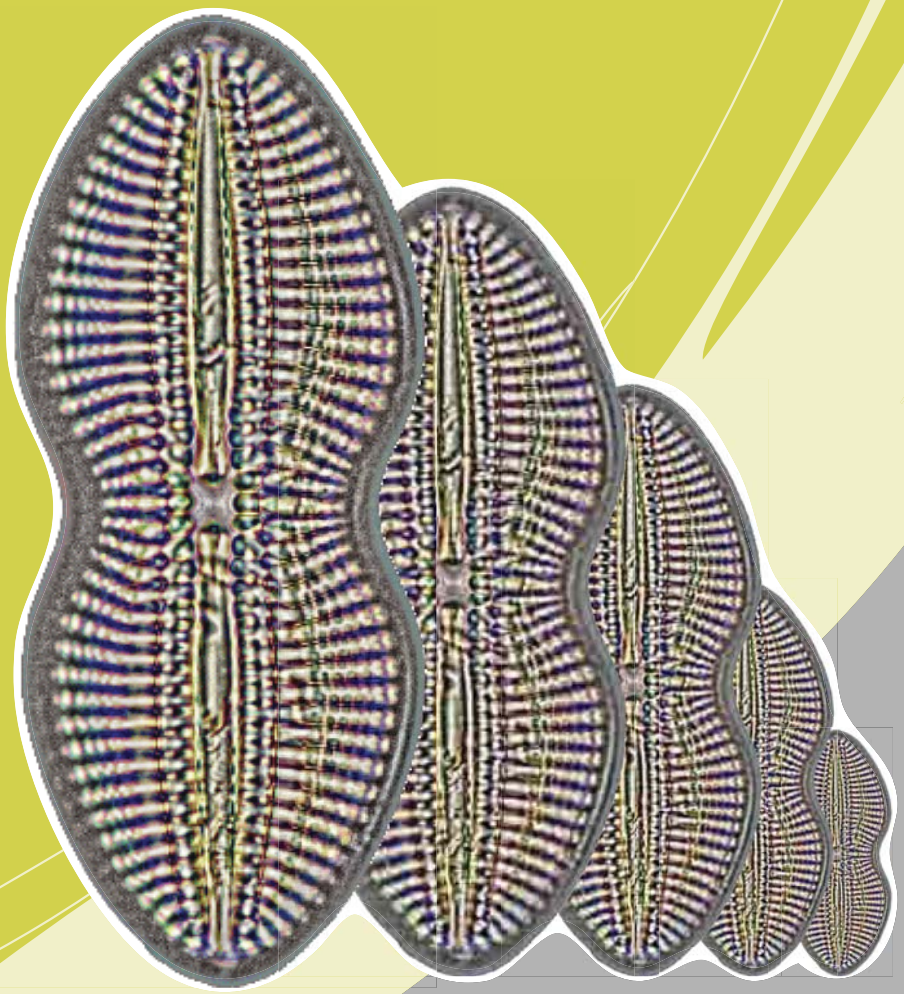
BENTHIC DIATOMS ASSOCIATED WITH MANGROVE ENVIRONMENTS IN THE NORTHWEST REGION OF MÉXICO

LÓPEZ FUERTE F. O. SIQUEIROS BELTRONES D. A. NAVARRO J. N.

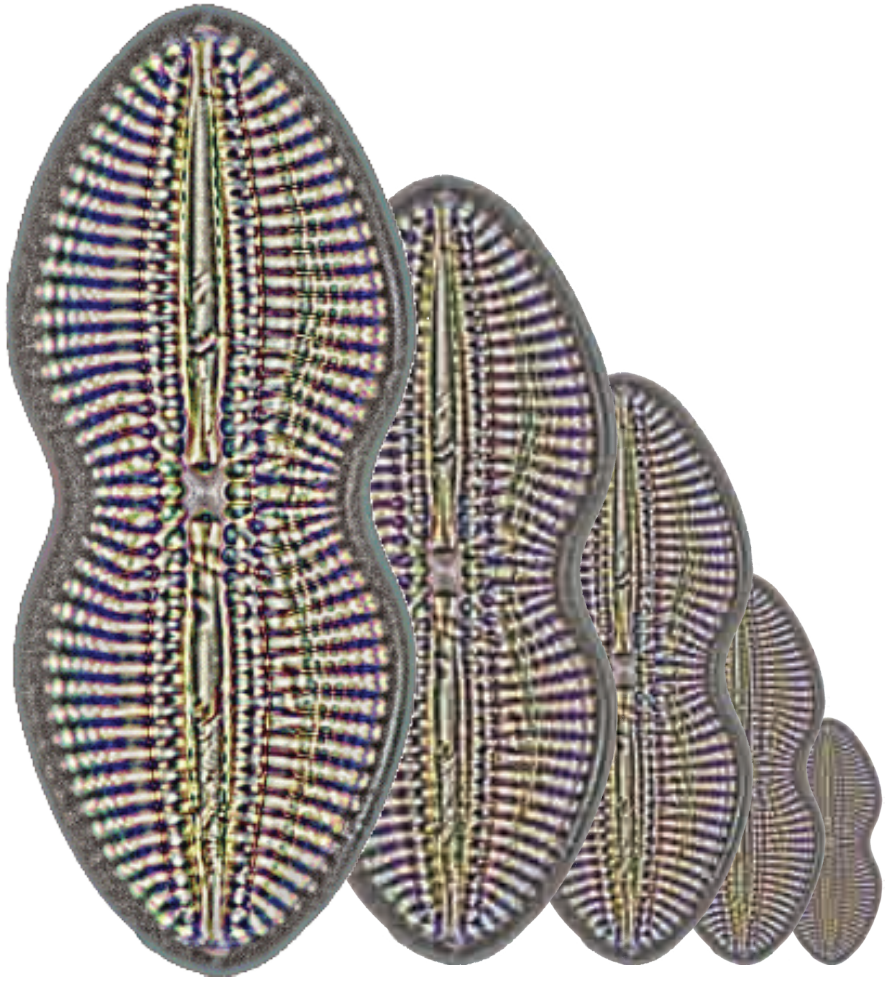


CONABIO
GOBIERNO FEDERAL
UABCS
CICIMAR-IPN

Cover Photography
***Diploneis crabro* Ehrenberg**
Taken by: F. O. López Fuerte
Magnification 1000x using an Olympus CH-2 microscope equipped with an automatic photographic system.

BENTHIC DIATOMS ASSOCIATED WITH MANGROVE ENVIRONMENTS IN THE NORTHWEST REGION OF MÉXICO

LÓPEZ FUERTE F. O. SIQUEIROS BELTRONES D. A. NAVARRO J. N.



CONABIO
GOBIERNO FEDERAL
UABCS
IPN
CICIMAR-IPN

FRANCISCO OMAR LÓPEZ FUERTE
Universidad Autónoma de Baja California Sur
Lab. de Sistemas Arrecifales. Dpto. de Economía.
La Paz, B. C. S., México.
folopez@uabcs.mx

DAVID ALFARO SIQUEIROS BELTRONES
Departamento de Plancton y Ecología Marina
Centro Interdisciplinario de Ciencias Marinas
Instituto Politécnico Nacional
La Paz, B. C. S., México.

NELSON NAVARRO R.
Department of Biology
Pontificial Catholic University of Puerto Rico
Ponce, Puerto Rico

Primera Edición. 2010.

D.R. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO)
Av. Liga Periférico-Insurgentes Sur, No. 4903, Colonia Parques del Pedregal, Tlalpan, C.P. 14010, México, D. F.

D.R. Universidad Autónoma de Baja California Sur.
Carretera al Sur, km 5.5, A. P. 19-B, C. P. 23080, La Paz B.C.S. México.

D.R. Centro Interdisciplinario de Ciencias Marinas del Instituto Politécnico Nacional. Av. IPN S/N Col. Playa Palo de Santa Rita. C. P. 23096, La Paz B.C.S. México.

ISBN: 978-607-7607-30-4

Impreso y hecho en México/Printed and Made in México

Editado y producido por el comité editorial de *CICIMAR-Oceánides*.
Editor responsable: David A. Siqueiros Beltrones
Producción: Rubén Esteban García Gómez.

COMISIÓN NACIONAL PARA EL CONOCIMIENTO Y USO DE LA BIODIVERSIDAD

Mtro. Juan Rafael Elvira Quesada
Secretario Técnico
Dr. José Sarukhán Kermez
Coordinador Nacional
M. en C. María del Carmen Vázquez Rojas
Directora Técnica de Evaluación de Proyectos

UNIVERSIDAD AUTÓNOMA DE BAJA CALIFORNIA SUR

Lic. Juan Rodrigo Guerrero Rivas
Rector
M. en C. Javier Gaitán Morán
Secretario Académico
C.P. Julián Francisco Galindo Hernández
Secretario de Finanzas y Administración
M. en C. Luis Oscar Palos Arocha
Jefe del Departamento Académico de Economía

INSTITUTO POLITÉCNICO NACIONAL

Dra. Yoloxóchitl Bustamante Díez
Directora General
Dr. Bonifacio Efren Paradas Arias
Secretario Académico
Dr. Jaime Álvarez Gallegos
Secretario de Investigación y Posgrado

CENTRO INTERDISCIPLINARIO DE CIENCIAS MARINAS

Dr. Rafael Cervantes Duarte
Director
Dr. Agustín Hernández Herrera
Subdirector Académico y de Investigación
M. en C. Pedro González Ramírez
Subdirector de Servicios Educativos e Integración Social
Lic. Leticia Reyes Famania
Subdirectora Administrativa

CONABIO

GOBIERNO FEDERAL

ACKNOWLEDGEMENTS

We acknowledge the finacial support granted by CONABIO for the edition and printing of this book. We also thank Eberto Novelo Maldonado and Domenico Voltolina for reviewing the manuscript and making helpful comments and corrections. We are greatful to Horst Lange-Bertalot and Andrzej Witkowski for their thorough review of an earlier manuscript. The Instituto Politécnico Nacional partially supported this work through projects CGPI-2001-03-19 and CGPI-2002-03-73. Rubén García Gómez aided in the formatting and edition of the text and cover design of this book.

AGRADECIMIENTOS

Se agradece a la CONABIO por el apoyo otorgado para la edición e impresión de esta obra, así como los comentarios y correcciones realizados por los revisores Eberto Novelo Maldonado y Domenico Voltolina. Agradecemos a Lange-Bertalot y Andrzej Witkowski por la revisión realizada a un primer manuscrito. También agradecemos al Instituto Politécnico Nacional el apoyo parcial a través de los proyectos CGPI-2001-03-19 y CGPI-IPN 20020373. Rubén García Gómez apoyó en la edición del formato y diseño de la portada de este libro.

PROLOGUE

THE BOOK BENTHIC DIATOMS ASSOCIATED WITH MANGROVE ENVIRONMENTS IN THE NORTHWEST REGION OF MÉXICO IS INTENDED TO PROVIDE A GLIMPSE OF THE HIGH BIODIVERSITY THAT CHARACTERIZES MANGROVE SYSTEMS. IS ONLY RECENTLY THAT RESEARCHERS IN MÉXICO HAVE BEGAN TO DISCLOSE OUTSIDE THE SCIENTIFIC COMMUNITY THE GREAT VARIETY OF MICROALGAL FORMS FOUND IN MEXICAN WATERS. OUR AIM IS TO CONTRIBUTE IN THIS EFFORT BEYOND OUR FRONTIERS IN ORDER TO COMPLETE THE SCIENTIFIC INFORMATION ALREADY PUBLISHED ON THIS SUBJECT WITH A MORE ATTRACTIVE ICONOGRAPHIC MATERIAL. THIS TOGETHER WITH INFORMATION ON DISTRIBUTION OF THE RECORDER DIATOM TAXA SHOULD PROVE USEFUL BOTH FOR SCIENTISTS AND BIOLOGY STUDENTS INTERESTED ON THIS AMAZING GROUP OF MICROALGAE AS WELL AS FOR THE NATURALISTS THAT REQUIRE GRAPHIC REFERENCES ABOUT NON EVIDENT NATURAL RESOURCES REPRESENTED BY MICROSCOPIC LIFE FORMS.

THE AUTHORS

ABSTRACT

Worldwide, research on benthic diatoms from mangrove systems is scarce considering the ecological importance of these coastal ecosystems. Likewise, for the Mexican NW region studies on benthic diatoms are few and recent. Consequently, a diatomological flora representative of mangrove environments has not been circumscribed, and no distribution or abundance patterns have been determined. Despite the few researches on Mexican mangrove environments, there is a highly diverse and conspicuous taxocoenoses thriving in the mangrove environment were various substrata represent ample colonizing areas. The purpose of this work is to provide an illustrated iconographic catalogue of representative diatoms from subtropical mangroves environments in NW México. The catalogue includes 520 taxa classified in 104 genera, sampled from intertidal sediments, prop roots of *Rhizophora mangle* and their epiphytic macroalgae, as well as tychoplankton from four mangrove systems of the Mexican NW. In the iconographic section 234 taxa are represented, including morphological variations for certain taxa.

RESUMEN

Los estudios sobre diatomeas bentónicas de ambientes de manglar a nivel global son escasos, considerando la importancia ecológica de estos ecosistemas costeros. Asimismo, para el NW Mexicano los estudios de este tipo son muy pocos y recientes. Consecuentemente, no se ha definido una flora diatomológica representativa de ambientes de manglar, ni se han determinado patrones de distribución y abundancia. No obstante, en los pocos trabajos realizados en estos sistemas se ha determinado que albergan una taxocenosis diversa y conspicua, que ocupa los variados sustratos que ofrecen al proveer amplias áreas de colonización. El propósito de este trabajo es proporcionar un catálogo de diatomeas bentónicas ilustrado iconográficamente, representativo de manglares subtropicales en México. Se incluyen 520 taxa distribuidos en 104 géneros, recolectados en: sedimentos intermareales, raíces aéreas de *Rhizophora mangle* y macroalgas epifitas de estas, así como formas del ticoplancton, en cuatro manglares del NW Mexicano. En la sección iconográfica se representan 234 taxa y en algunos casos se iluyen variaciones morfológicas de ciertos taxa.

CONTENTS

1. INTRODUCTION

Mangrove systems in México comprise an estimated area of 6600 km^2. In the Mexican Pacific mangrove forests located on the coasts of Sinaloa and Nayarit (Gulf of California) extend over 1000 km^2, were a high fresh-water input favors the structural development of the forests (Flores-Verdugo, 1989). On the opposite coast mangroves in the southern Baja California peninsula reach their northernmost distribution at 30º N inside the Gulf of California, whilst on the pacific coast of the peninsula the Magdalena-Almejas lagoon system (25º N) has been proposed as representative of their Northern range (Blasco, 1984). However, these mangrove systems are not subject to a constant fresh-water input, and are thus much smaller, and with an irregular distribution. Mangrove species in the region are all the same: red mangrove (*Rhizophora mangle* L.), black mangrove (*Avicennia germinans* [L.] Stearn), and white mangrove (*Laguncularia racemosa* [L.] Gaertner).

As in most (all?) intertidal environments benthic diatoms are a primary component of the microbial communities, and are responsible for sediment stabilization and avoiding desiccation, as well as significantly contributing to the primary production of the ecosystems (Navarro, 1988; Cahoon & Safir, 2002).

Although since the 1970's research on benthic diatoms from mangrove systems allover the world has surged (Reyes-Vásquez, 1975; Foged, 1975; Sullivan, 1980; 1981; Maples, 1983; Navarro, 1982; Navarro & Torres, 1987 and Wah & Wee, 1988) this is still scarce considering the ecological importance of these coastal ecosystems.

In the Mexican NW region, studies on benthic diatoms are few and recent. However several have been carried out in mangrove environments (Siqueiros-Beltrones & Morzaria-Luna, 1999; Siqueiros-Beltrones & Sánchez-Castrejón, 1999; Siqueiros-Beltrones & López-Fuerte, 2006; Siqueiros-Beltrones *et al*. 2005).

A diatomological flora representative of mangrove environments has not been circumscribed, and no distribution or abundance patterns have been determined. However, the above literature does suggest the existence of highly diverse and conspicuous taxocoenoses thriving in the mangrove environment, were several substrata may provide ample colonizing areas.

The purpose of this work is to provide an illustrated floristic account of the diatom taxa that have been registered for the different substrata, *e. g.*, various types of sediments, mangrove roots, epiphytic macroalgae, and tychoplanktonic forms, found in the mangrove systems of the Mexican Pacific, including both coasts of the Baja California peninsula and of Sinaloa on main land México.

2. STUDY AREA (Fig. 1).

Localities

2.1. Balandra's lagoon-cove (Baja peninsula)

Balandra is a protected area located in Bahía de La Paz, 19 km N of La Paz city, at 24˚ 18´ 30¨ N - 24˚ 19´ 45¨ N, and 110˚ 19´ 45¨ W - 110˚ 18´ 15¨ W (locality 1). The lagoon margins are bordered mainly by two species of mangrove: *R. mangle* and *A. germinans*. Few specimens of *L. racemosa* may be found (Siqueiros-Beltrones & Sánchez-Castrejón, 1999). Tides are the principal factor affecting the hydrological characteristics of the lagoon (Gutiérrez-Sánchez, 1987).

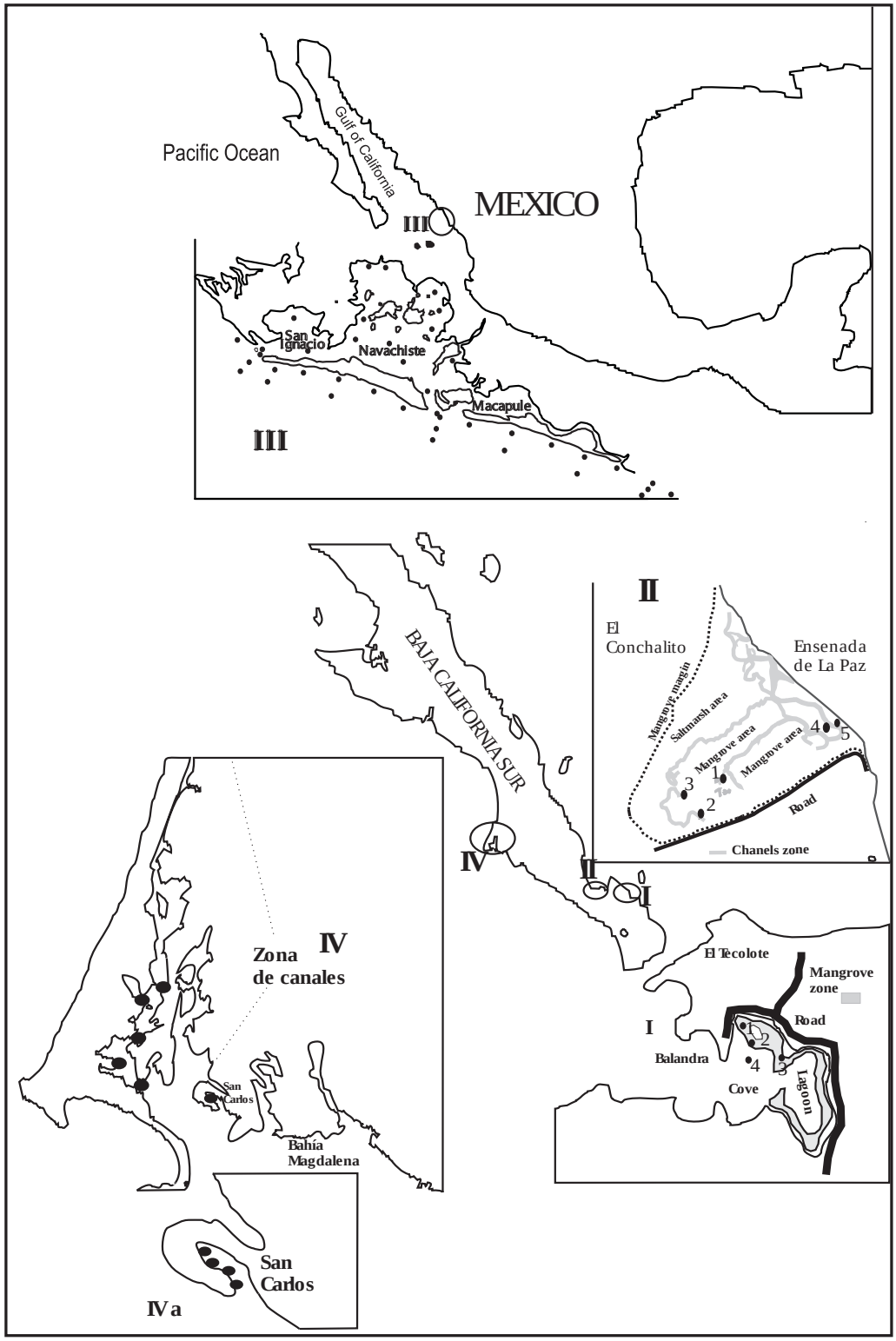


Figure 1. - Location of mangrove systems surveyed for benthic diatoms, and sampling sites.

2.2. El Conchalito (Baja peninsula)

Also in Bahía de La Paz, is located inside the Ensenada de La Paz, at 24˚ 08´ 34¨ N - 24˚ 07´ 40¨ N, and 110˚ 20´ 35¨ W (locality II). The mangrove forest covers an area of 39.3 ha. It shows *Avicennia germinans* in the front area, *Rhizophora mangle* towards the central part and alength the border of the channels, and *Laguncularia racemosa* towards the back. The adjacent sea forms a lagoon (ensenada) that floods the mangrove periodically by a main tidal channel with small branches. The tidal amplitude has an average of 1.94 m (González-Acosta, 1999).

2.3. San Ignacio-Navachiste lagoon system

It is located in the northern part of Sinaloa (continental México) at 25° 15' N - 25° 35' N, and 108° 30' W - 109° 03' W, extending approximately 220 km² (locality III). This is a shallow system (0.5-5 m deep) which comprises three coastal lagoons: 1) San Ignacio, 2) Navachiste, and 3) Macapule. The bottom ranges from muddy sediments in the central parts to sand where the system communicates with the open ocean (Vicencio-Aguilar, 1979). The same three mangrove species are present.

2.4. Bahía Magdalena-Bahía Almejas lagoon system

This system is located at 24˚ 15' N - 25˚ 20', N and 111˚ 30' W - 112˚ 12' W (locality IV and IVa), commonly referred to as being within a biogeographic transition zone (Castro-Aguirre & Torres, 1993). It is considered the most important lagoon system in the western coast of the Baja California peninsula. It is divided into three zones: Bahía Almejas to the S, central Bahía Magdalena, and Zona de Canales to the NW. The latter shows many irregular channels with a mean depth of 3.5 m. It is influenced to the S by the Bahía Magdalena mouth and to the N by Boca de la Soledad. All three zones are bordered by the same three mangrove species.

3. SAMPLING METHODS AND PROCESSING OF SAMPLES

3.1. Mangrove prop roots

Samples were collected in Bahía Magdalena during November (autumn) 1999 and April (spring) 2000, approximately between 10 h and 12 h. In November two sites were sampled, while in April two sites were added to increase the representativeness of the sampled area. The sampling sites were approximately 50 m apart. Samplings were done during low tide when the roots were exposed. Bark segments 30 cm^2 in area (2 X 15 cm) were peeled off from two parts of the red mangrove prop roots: damp segments (lower level) from the bottom up, and dry segments (upper level) just below 90 cm, limited by the high tide mark on the roots. Each sample was composed of three segments (from 3 roots of the same tree). During November 12 segments were collected (4 samples), and a total of 24 segments (8 samples) in April.

In the laboratory the root segments were brushed using a toothbrush and rinsed with tap water to obtain a concentrate of sediments, organic matter and diatoms. The organic matter inside (and outside) diatom frustules was oxydized using a 1: 3: 1 mixture of sample, nitric acid and commercial ethanol (Siqueiros-Beltrones, 2002). The clean frustules were mounted using Meltmount (RI = 1.7), yielding three permanent slides from each composite sample.

3.2. Epiphytic macroalgae

The sampling was carried out in Bahía Magdalena during November 1999. Twelve 30 cm^2

segments were peeled off from submerged and exposed prop roots of red mangrove plants. The epiphytic macroalgae found on submerged portions of the roots were separated under a dissecting microscope. The root segments were brushed using a toothbrush rinsing with water to obtain a concentrate of sediments, organic matter and diatoms that were observed in fresh mounts. Oxydizing the organic matter using nitric acid and alcohol cleaned the diatom frustules from the roots and macroalgae. Permanent preparations were mounted by triplicate using Meltmount (R.I.=1.7) (Siqueiros-Beltrones, 2002).

3.3. Sediments

3.3.1. El Conchalito

Alength the desiccation gradient five sampling sites were chosen. During one year (1996), bi-monthly samples were taken at low tide. In each sample site twenty five square centimeters of sediments 0.5 cm deep were collected using a spatula and stored in Petri dishes. Samples were oxydized using nitric acid and heat to remove the organic matter. Clean frustules were mounted on permanent slides using Cumar R-9 (Holmes *et al*. 1981), and observed under phase contrast microscopy.

3.3.2. Balandra

Sampling was done seasonally in 1992, during low tide, at four sites subjected to different exposure periods alength the flood channel mudflats. Three of the sites consisted of muddy sediments of the intertidal zone within the mangroves. Sites one and two were within the white mangrove pneumatophore area and incipient microbial mats; site three was within the red mangrove prop root area. Site four was on a sandy beach in the lagoon. At each site, three 20 cm^2 samples of sediments and associated diatoms (1 cm thick) were collected in Petri dishes from a ca 3-m^2 area.

3.3.3. Magdalena-Almejas lagoon system

Five sampling sites were stablished in the Zona de Canales and one in San Carlos (Bahía Magdalena). Samplings were done in April and October, 2002 during low tide. Two sediment samples (approx. 60 cm^2 and 0.5 cm thick) were collected at each site using a spatula. These were kept inside Petri dishes in ice and in the dark.

In the laboratory, in order to clean the diatom frustules, organic matter was oxydized using a mixture of sample: nitric acid: ethanol in a 1: 3: 1 proportion, according to Siqueiros-Beltrones (2002). After rinsing the treated samples with distilled water to a pH $\geq$ 6, diatom samples were mounted on permanent slides by triplicate using Pleurax (R.I.=1.7).

3.4. Tychoplankton

Samples were collected using a 60 µm phytoplankton net over 15 stations in Navachiste lagoon. Samples were fixed using lugol (1% final concentration) and 3 ml of 4% buffered formaline. Salts and preservatives were removed by centrifugation with distilled water. Diatom cleaning followed Hasle & Fryxell (1970). Samples were then made into a compound sample for identifying the tychoplankton of the whole lagoon. Permanent diatom mounts were made using Hyrax (R.I.=1.65).

4. FLORISTICS

Diatom identifications were made to the lowest taxonomic level possible using phase contrast microscopy. Observations were made at 630x and 1000x magnifications using a Zeiss Standard 16 microscope and an Olympus CH-2 microscope equipped with an automatic photographic system. Taxonomic identification and the ecology (salinity preferences and life forms) presented in this volume are based on Schmidt *et al*. (1874-1959), Peragallo & Peragallo (1897-1908), Hagelstein (1938), Hustedt (1930, 1955, 1959, 1961-1966), Cup (1943), Brockmann (1950), Hendey (1951, 1964), Cleve-Euler (1951-1955), Patrick & Reimer (1966, 1975), Stoermer, (1967), Giffen (1973), Lange-Bertalot & Ruppel (1980), McIntire & Reimer (1974), Reyes-Vázquez (1975), Foged (1975, 1984), Compere (1982). Navarro (1982), Maples (1983), Krammer (1980, 1988, 1992), Krammer & Lange-Bertalot (1986, 1987, 1988, 1991), Simonsen (1987), Williams & Round (1987), Desikachary *et al*. (1987), Desikachary (1987, 1988), Paddock (1988), Wah & Wee (1988), Poulin *et al*.(1984a, 1984b, 1987, 1990), Round *et al*. (1990), Round (1991), Snoeijs (1992, 1993), Sabbe & Vyverman (1995), Sterrenburg (1993a, 1993b, 1994, 1995), Snoeijs & Vilbaste (1994), Snoeijs & Potapova (1995), Snoeijs & Balshova (1998), Moreno *et al*. (1996), Round & Bukhtiyarova (1996), Witkowski *et al*. (2000) and Siqueiros-Beltrones (2002).

5. DIATOM TAXA

This chapter provides an overview of 524 diatom species found in intertidal sediments, prop roots of *Rhizophora mangle*, and their epiphytic macroalgae, as well as tychoplankton, in four mangrove systems of the Mexican NW. The micrographs represent 234 taxa; in several cases their range of morphological variability is shown. Taxonomic (common synonyms, references) and ecological information (life form, salinity preference) accompanies most of the identified taxa. For each taxon the information is presented in the following way:

5.1. Species names

The most recently published was used as much as possible.

5.2. Synonyms

Taxonomic basionym or synonyms were given only in the case of recent nomenclatural changes or when considered appropriate.

5.3. Floras

For each species, pertinent references are indicated that contain illustrations that best matched our specimens. These references are selected from several floras that are listed in the references, mainly research carried out in mangrove systems.

5.4. Life form, distribution and salinity preference

Life forms and distribution are based mostly on previously published information by Round *et al*. (1990) and Snoeijs (1993). Depending on availability, salinity tolerance is indicated according to Simonsen (1962, in Pankow, 1990).

5.5. Locality

This section makes reference to the locality and to the substrate on which the different taxa were collected. An identification key for each substrate and locality was created as follows:

BAS: Balandra-Sediments

COS: El Conchalito-Sediments

NAT: Navachiste-Tychoplankton

BMEM: Bahía Magdalena-Epiphytic Macroalgae

BMER: Bahía Magdalena-Epiphytic (prop roots of *Rhizophora mangle*)

BMS: Bahía Magdalena-Sediments

6. DIATOM FLORA

PLATE 1

Stephanopyxis palmeriana (Greville) Grunow

Pl. 1, figs. 1-2, resting spores 3-4.

Dimensions: height, 56 µm; diameter of resting spores, 36 µm.

Floras: Cupp (1943), p. 40, fig.4. Moreno *et al*. (1996), p. 124, pl. 31, figs. 8-9.

Basionym: *Creswellia palmeriana* Greville

Synonym(s): *Creswellia palmeriana* Greville

Locality: NAT

Biddulphia alternans (J. W. Bailey) van Heurck

Pl. 1, fig. 5.

Dimensions: height, 19 µm; width 34 µm; 7 areolae in 10 µm.

Floras: Hustedt (1930), p. 825, fig. 488. Hendey (1964), p. 102, pl. 25, fig. 5. Navarro (1982), p. 105 (as *Triceratium alternans* Bailey). Moreno *et al*. (1996), p. 31, pl. 11, figs. 4-5. Witkowski *et al*. (2000), p. 25, pl. 7, fig. 6, pl. 8, fig. 1.

Synonym(s): *Triceratium alternans* Bailey

Life form and distribution: Gulf of California.

Locality: BMER, NAT

Pleurosira laevis (Ehrenberg) Compére

Pl. 1, fig. 6.

Dimensions: height, 65 µm; width 30 µm.

Floras: Krammer & Lange-Bertalot (1991a), p. 87, pl. 84, figs. 1-4 h.

Synonym(s): *Biddulphia laevis* Ehrenberg

Life form and distribution: Cosmopolitan, benthic and epiphytic, eutrapheutic.

Salinity: Mesohalobous, in temperate waters.

Locality: NAT

PLATE 2

Planktoniella sol (Wallich) Schütt

Pl. 2, fig. 1.

Dimensions: diameter of the valve portion 25-80 µm; total diameter often as much as 120-360 µm.

Floras: Hustedt (1929), p. 465, fig. 259. Moreno *et al*. (1996), p. 111, pl. 28, fig. 14.

Basionym: *Coscinodiscus sol* Wallich

Life form and distribution: Planktonic, temperate, Gulf of California, Pacific Mexican, North Sea, British Chanel.

Locality: NAT

Asteromphalus heptactis (Brébisson) Ralfs

Pl. 2, fig. 2.

Dimensions: diameter 42 μm.

Floras: Hustedt (1930), p. 495, fig. 277. Moreno *et al*. (1996), p. 26, pl. 10, fig. 3.

Basionym: *Spatangidium heptactis* Brébisson

Synonym(s): *Spatangidium heptactis* Brébisson, *S. ralfsianum* G. Norman, *Asterolampra heptactis* (Brébisson) Greville, *A. reticulatus* Cleve, *A. ralfsiana* (G. Norman) Grunow, *A. areolata* A. Mann

Life form and distribution: Planktonic, marine littoral, temperate, Gulf of California, Pacific Mexican, Alaska.

Locality: NAT

Asteromphalus flabellatus (Brébisson) Greville

Pl. 2, fig. 3.

Dimensions: diameter 40.7 μm.

Floras: Hustedt (1930), p. 498, fig. 279, Foged (1975), p. 13, pl. 3, fig. 5. Moreno *et al*. (1996), p. 26, pl. 10, fig. 1.

Basionym: *Spatangidium flabellatum* Brébisson

Synonym(s): *Spatangidium flabellatum* Brébisson

Life form and distribution: Tanzania coast, Gambia, Baja California coasts, Australia.

Locality: NAT

Psammodiscus nitidus (Gregory) Round & Mann

Pl. 2, fig. 4

Dimensions: diameter 25 μm; 5-6 areolae in 10 μm; 10 estriae in 10 μm.

Floras: Hustedt (1930), p. 414, fig. 221 (as *Coscinodiscus nitidus* Gregory). Hendey (1964), p. 76, pl. 23, fig. 2 (as *C. nitidus* Gregory). Moreno *et al*. (1996), p. 117, pl. 29, fig. 10. Witkowski *et al*. (2000), p. 75, pl. 23, figs. 12-1

Basionym: *Coscinodiscus nitidus* Gregory

Life form and distribution: Marine, neritic, oceanic, cosmopolitan.

Salinity: Polyhalobe

Locality: BMS

Ehrenbergia granulosa (Grunow) Witkowski, Lange-Bertalot & Metzeltin

Pl. 2, fig. 5.

Dimensions: diameter 27 μm; 18 striae in 10 μm.

Floras: Hustedt (1930), p. 386, fig. 198 (as *Coscinodiscus granulosus* Grunow). Witkowski *et al*. (2000), p. 31, pl. 2, figs. 12-18.

Life form and distribution: This taxon was recorded as epipelic in B. Magdalena.

Locality: BMS

Triceratium favus Ehrenberg

Pl. 2, figs. 6-7.

Dimensions: length (one side) 75 µm; pervalvar axis 52 µm; 2-3 areolae in 10 µm.

Floras: Hendey (1964), p. 108, pl. 25, fig. 4. Foged (1975), p. 56, pl. 2, fig. 11. Navarro (1982), p. 18, pl. 10, figs. 1-3.

Synonym(s): *Triceratium comptum* Ehrenberg, *T. muricatum* Brightwell, *T. fimbriatum* Wallich, *T. ferox* Castracane, *T. sarcophagus* Castracane, *Biddulphia favus* (Ehrenberg) Grunow

Life form and distribution: Rare in temperate-cold waters.

Locality: BMER, NAT, BMS

PLATE 3

Thalassiosira eccentrica (Ehrenberg) Cleve

Pl. 3, figs. 1-4.

Dimensions: diameter 38-69 µm; 6-8 areolae in 10 µm.

Floras: Hendey (1964), p. 80, pl. 24, fig. 7. Navarro (1982), p. 10, pl. 1, figs. 3-4. Wah & Wee (1988), fig. 86. Moreno *et al*. (1996), p. 133, pl. 33, figs. 8-9.

Basionym: *Coscinodiscus excentricus* Ehrenberg

Synonym(s): *Odontodiscus excentricus* Ehrenberg

Life form and distribution: Littoral, planktonic, oceanic and neritic, cosmopolitan.

Salinity: Polyhalobe, euryhaline

Locality: BMER, BMS, NAT

Thalassiosira oestrupii (Ostenfeld) Hasle

Pl. 3, figs. 5-8.

Dimensions: diameter 37.5-50 µm; 5-6 areolae in 10 µm.

Floras: Hasle, G. R. & Syvertsen, E. E. (1997), p. 5-386.

Basionym: *Coscinosira oestrupii* Ostenfeld

Synonym(s): *Coscinosira oestrupii* Ostenfeld, *Thalassiosira antiqua* var. *septata* Proschkina-Lavrenko

Life form and distribution: This species shows a cosmopolitan occurence.

Locality: BMER, BMS

PLATE 4

Cerataulus californicus A. Schmidt

Pl. 4, fig. 1.

Dimensions: diameter 80.5 µm; 7-8 areolae in 10 µm.

Floras: Moreno *et al*. (1996), p. 34, pl. 12, fig. 9.

Synonym(s): *Biddulphia californica* (Schmidt) Wolle

Life form and distribution: Previously recorded in the Gulf of California and off the coasts of California.Tychoplancton.

Locality: NAT, BMS

Coscinodiscus radiatus Ehrenberg

Pl. 4, figs. 2-4.

Dimensions: diameter 60.5-67 µm; 5-6 areolae in 10 µm.

Floras: Moreno *et al*. (1996), p. 59, pl. 18, fig. 3 (as *Coscinodiscus radiatus* var. 1.).

Synonym(s): *Coscinodiscus borealis* Ehrenberg

Life form and distribution: Gulf of California.

Salinity: Polyhalobe

Locality: NAT, BMER, BMS

Coscinodiscus apiculatus Ehrenberg

Pl. 4, fig. 6.

Dimensions: diameter 50 µm; 4-5 areolae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 434, pl. 117, fig. 10.

Life form and distribution: This taxon had not been recorded in México.

Locality: NAT

Thalassiosira decipiens (Grunow) Joergensen

Pl. 4, fig. 5.

Dimensions: diameter 17 µm; 11-13 areolae in 10 µm.

Floras: Hasle (1979), p. 85. Navarro (1982), p. 10, pl. 1, figs. 1-2. Moreno *et al*. (1996), p. 133, pl. 33, fig. 7.

Basionym: *Coscinodiscus eccentricus* var. *decipiens* Grunow

Synonym: *Coscinodiscus decipiens* Grunow ex van Heurck, *Thalassiosira gelatinosa* Hensen

Life form and distribution: Planktonic, marine littoral, frequent in warm and cold waters.

Salinity: Marine waters, polyhalobe

Locality: BMS

PLATE 5

Aulacodiscus sturzii Kitton

Pl. 5, figs. 1-2.

Dimensions: diameter 68-87 µm; 8-9 areolae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 107, figs. 8-9.

Life form and distribution: This taxon had not been recorded in México.

Locality: BMS

Aulacodiscus margaritaceus Ralfs

Pl. 5, figs. 3, 5.

Dimensions: diameter 54 µm; 8-9 areolae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), p. 37, fig. 4. Moreno *et al*. (1996), p. 27, pl. 10, fig. 7.

Life form and distribution: Malta, Java, Fundort, Bahía de Campeche, California, Gulf of California.

Locality: NAT

Aulacodiscus macraeanus Greville

Pl. 5, fig. 4 (630X).

Dimensions: diameter 76 µm; 9-10 areolae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 456, figs. 8-10.

Life form and distribution: This taxon had not been recorded in México.

Locality: NAT

Cerataulus sp. 1

Pl. 5, fig. 6.

Dimensions: diameter 35 µm; 10-12 areolae in 10 µm.

Life form and distribution: Planktonic or Tychoplancton.

Locality: NAT

PLATE 6

Actinocyclus subtilis (Gregory) Ralfs

Pl. 6, figs. 1-2.

Dimensions: diameter 67.5-75 µm; 9-11 areolae in 10 µm.

Floras: Hendey (1964), p. 84. Witkowski *et al*. (2000), p. 22, pl. 4, fig. 1.

Basionym: *Eupodiscus subtilis* Gregory

Synonym(s): *Eupodiscus gregorianus* Brébisson

Life form and distribution: Predominantly in warm water oceans, Gulf of California, cosmopolitan.

Locality: NAT

Actinocyclus octonarius Ehrenberg

Pl. 6, fig. 4.

Dimensions: diameter 55 µm; 7-8 areolae in 10 µm.

Floras: Hustedt (1930), p. 525, fig. 298. Witkowski *et al*. (2000), p. 450, pl. 4, figs. 2-3.

Synonym(s): *Actinocyclus ehrenbergii* Ralfs

Life form and distribution: Cosmopolitan species of the marine plankton and of the coastal zone sediments.

Locality: NAT

Eupodiscus radiatus J.W. Bailey

Pl. 6, fig. 3.

Dimensions: diameter 70 µm; 6 areolae in 10 µm.

Floras: Hendey (1964), p. 27, pl. 23, fig. 3. Navarro (1982), p. 17, pl. 9, fig. 2. Moreno *et al*. (1996), p. 71, pl. 20, figs. 10-11.

Synonym(s): *Aulacodiscus radiatus* (J. W. Bailey) Brightwell

Life form and distribution: Gulf of California, British Islands.

Locality: BMS

Cerataulus sp. 1

Pl. 6, fig. 5.

Dimensions: diameter 50 µm; 9 areolae in 10 µm.

Life form and distribution: Epipelgacic, tychoplankton.

Locality: NAT, BMS

Cerataulus californicus A. Schmidt

Pl. 6, fig. 6.

Dimensions: diameter 63 µm; 10 areolae in 10 µm.

Floras: Moreno *et al*. (1996), p. 34, pl. 12, fig. 9.

Synonym(s): *Biddulphia californica* (Schmidt) Wolle

Life form and distribution: Previously recorded in the Gulf of California and off the coasts of California.

Locality: NAT, BMS

PLATE 7

Paralia sulcata (Ehrenberg) Cleve

Pl. 7, figs. 1-2, 8-10.

Dimensions: diameter 63.8-36 µm.

Floras: Navarro (1981), p.429, figs. 11-13.

Basionym: *Gallionella sulcata* Ehrenberg

Synonym(s): *Paralia marina* (W. Smith) Heiberg, *Gallionella sulcata* Ehrenberg, *Melosira sulcata* (Ehrenberg) Kützing, *Orthoseira marina* W. Smith

Life form and distribution: Marine, benthic, epiphytic, tychopelagic, common in the neritic plankton, Gulf of California, Niza.

Salinity: Polyhalobe

Locality: NAT, BMEM, BMER, BMS

Cyclotella striata (Kützing) Grunow

Pl. 7, figs. 3-4.

Dimensions: diameter 7-15 µm.

Floras: Foged (1984), p. 31, pl. 17 fig. 4. Wah & Wee (1988), fig. 27. Moreno *et al*. (1996), p. 60, pl. 18, fig. 9.

Basionym: *Coscinodiscus striatus* Kützing

Synonym(s): *Coscinodiscus striatus* Kützing, *Cyclotella dallasiana* W. Smith

Life form and distribution: Benthic, planktonic (tychoplanktonic).

Salinity: Mesohalobe to polyhalobe, euryhaline

Locality: NAT, BMER, BMS

Cyclotella litoralis Lange & Syvertsen

Pl. 7, figs. 5-7.

Dimensions: diameter 23-40 µm.

Floras: Lange & Syvertsen (1989), p. 343, figs. 1-30. Moreno *et al*. (1996), p. 61, pl. 18, fig. 10. (as *C. stylorum* Brightwell). Hasle & Syvertsen in Tomas (1997), p. 33, pl. 1, fig. b.

Life form and distribution: Florida, Mekong.

Salinity: Polyhalobe

Locality: NAT, BMS

Podosira montagnei Kützing

Pl. 7, fig. 11.

Dimensions: diameter 42 µm.

Floras: Navarro *et al*. (2000), pl. 1, figs. 1-2.

Synonym(s): *Podosira laevis* Gregory

Life form and distribution: Tychoplankton.

Locality: NAT

Podosira stelliger (J. W. Bailey) A. Mann

Pl. 7, fig. 13.

Dimensions: Length 19 µm, mantle 23.8 µm.

Floras: Hendey (1964), p. 90, pl. 22, fig. 6. Hajós, 1973, pl. 2, figs. 2-3. Navarro (1982), p. 11, pl. 2, figs. 4-5. Desikachary (1988), pl. 601, figs. 1-13, pl. 602, figs. 1-11.

Basionym: *Hyalodiscus stelliger* J. W. Bailey

Synonym(s): *Hyalodiscus stelliger* J.W. Bailey, *Podosira maculata* W. Smith, *Melosira maculata* Lagerst.

Life form and distribution: Marine, benthic, Gulf of California.

Salinity: Polyhalobe

Locality: BMER, BMS

Melosira moniliformis var. ***octogona*** (Grunow) Hustedt

Pl. 7, fig. 12.

Dimensions: diameter 37.5 µm.

Floras: Krammer & Lange-Bertalot (1991), p. 9, pl. 6, figs. 1-5. Witkowski *et al*. (2000), p. 35, pl. 3, figs. 1-2.

Basionym: *Melosira borreri* var. *octogona* A. Grunow

Synonym(s): *Melosira borreri* var. *octogona* Grunow, *M. moniliformis* var. *octogona* (Grunow) Hustedt, *M. lineata* var. *octogona* (Grunow) Cleve

Life form and distribution: Tychoplankton.

Locality: NAT

PLATE 8

Odontella aurita (Lyngbye) Agardh

Pl. 8, figs. 1-3, 6.

Dimensions: length 107.5 µm; width 60.5-78.5 µm; pervalvar axis 34.5 µm 7-11 areolae in 10 µm.

Floras: Hendey, 1964, pl. 24, fig. 6. Wah & Wee (1988), figs. 17-20. Moreno *et al*. (1996), p. 106, pl. 27, fig. 9.

Basionym: *Diatoma auritum* Lyngbye

Synonym(s): *Diatoma auritum* Lyngbye, *Biddulphia aurita* (Lyngbye) Brébisson

Life form and distribution: littoral, epiphytic or in and on sediments, cosmopolitan? Gulf of California, meroplanktonic species, neritic species.

Salinity: Polyhalobe

Locality: BAS, NAT, BMS

Odontella rhombus (Ehrenberg) Kützing

Pl. 8, figs. 4-5.

Dimensions: length 52 µm; width 35 µm; pervalvar axis 34.5 µm; 7-8 areolae in 10 µm.

Floras: Hendey (1964), p. 103, pl. 25, fig. 8. Moreno *et al*. (1996), p. 108, pl. 27, fig. 15 (as *Odontella rhombus* f. *rhombus* Ehrenberg).

Basionym: *Zygoceros rhombus* Ehrenberg

Synonym(s): *Zygoceros rhombus* Ehrenberg, *Bidulphia rhombus* (Ehrenberg) Wm. Smith

Life form and distribution: Gulf of California, European Coasts.

Salinity: Polyhalobe

Locality: NAT

PLATE 9

Actinoptychus senarius (Ehrenberg) Ehrenberg

Pl. 9, figs. 1-2, 5-7.

Dimensions: diameter 31.5-73.8 μm; 3-7 areolae in 10 μm.

Floras: Hendey, 1964, pl. 23, figs. 1-2. Navarro (1982), p. 13, pl. 4, fig. 1. Moreno *et al*. (1996), p. 18, pl. 7, figs. 2-3. Witkowski *et al*. (2000), p. 22, pl. 3, figs. 3-4.

Basionym: *Actinocyclus senarius* Ehrenberg

Synonym(s): *Actinoptychus undulatus* (J. W. Bailey) Ralfs, *Actinocyclus senarius* Ehrenberg, *A. undulatus* J.W. Bailey

Life form and distribution: Gulf of California, England coasts, warm water.

Locality: NAT, BMEM, BMER, BMS

Actinoptychus hexagonus Grunow

Pl. 9, figs. 3-4(630X)

Dimensions: diameter 50 μm

Floras: Desikachary (1988), p. 2, pl. 417, figs. 1-2.

Characteristics: Hexagonal center and fine granulations in all six sectors no large areolae visible.

Life form and distribution: Benthic.

Locality: BMER, BMS

PLATE 10

Actinoptychus vulgaris Schumann

Pl. 10, figs. 1-2.

Dimensions: diameter 73.8 μm; 10-11 areolae in 10 μm.

Floras: Desikachary (1988), p. 2, pl. 420, figs. 4, 6. Moreno *et al*. (1996), p. 19, pl. 8, fig. 1.

Synonym(s): *Actinoptychus vulgaris* f. *octonaria* Frenguelli

Life form and distribution: Gulf of California, North Sea.

Locality: COS, NAT, BMEM, BMS

Actinoptychus splendens (Shadbolt) Ralfs ex Pritchard

Pl. 10, figs. 3-4 (630X).

Dimensions: diameter 67.5 μm; 11 areolae in 10 μm.

Floras: Hendey (1964), p. 95, pl. 22, fig. 1. Navarro (1982), p. 13, pl. 4, fig. 2. Moreno *et al*. (1996), p. 18, pl. 7, figs. 4-5.

Basionym: *Actinosphaenia splendes* Shadbolt

Synonym(s): *Actinoptychus halionyx* Grunow

Life form and distribution: Littoral and planktonic (neritic and oceanic); the English chanel, coasts of Spain and Gulf of California.

Salinity: Polyhalobe, meioeuryhaline

Locality: COS, NAT, BMER, BMEM, BMS

Actinoptychus cathedralis Brun

Pl. 10, figs. 5-6 (630X)

Dimensions: diameter 30 µm

Floras: Schmidt *et al*. (1874-1959), pl. 154, fig. 6.

Life form and distribution: Tychoplankton.

Locality: NAT

PLATE 11

Actinoptychus parvus A. Mann

Pl. 11, fig. 1.

Dimensions: diameter 73 µm.

Floras: Moreno *et al*. (1996), p. 18, pl. 7, figs. 1 a, b.

Synonym(s): *Actinoptychus laevigatus* f. *parva* Schmidt

Life form and distribution: Yokohama. Tychoplankton.

Locality: NAT

Actinoptychus adriaticus Grunow

Pl. 11, figs. 2-5.

Dimensions: diameter 62 µm; 11-12 areolae in 10 µm.

Floras: Desikachary (1988), p. 2, pl. 421, fig. 7.

Life form and distribution: Tychopelagic, cosmopolitan?. Stenothermal, warm-water form, indicating a warm to temperate sedimentary environment (marine, neritic, littoral, planktonic).

Salinity: Polyhalobe, meioeuryhaline, marine-brackish

Locality: BAS, NAT, BMER, BMS

PLATE 12

Auliscus punctatus J. W. Bailey

Pl. 12, fig. 1.

Dimensions: diameter 81.5 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 89, fig. 14.

Life form and distribution: Littoral epipsammic.

Salinity: Polyhalobe, meioeuryhaline

Locality: NAT, BMEM, BMER, BMS

Auliscus elegans var**.** ***californica*** Grunow

Pl. 12, figs. 2-3.

Dimensions: diameter 42-61.5 µm**.**

Floras: Schmidt *et al*. (1874-1959), pl. 89, fig. 8 (as *Auliscus grunowii* var**.** *californica* Grunow). Vanlandingham (1967), part. 1, pag. 383.

Life form and distribution: Gulf of California.

Locality: NAT

Auliscus sculptus (W. Smith) Ralfs

Pl. 12, fig. 4.

Dimensions: diameter 45 µm.

Floras: Hendey (1964), p. 98, pl. 23, fig. 4. Foged (1975), p. 14, pl. 4, figs. 2-4. Moreno et al. (1996), p. 29, pl. 1, fig. 3.

Basionym: *Eupodiscus sculptus* W**.** Smith

Synonym(s): *Eupodiscus sculptus* W**.** Smith**,** *Auliscus caelatus* J**.** W**.** Bailey

Life form and distribution: Gulf of California.

Locality: NAT, BMER, BMS

Auliscus caelatus var**.** ***strigillata*** A**.** Schmidt

Pl. 12, fig. 5.

Dimensions: diameter 77 µm**.**

Floras: Hustedt (1930), p. 520, fig. 294.

Life form and distribution: Gulf of California, tychoplankton.

Locality: NAT

Biddulphia tridens (Ehrenberg) Ehrenberg

Pl. 12, figs. 6-7.

Dimensions: length 104 µm; width 44.5 µm.

Floras: Navarro (1990), p.181, figs. 1-12. Moreno *et al*. (1996), p. 31, pl. 11, figs. 7-9.

Life form and distribution: Coasts of Europe, Gulf of California, tychoplankton.

Locality: NAT

PLATE 13

Plagiogramma tesselatum Greville

Pl. 13, figs. 1-3.

Dimensions: length 80 µm; width 20.7 µm; 4-6 striae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 209, figs. 44-50. Desikachary (1989), p.6, pl. 687, fig.7.

Life form and distribution: Not available.

Locality: NAT

Plagiogramma interruptum (Gregory) Ralfs

Pl. 13, figs. 4-7.

Dimensions: length 25.2-47.6 μm; width 3.8-4.6 μm; 18-20 striae in 10 μm.

Floras: Hustedt (1931), p. 110, fig. 636. Navarro (1982), p. 23, pl. 13, figs. 1-2. Witkowski *et al*. (2000), p. 38, pl. 11, figs. 22-24.

Life form and distribution: Widely distribution oceanic species.

Locality: NAT, BMS

Plagiogramma wallichianum Greville

Pl. 13, figs. 8-9.

Dimensions: length 34.5-27 μm; width 7.7-6.9 μm; 7 striae in 10 μm.

Floras: Hustedt (1955), p. 11, pl. 4, fig. 29. Foged (1984), p. 87, pl. 26, fig. 5.

Life form and distribution: Recorded from the Atlantic coast of the U.S.A. and the Caribbean.

Salinity: Polyhalobe

Locality: BAS, NAT, BMER, BMS

Plagiogramma sp. 1

Pl. 13, fig. 10.

Dimensions: length 19 μm; width 7 μm; dense striae.

Life form and distribution: Not available.

Locality: BMS

Plagiogramma rhombicum Hustedt

Pl. 13, figs. 11-12.

Dimensions: Dimensions: length 20.5-17.7 μm; width 9 μm; 8 total striae.

Floras: Hustedt (1955), p. 12, fig. pl. 4, figs. 25-27. Navarro (1982), p. 23, pl. 13, fig. 4. Foged (1984), p. 87, pl. 26, figs. 1-2. Witkowski *et al*. (2000), p. 38, pl. 11, fig. 33.

Life form and distribution: Beaufort Bay in the U.S.A. and Red Sea.

Salinity: Polyhalobe

Locality: BMS

Plagiogramma pulchellum Greville

Pl. 13, fig. 13.

Dimensions: length, 46 μm; width 8.5 μm; 8 striae in 10 μm.

Floras: Schmidt *et al*. (1874-1959), pl. 209, figs. 33-34.

Life form and distribution: Fairly widespread in warmer oceans.

Locality: NAT

Rhaphoneis castracanii Grunow

Pl. 13, figs. 14-15.

Dimensions: length, 38.4 µm; width 28.4 µm; 6-7 striae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 294, figs. 35-37. Navarro (1982), p. 24, pl. 13, fig. 10.

Life form and distribution: Rare in warm waters.

Locality: BMS

PLATE 14

Eunotogramma frauenfeldii Grunow

Pl. 14, figs. 1-2.

Dimensions: length, 3.8 µm; width 51.5 µm; 3-4 striae in 10 µm.

Floras: Hendey (1970), p.385, figs 16-18. Foged (1975), p. 24, pl. 4. fig. 3.

Life form and distribution: Only recorded from the west coast of Africa and Galápagos Islands and coasts of Tanzania.

Locality: BMS

Eunotogramma laevis Grunow

Pl. 14, figs. 3-8.

Dimensions: length 19.2-28.4 µm; width 5.3 µm.

Floras: Hustedt (1955), p. 10, pl. 4, figs. 3-9 (as *Eunotogramma laeve* Grunow). Navarro (1982), p. 15. pl. 6, fig. 1(as *E. laeve* Grunow). Moreno *et al*. (1996), p. 70, pl. 20, fig. 9 (as *E. leave* Grunow). Witkowski *et al*. (2000), p. 32, pl. 10, fig. 4.

Life form and distribution: Beaufort, Tanzania, Florida, Gambia.

Salinity: Polyhalobe

Locality: NAT, BMEM, BMS

Fragilaria capensis Grunow

Pl. 14, fig. 9.

Dimensions: length 24.6 µm; width 5.3 µm; 10 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 48, pl. 28, figs. 12-17.

Life form and distribution: Marine littoral species, probably cosmopolitan.

Locality: COS, NAT, BMER, BMS

Campylosira cymbelliformis (A. Schmidt) Grunow

Pl. 14, fig. 10.

Dimensions: length 40 µm; width 5.3 µm; 7 striae in 10 µm.

Floras: Round *et al*. (1990), p. 298, figs. a-i. Moreno *et al*. (1996), p. 33, pl. 12, fig. 4. Witkowski *et al*. (2000), p. 26, pl. 10, figs. 23-25.

Basionym: *Synedra cymbelliformis* A. Schmidt

Synonym(s): *Synedra cymbelliformis* A. Schmidt

Life form and distribution: Cosmopolitan.

Locality: NAT

Dimeregramma minor (Gregory) Ralfs var. ***minor***

Pl. 14, figs. 11-16, 18.

Dimensions: length 17.6-73 µm; width 10.7-19.2 µm; 8-10 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 118, fig. 640. Hendey (1964), p. 156, pl. 27, fig. 12. Navarro (1982), p. 34, pl. 11, figs. 1-3 (*Denticula minor* Gregory). Moreno *et al*. (1996), p. 64, pl. 19, fig. 7 (as *Dimeregramma minor* (Gregory) Ralfs).Witkowski *et al*. (2000), p. 29, pl. 11, figs. 3-9.

Basionym: *Denticula minor* Gregory

Life form and distribution: Gulf of California.

Salinity: Polyhalobe

Locality: BAS, BMEM, BMER, BMS

Dimeregramma maculatum (Cleve) Frenguelli

Pl. 14, figs. 17, 25-26.

Dimensions: length 23-30.7 µm; width 8.4-10.7 µm; 6-7 striae in 10 µm.

Floras: Hustedt (1955), p. 13, pl. 4, figs. 44-45.

Life form and distribution: Marine form, recorded as epipelic, epiphyte, tychoplankton and epipsammic.

Locality: COS, BMER, NAT, BMS

Dimeregramma sp. 1

Pl. 14, figs. 19-20, 23-24.

Dimensions: length, 41.5-58.5 µm; width 12-13.8 µm; 7 striae in 10 µm.

Locality: BMS

Dimeregramma sp. 2

Pl. 14, figs. 21-22.

Dimensions: length 50.7 µm; width 14.6 µm; 10 striae in 10 µm.

Locality: BMS

PLATE 15

Biddulphia alternans (J. W. Bailey) van Heurck

Pl. 15, figs. 1-5

Dimensions: length 34.6-53.8 µm; width 34.61-57.6 µm; 6-9 striae in 10 µm.

Floras: Hustedt (1930), p. 825, fig. 488. Witkowski *et al*. (2000), p. 25, pl. 7, fig. 6, pl. 8, fig. 1.

Synonym(s): *Triceratium variable* Brightwell; *T. alternans* J.W. Bailey; *Trigonium alternans* J.W. Bailey

Life form and distribution: Marine species, common epiphyte, not rare on European coasts.

Locality: NAT, BMER, BMS

Gephyria media Arnott

Pl. 15, fig. 6.

Dimensions: length 120 µm; width 33 µm; 7-8 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 10, fig. 544. Witkowski *et al*. (2000), p. 56, pl. 14, fig. 13.

Life form and distribution: Littoral form in warm waters. This taxon has been recorded in the W coast of the peninsula of B.C.

Locality: BMS

Rhaphoneis castracanii Grunow

Pl. 15, figs. 7, 9.

Dimensions: length 36.9 µm; width 33 µm; 6 striae in 10

Floras: Schmidt *et al*. (1874-1959), pl. 294, figs. 35-37. Navarro (1982), p. 24, pl. 13, fig. 10.

Life form and distribution: Recorded in mangrove environment.

Locality: BMS

Terpsinoë americana (J.W. Bailey) Ralfs

Pl. 15, fig. 8.

Dimensions: length 55.3 µm; width 34.6 µm; 11-13 striae in 10 µm.

Floras: Hustedt (1930), p. 900, fig. 541. Witkowski *et al*. (2000), p. 41, pl. 9, figs. 4-5.

Basionym: *Tetragramma americana* J. W. Bailey

Synonym(s): *Tetragramma americana* J. W. Bailey, *Terpsinoë minima* J. W. Bailey

Life form and distribution: Inhabitant of brackish-water. Recorded in sediments and mangrove roots, probably as tychoplankton.

Locality: BMER, BMS

PLATE 16

Grammatophora undulata Ehrenberg

Pl. 16, fig. 1.

Dimensions: length 67.6 µm; width 20 µm.

Floras: Foged (1984), p. 45, pl. 24, fig. 4. Witkowski *et al*. (2000), p. 59. pl. 15, fig. 1.

Synonym(s): *Grammatophora gibba* Ehrenberg, *G. marina* var. *undulata* Peragallo, *G. marina* var. *gibba* Peragallo, *G. decussata* Mereschkowsky

Life form and distribution: Warm water species. Found only in Gulf of California.

Salinity: Polyhalobe

Locality: NAT

Grammatophora marina (Lyngbye) Kützing

Pl. 16, figs. 2, 3, 5,6.

Dimensions: length 56.9-96.1 µm; width 8.4-1.2 µm; 20-21 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 353, pl. 87, figs. 6-8. Hendey (1964), p. 170. Moreno *et al*. (1996), p. 77, pl. 21, fig. 16. Witkowski *et al*. (2000), p. 58. pl. 15, figs. 9-12.

Basionym: *Diatoma marinum* Lyngbye

Synonym(s): *Diatoma marinum* Lyngby, *Grammatophora mexicana* Ehrenberg

Life form and distribution: Gulf of California, North Sea, Atlantic coasts.

Salinity: Polyhalobe

Locality: BAS, NAT, BMEM, BMER, BMS

Grammatophora hamulifera Kützing

Pl. 16, fig. 4.

Dimensions: length 16 µm; width 20 µm; 12 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 40, fig. 566. Witkowski *et al*. (2000), p. 57. pl. 14, figs. 14-16.

Synonym(s): *Grammatophora angulosa* var. *hamulifera* Grunow, *G. islandica* var. *hamulifera* Lagerstedt, *G. uncina* Leudiger-Fortmorel

Life form and distribution: Marine species in warm waters.

Salinity: Polyhalobe

Locality: NAT

Grammatophora oceanica var. ***subtilissima*** (J. W. Bailey) De toni

Pl. 16, figs. 7-8.

Dimensions: length 96.1 µm; width 10 µm; 36 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 48, fig. 575. Witkowski *et al*. (2000), p. 59, pl. 13, fig. 1, pl. 14, figs. 12-13, pl. 15, fig. 15, pl. 17, fig. 5. (as *Grammatophora subtilissima* J. W. Bailey)

Synonym(s): *Grammatophora oceanica* var. *macilenta* f. *subtilissima* (J. W. Bailey) Hustedt, *G. subtilissima* J. W. Bailey, *G. oceanica* var. *subtilissima* (J. W. Bailey) Grunow

Life form and distribution: Epiphytic.

Salinity: Mesohalobe

Locality: NAT

Delphineis surirella (Ehrenberg) Andrews

Pl. 16, fig. 9, 14.

Dimensions: length 30.7 µm; width 11.5 µm; 11 striae in 10 µm.

Floras: Navarro (1982), p. 19, pl. 14, figs. 1-3.

Synonym(s): *Rhaphoneis surirella* (Ehrenberg) Grunow

Life form and distribution: Marine species common throghouth the year.

Locality: NAT, BMER, BMS

Delphineis surirella var. ***australis*** (Petit) Navarro

Pl. 16, figs. 10-12, 13, 15.

Dimensions: length 30.7-60 µm; width 16.9-21.5 µm; 6 striae in 10 µm.

Floras: Hustedt (1955), p. 14, pl. 4, fig. 56 (as *Rhaphoneis surirella* var. *australis* Petit). Hendey (1964), p. 55, pl. 26, figs. 11-13. Navarro (1982), p. 19, pl. 14, fig. 4. Foged (1984), p. 91, pl. 27, fig. 1 (as *R. surirella* var. *australis* Petit).

Life form and distribution: Marine species, little common.

Salinity: Polyhalobe

Locality: NAT, BMS

Glyphodesmis distans (Gregory) Grunow ex van Heurck

Pl. 16, fig. 16.

Dimensions: length 46.1 µm; width 12.3 µm; 5 striae in 10 µm.

Floras: Hendey (1964), p. 156, pl. 27, fig. 6 (as *Dimeregramma distans* Gregory). Moreno *et al*. (1996), p. 75, pl. 21, fig. 11. Witkowski *et al*. (2000), p. 32, pl. 11, figs. 25-28.

Basionym: *Denticula distans* Gregory

Synonym(s): *Dimeregramma distans* (Gregory) Ralfs

Life form and distribution: Marine species, widespread in the littoral sediments, common in the fossil sediments of the western Baltic Sea, Nort Sea, British Islands.

Locality: NAT

Opephora guenter-grassii (Witkowski & Lange-Bertalot) Sabbe & Vyverman

Pl. 16, fig. 17.

Floras: Navarro (1982), p. 22, pl. 12, fig. 8 (as *Opephora pacifica* (Grunow) Petit). Sabbe & Vyverman (1995), p. 241, figs. 13-28. Witkowski *et al*. (2000), p. 70, pl. 24, figs. 40-44.

Basionym: *Fragilaria guenter-grassii* Witkowski & Lange-Bertalot

Synonym(s): *Opephora olsenii* Moeller

Life form and distribution: Epipsammic, ephiphytic, Baltic Sea and in estuarine areas of the North Sea.

Salinity: Brackish-water to marine

Locality: BMS

Opephora pacifica (Grunow) Petit

Pl. 16, figs. 18-20.

Dimensions: length 20-32.3 µm; width 5.3-6.9 µm; 7-8 striae in 10 µm.

Floras: Navarro (1982), p. 22, pl. 12, figs. 6-10. Wah & Wee (1988), fig. 74. Moreno *et al*. (1996), p. 108, pl. 27, fig. 17. Witkowski *et al*. (2000), p. 72, pl. 25, figs. 18-26.

Basionym: *Fragilaria pacifica* Grunow

Synonym(s): *Fragilaria pacifica* Grunow

Life form and distribution: Littoral, epipsammic, Gulf of California, North Sea.

Salinity: Marine

Locality: NAT, BMEM, BMER, BMS

Opephora burchardtiae Witkowski, Metzeltin & Lange-Bertalot

Pl. 16, fig. 21.

Dimensions: length 20 µm; width 4.6 µm; 7 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 70, pl. 25, figs. 31-34, 38.

Life form and distribution: cosmopolitan inhabiting littoral sediments.

Locality: BMS

Opephora schwartzii (Grunow) Petit

Pl. 16, figs. 22-25.

Dimensions: length 35.3-18.4 µm; width 7.6-11.5 µm; 6-7 striae in 10 µm.

Floras: Hustedt (1955), p. 13, pl. 4, fig. 46. Navarro (1982), p. 22, pl. 12, fig. 11. Witkowski *et al*. (2000), p. 73, pl. 25, fig. 1.

Basionym: *Fragilaria schwartzii* Grunow

Synonym(s): *Fragilaria schwartzii* Grunow

Life form and distribution: marine species known from all of the oceans.

Salinity: Polyhalobe

Locality: COS, NAT, BMER

Licmophora remulus Grunow

Pl. 16, fig. 26.

Floras: Hustedt (1931-1959), p. 57, fig. 580. Navarro (1982), p. 22, pl. 12, figs. 4-5. Witkowski *et al*. (2000), p. 68, pl. 19, figs. 1-2.

Synonym(s): *Podosohenia remulus* Grunow, *Licmophora crozieri* Grunow

Life form and distribution: Found on ocean coasts of warmer zones.

Locality: BAS, BMER, BMS

PLATE 17

Cocconeis dirupta Gregory

Pl. 17, figs. 1-6.

Dimensions: length 24.6-40.7 µm; width 15.4-30.7 µm; 11-14 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 354, figs. 809 a-c. Foged (1984), p. 28, pl. 31, fig. 9.

Life form and distribution: Benthic.

Salinity: Marine littoral species (polyhalobe)

Locality: BAS, NAT, BMEM, BMER, BMS

Cocconeis dirupta var. ***flexella*** (Janisch & Rabenhorst) Grunow

Pl. 17, figs. 7- 8.

Dimensions: length 17-41 µm; width 10-28.5 µm; 17-20 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 355, figs. 809 d-i. Moreno *et al*. (1996), p. 50, pl. 15, fig. 13.Witkowski *et al*. (2000), p. 105, pl. 39, figs. 6-7, pl. 51, figs. 5-8.

Life form and distribution: Marine form found in the Adriatic Sea, Gulf of California.

Locality: BMS

Cocconeis costata var. ***pacifica*** Grunow

Pl. 17, figs. 9-10.

Dimensions: length 32 µm; width 25.4 µm; 6-8 striae robust in 10 µm.

Floras: Witkowski *et al*. (2000), p. 105, pl. 35, figs. 10-13.

Life form and distribution: Marine form. According to the above authors widespread but rarely recorded, albeit it occurs abundantly as an epiphyte on *Macrocystis pyrifera* blades in the Baja California peninsula (Siqueiros-Beltrones *et al*., 2002). Romero (pers. com.) confirmed the identification in spite of the absence of a staurus in our specimens.

Locality: BMS

Cocconeiopsis fraudulenta (A. Schmidt) Witkowski, Lange-Bertalot et Metzeltin

Pl. 17, fig. 11.

Dimensions: length 23 µm; width 10 µm; 17 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 641, fig. 1642. Witkowski *et al*. (2000), p. 173, pl. 68, figs. 9, 11-12.

Basionym: *Navicula fraudulenta* A. Schmidt

Life form and distribution: Littoral marine species common in the North Sea, Carribean.

Locality: BMS

Cocconeiopsis orthoneoides (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Pl. 17, fig. 12.

Dimensions: length 23 µm; width 19 µm; 15-17 striae in 10 µm.

Floras: Hustedt (1955), p. 31, pl. 7, fig. 14. Foged (1978), p. 95, pl. 32, fig. 12. Witkowski *et al*. (2000), p. 172, pl. 67, figs. 1-2, pl. 68, fig. 1.

Basionym: *Navicula orthoneoides* Hustedt

Life form and distribution: Recorded from the east coast of the U. S. A., and Africa.

Salinity: Polyhalobe

Locality: BMS

Cocconeiopsis patrickae (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Pl. 17, fig. 13.

Dimensions: length 10.8 µm; width 19 µm; 14 striae in 10 µm.

Floras: Hustedt (1955), p. 26, pl. 8, figs. 15, 16. Simonsen (1987), p. 411, pl. 615, figs. 1-8. Witkowski *et al*. (2000), p. 174.

Basionym: *Navicula patrickae* Hustedt

Life form and distribution: Marine species, widespread in the littoral, known from the coasts of the Atlantic and Indian Oceans.

Salinity: Polyhalobe

Locality: BAS, BMS

Cocconeis sp. 1

Pl. 17, figs. 14-15.

Dimensions: length 30.8 µm; width 21.5 µm.

Floras: Riaux-Gobin & Romero (2003), p. 152, pl. 41, figs. 1-7 (as *Cocconeis hauniensis* A. Witkowski).

Life form and distribution: Widespread in the Gulf of Gdansk and in the Baltic Sea, so far found also in the Schelde Estuary, the Netherlands.

Locality: NAT

Cocconeis scutellum Ehrenberg

Pl. 17, figs. 16-17.

Dimensions: length 25.3-26 µm; width 16-20 µm; 9-10 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 338, fig. 790. Hendey (1964), p. 180, pl. 27, fig. 8. Sar *et al*., (2003), p. 95, figs. 44-50.

Life form and distribution: Neritic, estuarine, tychopelagic, epiphytic, epipelic, cosmopolitan in temperate-tropical waters.

Salinity: Marine-brackish, mesohalobe, polyhalobe

Locality: BAS, BMEM, BMER, BMS

Cocconeis disculoides Hustedt

Pl. 17, fig. 18.

Dimensions: length 23.8 μm; width 12.3 μm; 7-8 striae in 10 μm.

Floras: Hustedt (1955), p. 17, pl. 5, figs. 8-11, pl. 7, fig. 8. Witkowski *et al*. (2000), p. 106, pl. 42, figs. 28-33.

Life form and distribution: Widespread in the littoral of the Atlantic and Indian Ocean coasts, Gulf of California.

Locality: BAS, BMS

Cocconeis sp. 2

Pl. 17, fig. 19.

Dimensions: length 24.5 μm; width 17 μm; 10 striae in 10 μm.

Locality: NAT

Anorthoneis eurystoma Cleve

Pl. 17, fig. 20.

Dimensions: length 29 μm; width 22 μm; 10 striae in 10 μm.

Floras: Hustedt (1955), p. 15, pl. 2, fig. 7, pl. 5, figs. 16-17. Navarro (1982), p. 28. pl. 16, figs. 7-8. Foged (1984), p. 21, pl. 25, figs. 10-11. Witkowski *et al*. (2000), p. 97, pl. 54, figs. 4-8.

Life form and distribution: Neritic, pantropical.

Salinity: Polyhalobe

Locality: BMS

Anorthoneis excentrica (Donkin) Grunow

Pl. 17, fig. 21.

Dimensions: length 14.6 μm; width 13.8 μm; 17-18 striae in 10 μm.

Floras: Hustedt (1931-1959), p. 233, fig. 719. Witkowski *et al*. (2000), p. 97, pl. 42, fig. 20, pl. 54, figs. 9-10.

Life form and distribution: Marine species inhabiting sandy sediments of the littoral.

Locality: BMS

Tabularia parva (Kützing) Williams & Round

Pl. 17, figs. 22-23.

Dimensions: length 23.8-36.9 μm; width 46-53.8 μm; 16-17 striae in 10 μm.

Floras: Navarro (1982), p. 20, pl. 14, fig. 11 (as *Fragilaria tabulata* var. *parva* (Hustedt) Lange-Bertalot).

Life form and distribution: Epiphytic.

Salinity: Mesohalobe, euryhaline

Locality: BMER

Catacombas gaillonii (Bory) D. M. Williams & Round

Pl. 17, fig. 24.

Dimensions: length 85 µm; width 7 µm; 22-24 striae in 10 µm.

Floras: Williams & Round (1986), p. 315. Witkowski *et al*. (2000), p. 80, pl. 30, figs. 6-8.

Basionym: *Navicula gaillonii* Bory

Synonym(s): *Synedra baltica* Herenberg; *S. gaillonii* (Bory) Ehrenberg

Life form and distribution: Epiphytic, probably cosmopolitan species inhabiting marine littoral and estuaries, rarely also found in inland saline waters.

Locality: BMEM, BMS

Hyalosynedra laevigata (Grunow) D. M. Williams & Round

Pl. 17, fig. 25.

Dimensions: length 47 µm; width 2.7 µm.

Floras: Foged (1984), p. 97, pl. 28, fig. 13. Lange-Bertalot, (1980), p. 752 (as *Fragilaria laevigata* (Grunow) Lange-Bertalot). Stoermer, *et al*. (1999), p. 515-566. Witkowski *et al*. (2000), p. 62, pl. 17, fig. 22, pl. 29, figs. 6-10, pl. 30, figs. 30-23.

Basionym: *Synedra laevigata* Grunow

Synonym(s): *Synedra laevigata* Grunow

Life form and distribution: Not rare in warmer seas.

Salinity: Polyhalobe

Locality: BMER, BMS

Thalassionema nitzschioides (Grunow) Mereschkowsky

Pl. 17, figs. 26-27.

Dimensions: length 32-72 µm; width 2-2.5 µm; 10-11 striae in 10 µm.

Floras: Poulin *et al*. (1984b), p. 363, figs. 92-93. Hasle & Syvertsen, (1996), pl. 57, figs. a, b.

Basionym: *Synedra nitzschioides* Grunow

Synonym(s): *Synedra nitzschioides* Grunow, *S. nitzschioides* var. *minor* Cleve, *Thalassiothrix nitzshioides* (Grunow) Grunow, *T. nitzschioides* var. *javanica* Grunow, *T. curvata* Castracane, *T. fraunfeldii* var. *nitzschioides* (Grunow) Jörgensen.

Life form and distribution: Planktonic, common in upwelling areas. Subtropical thanatocoenosis (Pacific), oceanic species, marine, neritic, littoral, planktonic. This species is most abundant in relatively nearshore cores. Cosmopolitan, but not in the high arctic and antarctic.

Salinity: Mesohalobe to polyhalobe, meio to mesoeuryhaline.

Locality: BMER, BMS

PLATE 18

Achnanthes angustata Greville

Pl. 18, fig. 1.

Dimensions: length 88.5 µm; width 19 µm; 9-10 striae in 10 µm.

Floras: Navarro (1982), p. 26, pl. 15, fig. 1 (as *Achnanthes brevipes* var*. angustata* (Greville) Cleve). Witkowski *et al*. (2000), p. 85, pl. 44, figs. 29-31.

Synonym(s): *Achnanthes brevipes* var*. angustata* (Greville) Cleve

Life form and distribution: Marine species, widespread (cosmopolitan?).

Salinity: Polyhalobe

Locality: BMER, BMS

Achnanthes pseudogroenlandica Hendey

Pl. 18, fig. 2.

Dimensions: length 31.5 µm; width 3.8 µm; 11-12 striae in 10 µm.

Floras: Hendey (1964), p. 177, pl. 28, figs. 9-12. Witkowski *et al*. (2000), p. 94, pl. 44, figs. 16-23.

Life form and distribution: Marine species.

Locality: BMER

Achnanthes brevipes Agardh

Pl. 18, fig. 3.

Dimensions: length 34.6 µm; width 7.7 µm; 10 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 424, figs. 877 a-c.

Life form and distribution: Marine species, cosmopolitan.

Locality: BAS, BMS

Achnanthes brevipes var*. intermedia* (Kützing) Cleve

Pl. 18, fig. 4.

Dimensions: length 32 µm; width 7 µm; 11 striae in 10 µm.

Floras: Wah & Wee (1988), figs. 2-3. Witkowski *et al*. (2000), p. 86, pl. 43, figs. 1-5.

Basionym: *Achnanthes intermedia* Kützing

Synonym(s): *Achnanthes intermedia* Kützing, *A. subsessilis* Kützing

Life form and distribution: Marine species, benthic.

Salinity: Polyhalobe

Locality: BAS, BMEM, BMER, BMS

Achnanthes parvula Kützing

Pl. 18, figs. 5-6.

Dimensions: length 13 µm; width 4.6 µm; 11 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 93, pl. 43, figs. 6-7, pl. 45, figs. 6-8, pl. 47, fig. 9.

Synonym(s): *Achnanthes brevipes* var. *parvula* (Kützing) Cleve, *Achnanthidium brevipes* var. *parvulum* (Kützing) Mereschovsky

Life form and distribution: Cosmopolitan? Inhabiting marine and brackish waters of the coastal areas.

Locality: BME

Achnanthes javanica Grunow

Pl. 18, fig. 7.

Dimensions: length 77 µm; width 32 µm; 7 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 91, pl. 45, fig. 15.

Life form and distribution: Predominantly found alength warm water ocean coasts.

Locality: BAS, BMS

Achnanthes yaquinensis McIntire & Reimer

Pl. 18, figs. 8-13.

Dimensions: length 24.6-65 µm; width 13-21.5 µm; 8-9 striae in 10 µm.

Floras: McIntire & Reimer (1974), pl. 18, fig. 1.

Life form and distribution: Epiphytic.

Locality: BMEM, BMER, BMS

Planothidium lanceolata (Brébisson) Grunow

Pl. 18, fig. 16.

Dimensions: length 11.5 µm; width 4.5 µm; 13 striae in 10 µm.

Floras: van Heurck (1880), pl. 27, fig. 8.

Basionym: *Achnanthes lanceolata* (Brébisson) Grunow

Synonym(s): *Achnanthidium lanceolatum* Brébisson, *Achnanthes lanceolatum* Brébisson

Life form and distribution: Epipsammic, epilithic.

Locality: BMS

Achnanthes fimbriata (Grunow) Ross

Pl. 18, fig. 18.

Dimensions: length 59 µm; width 20.7 µm; 11-12 striae in 10 µm.

Floras: Hustedt (1955), p. 18, pl. 6, figs. 1-8. Navarro (1982), p. 27 pl. 15, figs. 7-9 (as *Achnanthes manifera* Brun). Foged (1984), p. 14, pl. 32, fig. 11 (as *A. manifera* Brun). Moreno *et al*. (1996), p. 13, pl. 6, figs. 3 a, b.

Basionym: *Schizostauron simbriatum* Grunow

Synonym(s): *Navicula fimbriata* Grunow, *Achnanthes heteropsis* Grunow, *A. danica* (Fögel) Grunow, *A. manifera* Brun

Life form and distribution: Neritic, pantropical.

Salinity: Mesohalobe

Locality: BAS, BMEM, BMER, BMS

Achnanthes curvirostrum Brun

Pl. 18, figs. 19-20.

Dimensions: length 39 µm; width 17 µm; 12-13 striae in 10 µm.

Floras: Navarro (1982), p. 27, pl. 15, figs. 10-11. Moreno *et al*. (1996), p. 13, pl. 6, fig. 1. Witkowski *et al*. (2000), p. 87, pl. 47, figs. 5-8.

Life form and distribution: Puerto Rico coasts, Gulf of México, Gulf of California.

Locality: NAT, BMS

Planothidium heidenii **(**Schülz) Witkowski

Pl. 18, fig. 14.

Dimensions: length 20 µm; width 7.7 µm; 12 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 120, pl. 51, figs. 21-22.

Basionym: *Achnanthes heidenii* Schülz

Locality: BMS

Planothidium hauckianum (Grunow) Round & Buktiyarova

Pl. 18, figs. 15, 17.

Dimensions: length 9-14.5 µm; width 5.3-6.9 µm.

Floras: Hustedt (1931-1959), p. 388, fig. 834 (as *Achnanthes haukiana* Grunow). Patrick & Reimer (1966), p. 267, pl. 17, figs. 25-32 (as *A. hauckiana* Grunow). Wah & Wee (1988), figs. 4-5 (as *A. hauckiana* Grunow). Witkowski *et al*. (2000), p. 120, pl. 48, figs. 39-41.

Basionym: *Achnanthes hauckiana* Grunow

Synonym(s): *Achnanthes delicatula* ssp. *hauckiana* (Grunow in Cleve & Grunow) Lange-Bertalot & Ruppel

Life form and distribution: Benthic (epipsammic and epilithic), especially common on sandy substrate.

Salinity: Brackish water, euryhaline

Locality: NAT, BMS

Oestrupia musca (Gregory) Hustedt

Pl. 18, figs. 21-22.

Dimensions: length 37.7-57 µm; width 101.5-39.2 µm; 7 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 79, pl. 14, figs. 14-16. Hendey (1964), p. 228, pl. 29, fig. 17.

Basionym: *Navicula musca* Gregory

Synonym(s): *Navicula musca* Gregory, *Caloneis musca* (Gregory) Cleve

Life form and distribution: epipsammic and epipelic

Locality: NAT, BMS

PLATE 19

Diploneis crabro Ehrenberg

Pl. 19, figs. 1-2, 3 (630X), 4.

Dimensions: length 14.5-57 µm; width 42.3.7-19.2 µm; 5-9 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 616, fig. 1028. Hendey, 1964, pl. 32, figs. 1, 3. Reyes-Vásquez (1975) pl. 5, fig. 34. Witkowski *et al*. (2000), p. 184, pl. 93, figs. 18-21.

Synonym(s): *Navicula crabro* Kützing

Life form and distribution: Distributed and common on most ocean coasts, benthic taxon.

Locality: NAT, BMER, BMS

Diploneis chersonensis (Grunow) Cleve

Pl. 19, fig. 5.

Dimensions: length 38.5 µm; width 11.5 µm; 13 striae in 10 µm.

Floras: Hendey (1964), p. 227, pl. 32, figs. 7-8. Reyes-Vásquez (1975) pl. 5, fig. 33. Foged (1978), p. 51, pl. 24, fig. 4. Witkowski *et al*. (2000), p. 184, pl. 86, fig. 10.

Basionym: *Navicula chersonensis* Grunow

Synonym(s): *Navicula apis* Ehrenberg, *N. chersonensis* Grunow

Life form and distribution: Neritic, cosmopolitan.

Salinity: Polyhalobe

Locality: NAT, BMER, BMS

Diploneis smithii (Brébisson) Cleve var. ***smithii***

Pl. 19, fig. 6.

Dimensions: length 31.5 µm; width 15.4 µm; 10 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 647, fig. 1051. Reyes-Vásquez (1975) pl. 4, fig. 31. Foged (1978), p. 53, pl. 25, fig. 3. Foged (1984), p. 37, pl. 6, fig. 9; pl. 40, fig. 6. Wah & Wee (1988), fig. 38. Witkowski *et al*. (2000), p. 624, figs. 6-7.

Basionym: *Navicula smithii* Brébisson

Synonym(s): *Navicula elliptica* W. Smith, *Navicula smithii* Brébisson

Life form and distribution: Neritic, cosmopolitan.

Salinity: Polyhalobe

Locality: BAS, NAT, BME

Diploneis obliqua (Brun) Hustedt

Pl. 19, figs. 7-10.

Dimensions: length 46-84.5 µm; width 22.3-28.5 µm; 10-12 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 686, fig. 1075 c. Navarro (1982), p. 35, pl. 22, fig. 9.

Life form and distribution: Very rare in warm waters.

Locality: NAT, BMEM, BMER, BMS

PLATE 20

Diploneis crabro Ehrenberg

Pl. 20, fig. 1.

Dimensions: length 111.5 µm; width 36 µm; 5-6 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 616, fig. 1028. Hendey, 1964, pl. 32, figs. 1, 3. Reyes-Vásquez (1975) pl. 5, fig. 34. Witkowski *et al*. (2000), p. 184, pl. 93, figs. 18-21.

Synonym(s): *Navicula crabro* Kützing

Life form and distribution: Distributed and common on most ocean coasts, benthic taxon.

Locality: NAT, BMER, BMS

Diploneis gruendleri (A. Schmidt) Cleve

Pl. 20, figs. 2-4.

Dimensions: length 42.7-60 µm; width 21.5-26 µm; 7 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 702, fig. 1084. Navarro (1982), p. 34, pl. 22, fig. 5.

Life form and distribution: Benthic taxon.

Locality: BAS, NAT, BMEM, BMS

Diploneis subcincta (A. Schmidt) Cleve

Pl. 20, fig. 5.

Dimensions: length 37 µm; width 11.5 µm; 11 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 118, pl. 19, fig. 16. Hustedt (1931-1959), p. 681, fig. 1072.

Synonym(s): *Navicula subcincta* A. Schmidt

Life form and distribution: Neritic, benthic taxon.

Locality: BMS

Diploneis notabilis (Greville) Cleve

Pl. 20, figs. 6-7.

Dimensions: length 23 µm; width 13.8 µm; 14 striae in 10 µm.

Floras: Hendey (1964), p. 224. pl. 32, fig. 11. Foged (1978), p. 52, pl. 25, figs. 7-8. Witkowski *et al.* (2000), p. 189, pl. 89, figs. 15-21, pl. 94, fig. 7.

Basionym: *Navicula notabilis* Greville

Life form and distribution: Widespread and common on all oceanic coasts with the main distribution area in the tropics.

Salinity: Polyhalobe

Locality: BMS

Diploneis didyma (Ehrenberg) Cleve

Pl. 20, figs. 8-9.

Dimensions: length 44.5-54 µm; width 17.7-19.2 µm; 9-10 striae in 10 µm.

Floras: Hustedt (1959), p. 685, figs. 1075 a-b. Witkowski *et al*. (2000), p. 185, pl. 87, figs. ?17-19.

Basionym: *Pinnularia didymus* Ehrenberg

Synonym(s): *Pinnularia didymus* Ehrenberg, *Navicula didymus* Ehrenberg

Life form and distribution: Cosmopolitan.

Salinity: Marine, brackish waters

Locality: BAS, BMS

Diploneis caffra (Giffen) Witkowski, Lange-Bertalot et Metzeltin

Pl. 20, figs. 10-11.

Dimensions: length 14.6-15.4 µm; width 69 µm; 18 striae in 10 µm.

Floras: Giffen (1970), p. 273, fig. 29-30 (as *Diploneis interrupta* var. *caffra* Giffen). Navarro (1982), p. 34, pl. 22, figs. 6-8 (as *D. interrupta* var. *caffra* Giffen).

Basionym: *Diploneis interrupta* var. *caffra* Giffen

Life form and distribution: Cosmopolitan.

Salinity: Polyhalobe

Locality: BMEM, BMER, BMS

Diploneis smithii (Brébisson) Cleve var. ***smithii***

Pl. 20, fig. 12.

Dimensions: length 61.5 µm; width 27 µm; 8 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 647, fig. 1051. Reyes-Vásquez (1975) pl. 4, fig. 31. Foged (1978), p. 53, pl. 25, fig. 3. Foged (1984), p. 37, pl. 6, fig. 9; pl. 40, fig. 6. Wah & Wee (1988), fig. 38. Witkowski *et al*. (2000), p. 624, figs. 6-7.

Basionym: *Navicula smithii* Brébisson

Synonym(s): *Navicula elliptica* W. Smith, *N. smithii* Brébisson

Life form and distribution: Neritic, cosmopolitan.

Salinity: Polyhalobe

Locality: BAS, NAT, BMER, BMS

Diploneis smithii var. ***recta*** Peragallo

Pl. 20, fig. 13.

Dimensions: length 39.2 µm; width 15.4 µm; 9 striae in 10 µm.

Floras: Hustedt (1930), p. 650, fig. 1052 b. Foged (1978), p. 53, pl. 25, fig. 5. Foged (1984), p. 38, pl. 6, fig. 11.

Basionym: *Navicula smithii* var. *suborbicularis* Gregory

Synonym: *Navicula smithii* var. *suborbicularis* Gregory, *N. suborbicularis* (Gregory) Donkin

Life form and distribution: Presumably cosmopolitan.

Salinity: Polyhalobe

Locality: BMS

Diploneis suborbicularis (Gregory) Cleve

Pl. 20, figs. 14-15.

Dimensions: length 36-46 µm; width 21.5-24.6 µm; 9-10 striae in 10 µm.

Floras: Reyes-Vásquez (1975) pl. 4, fig. 32. Navarro (1982a), p. 324, fig. 59.

Life form and distribution: Neritic, cosmopolitan.

Salinity: Marine

Locality: BAS, BMEM, BMER, BMS

PLATE 21

Fallacia nummularia (Greville) D. G. Mann

Pl. 21, figs. 1-2.

Dimensions: length 28.5-40 µm; width 23-33 µm; 11 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 527, fig. 1566. Navarro (1982), p. 46, pl. 29, fig. 6. (as *Navicula nummularia* Greville). Moreno *et al*. (1996), p. 72, pl. 21, fig. 4.

Witkowski *et al*. (2000), p. 209, pl. 71, figs. 10-11.

Basionym: *Navicula nummularia* Greville

Synonym(s): *Navicula nummularia* Greville

Life form and distribution: Tanzania, European coasts.

Salinity: Polyhalobe

Locality: NAT, BMEM, BMER, BMS

Fallacia hummii (Hustedt) D. G. Mann

Pl. 21, fig. 3.

Dimensions: length 33 µm; width 19 µm; 11 striae in 10 µm.

Floras: Hustedt (1955), p. 59, pl. 8, figs. 8-10.

Basionym: *Navicula hummii* Hustedt

Synonym(s): *Navicula hummii* Hustedt

Life form and distribution: Tropical marine species. Epipelic.

Locality: BMS

Fallacia forcipata (Greville) Stickle & D. G. Mann

Pl. 21, figs. 4-5.

Dimensions: length 23-30.8 µm; width 11.5-14.6 µm; 13 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 531, fig. 1568 (as *Navicula forcipata* Greville). Navarro (1982), p. 44, pl. 27, fig. 9. (as *N. forcipata* Greville). Moreno *et al*. (1996), p. 72, pl. 21, fig. 2. Witkowski *et al*. (2000), p. 205, pl. 72, figs. 2-9.

Basionym: *Navicula forcipata* Greville

Synonym(s): *Navicula forcipata* Greville

Life form and distribution: Cosmopolitan.

Locality: BAS, NAT, BMER, BMS

Fallacia nyella (Hustedt) D. G. Mann

Pl. 21, fig. 6.

Dimensions: length 16 µm; width 9 µm; 17-19 striae in 20-23 µm.

Floras: Hustedt (1961-1966), p. 535, fig. 1571. Witkowski *et al*. (2000), p. 209, pl. 70, figs. 1-7.

Basionym: *Navicula nyella* Hustedt

Synonym(s): *Navicula nyella* Hustedt

Life form and distribution: Tropical marine species.

Locality: COS, BMS

Fallacia vittata (Cleve) D. G. Mann

Pl. 21, figs. 7-10.

Dimensions: length 22-33 µm; width 13-15.4 µm; 17-19 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 371, fig. 1461. Witkowski *et al*. (2000), p. 215, pl. 70, fig.?21, pl. 71, figs.?15-? 16.

Basionym: *Diploneis bioculata* var. *vittata* Cleve

Synonym(s): *Diploneis bioculata* var. *vittata* Cleve, *D. bioculata* Cleve, *Navicula vittata* (Cleve) Hustedt

Life form and distribution: Tropical marine littoral species.

Locality: BAS, NAT, BMEM, BMER, BMS

Fallacia litoricola (Hustedt) D. G. Mann

Pl. 21, figs. 11-14.

Dimensions: length 23.8-34.5 µm; width 10-14.6 µm; 16-18 striae in 10 µm.

Floras: Navarro (1982), p. 45, pl. 28, fig. 6. (as *Navicula litoricola* Hustedt). Moreno *et al*. (1996), p. 72, pl. 21, fig. 3. Witkowski *et al*. (2000), p. 206, pl. 71, figs.?7-8, pl. 72, figs. 31-34.

Basionym: *Navicula litoricola* Hustedt

Synonym(s): *Navicula litoricola* Hustedt

Life form and distribution: Epilithic, epipelic.

Salinity: Marine littoral, brackish water (mesohalobe to polyhalobe)

Locality: NAT, BMER, BMS

Lyrella abrupta (Gregory) D. G. Mann

Pl. 21, fig. 15.

Dimensions: length 30.8 µm; width 17 µm; 13 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 229, pl. 99, fig. 8.

Basionym: *Navicula abrupta* (Gregory) Donkin

Synonym(s): *Navicula abrupta* (Gregory) Donkin

Life form and distribution: Tychoplanckton.

Locality: NAT

Lyrella exsul (A. Schmidt) D. G. Mann

Pl. 21, figs. 16-18.

Dimensions: length 40.7-80 µm; width 12-29 µm; 10-11 striae in 10 µm.

Floras: Hustedt (1959), p. 451, fig. 1515 a, b (as *Navicula exsul* (A. Schmidt) Hustedt)

Synonym(s): *Navicula exsul* A. Schmidt, *N. clavata* var. *exsul* A. Schmidt

Life form and distribution: Epilithic, epipelic. Cosmopolitan?

Locality: BAS, BMEM, BMER, BMS

Lyrella approximatoides (Hustedt) D. G. Mann

Pl. 21, figs. 19-22.

Dimensions: length 37-81.5 µm; width 21.5-27 µm; 9-10 striae in 10 µm.

Floras: Hustedt (1930-1966), p. 426, fig, 1498 (as *Navicula approximatoides* Hustedt). Foged (1984), p. 60, pl. 49, fig. 1(as *N. approximatoides* Hustedt).

Synonym(s): *Navicula approximatoides* Hustedt

Life form and distribution: Recorded from the Atlantic Ocean.

Salinity: Polyhalobe

Locality: BMS, BMEM, BMER

PLATE 22

Lyrella lyra (Ehrenberg) Karayeva var. ***lyra***

Pl. 22, figs. 2-5.

Dimensions: length 59-116 µm; width 37.7-33.8 µm; 11 striae in 10 µm.

Floras: Hendey (1964), p. 209, pl. 33, fig. 2 (as *Navicula lyra* Ehrenberg). Reyes-Vásquez (1975) pl.

5, fig. 37 (as *N. lyra* Ehrenberg). Navarro (1982), p. 45, pl. 29, figs. 1-3. Witkowski *et al*. (2000), p. 234, pl. 158, fig. 8.

Basionym: *Navicula lyra* Ehrenberg

Life form and distribution: Marine species of cosmopolitan distribution.

Locality: NAT, BMS

Lyrella lyra var. ***recta*** (Greville) Moreno

Pl. 22, fig. 1

Dimensions: length 173 µm; width 68.5 µm; 8-9 striae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 2, fig. 6. Foged (1975), p. 40, pl. 23, fig. 1.

Life form and distribution: Previously only recorded from the Atlantic Ocean.

Locality: NAT

PLATE 23

Navicula caribaea Cleve

Pl. 23, figs. 1-7.

Dimensions: length 32-92 µm; width 20-30.5 µm; 10-12 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 509, fig. 1555 (as *Navicula lyra* var. *atlantica* A. Schmidt).

Basionym: *Navicula lyra* var. *atlantica* A. Schmidt

Comments: Although reported in Peragallo et Peragallo (1897-1908), as a var. of *N. clavata*, we chose the Schmidt atlas version because our specimens do not comply with the *clavata* characteristics. Also, our populations may prove to be a variety derived from the Caribbean species.

Life form and distribution: Mexican Caribean and Jamaica.

Salinity: Marine species

Locality: BAS, NAT, BMEM, BMER, BMS

Lyrella abruptoides (Hustedt) D. G. Mann

Pl. 23, figs. 8, 10.

Dimensions: length 36-42 µm; width 18.5-20.8 µm; 12-13 striae in 10 µm.

Floras: Hustedt (1930-1966), p. 515, fig. 1557. Foged (1984), p, 59, pl. 49, fig. 2 (as *Navicula abruptoides* Hustedt).

Basionym: *Navicula abruptoides* Hustedt

Synonym(s): *Navicula abruptoides* Hustedt

Life form and distribution: Neritic, pantropical, recorded from the tropics.

Salinity: Polyhalobe

Locality: NAT, BMS

Navicula spectabilis f. ***emarginata*** (Cleve) Hustedt

Pl. 23, fig. 9.

Dimensions: length 58.5 µm; width 25 µm; 12 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 137, pl. 24, fig. 1. Hustedt (1961-1966), p. 453, fig. 1516.

Locality: BMS

Lyrella hennedyi (W. Smith) Stickle & D. G. Mann

Pl. 23, figs. 11-12.

Dimensions: length 61.5-77 µm; width 32-36 µm; 10-11 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 453, fig. 1516. Witkowski *et al*. (2000), p. 233, pl. 95, fig. 3, pl. 98, fig. 4.

Basionym: *Navicula hennedyi* W. Smith

Synonym(s): *Navicula hennedyi* W. Smith

Life form and distribution: Neritic, cosmopolitan in temperate-tropical waters.

Locality: BAS, NAT

PLATE 24

Lyrella irrorata (Greville) D. G. Mann

Pl. 24, figs. 1-6.

Dimensions: length 77-119 µm; width 34-42 µm; 6 striae in 10 µm.

Floras: Peragallo (1897-1908), p. 136, pl. 23, fig.12. Husted (1955), p. 24, pl. 8, fig. 139. Moreno *et al*. (1996), p. 87, pl. 23, fig. 12.

Basionym: *Navicula irrorata* Greville

Synonym(s): *Navicula irrorata* f. *tyipica*; *N.* (*Lyrella*?) *irrorata* f. *mexicana* Cleve

Comments: Although specimen number 4 is included as *L. irrorata,* we think that tha elliptic-lanceolate form and the homogeneously separated striae in the middle may prove to be sufficient as to separate this as a valid *L. irrorata* f. *mexicana*.

Life form and distribution: Gulf of México, European coasts.

Salinity: Polyhalobe

Locality: BAS, NAT, BMER, BMS

PLATE 25

Petroneis granulata (J. W. Bailey) D. G. Mann

Pl. 25, figs. 1-5, 7-11.

Dimensions: length 47.7-92 µm; width 21.5-30.8 µm; 9-10 striae in 10 µm.

Floras: Reyes-Vásquez (1975) pl. 6, fig. 39 (as *Navicula granulata* J. W. Bailey). Navarro (1982), p. 44, pl. 28, fig. 2 (as *N. granulata* J. W. Bailey). Foged (1984), p. 60, pl. 47, figs.1-3 (as *N. brasiliensis* Grunow). Moreno *et al*. (1996), p. 109, pl. 28, figs. 6-7. Witkowski *et al*. (2000), p. 327, pl.

97, figs. 1-2.

Basionym: *Navicula granulata* J. W. Bailey

Synonym(s): *Navicula granulata* J. W. Bailey

Life form and distribution: Benthic, epilithic, neritic, cosmopolitan in temperate-tropical waters.

Salinity: Polyhalobe

Locality: BAS, NAT, BMEM, BMER, BMS

Petroneis marina (Ralfs ex Pritchard) D. G. Mann

Pl. 25, fig. 6.

Dimensions: length 51.5 µm; width 27.7 µm; 9 striae in 10 µm.

Floras: Round *et al*. (1990), p. 675. Witkowski *et al*. (2000), p. 328, pl. 102, fig. 1.

Basionym: *Navicula marina* Ralfs ex Pritchard

Synonym(s): *Navicula marina* Ralfs ex Pritchard

Life form and distribution: Benthic, epilithic, neritic.

Salinity: Marine to brackish-water

Locality: COS, BMS

PLATE 26

Mastogloia angulata Lewis

Pl. 26, figs. 1-6.

Dimensions: length 54-92 µm; width 26-32 µm; 2 loculi in 10 µm, the middle 2 partecta distinctly larger than the remaining ones, 11 transapical striae in 10 µm.

Floras: Hustedt (1931-1959), p. 465, fig. 885. Reyes-Vásquez (1975), pl. 2, fig. 11. Navarro (1982), p. 27, pl. 25, figs. 5-6. Foged (1984), p. 49. pl. 33, fig. 3. Witkowski *et al*. (2000), p. 238, pl. 80, figs. 1-2.

Basionym: *Cocconeis binotata* Grunow

Synonym(s): *Cocconeis binotata* Grunow, *Diplochaete solitaria* Collins

Life form and distribution: Neritic, cosmopolitan in temperate-tropical waters.

Salinity: Polyhalobe

Locality: COS, NAT, BMS

Mastogloia pisciculus Cleve

Pl. 26, figs. 7-9.

Dimensions: length 48.5-57.8 µm; width 22-23 µm; 4 loculi in 10 µm; 17-18 transapical striae in 10 µm.

Floras: Hustedt (1931-1959), p. 558, fig. 990. Witkowski *et al*. (2000), p. 257, pl. 81, figs. 21-22.

Life form and distribution: Recorded from Florida, Seychelles Islands and New Caledonia.

Locality: BMS

Mastogloia sp. 1

Pl. 26, figs. 10-11.

Dimensions: length 44 µm; width 16 µm; 3 loculi in 10 µm; 19 transapical striae in 10 µm.

Locality: NAT, BMS

Mastogloia fallax Cleve

Pl. 26, figs. 12-13.

Dimensions: length 37 µm; width 16 µm; 8 loculi in 10 µm; 25 transapical striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 247, pl. 76, figs. 16-19.

Life form and distribution: Coasts of java, Borneo, Seychelles Islands, Mediterranean.

Salinity: Polyhalobe. Locality: BMS

Mastogloia binotata (Grunow) Cleve

Pl. 26, figs. 14-15.

Dimensions: length 27 µm; width 22 µm; loculi ring containing only one large, apically enlengthated partectum located in the middle on each side of the valve; 13 transapical striae radiate in 10 µm.

Floras: Reyes-Vásquez (1975), pl. 2, fig. 12. Moreno *et al*. (1996), p. 89, pl. 24, fig. 3. Witkowski *et al*. (2000), p. 240, pl. 75, figs. 15-17.

Basionym: *Cocconeis binotata* Grunow

Synonym(s): *Cocconeis binotata* Grunow, *Diplochaete solitaria* Collins

Life form and distribution: Neritic, epiphytic, cosmopolitan in temperate-tropical waters.

Salinity: Mesohalobe to polyhalobe

Locality: BAS, NAT

PLATE 27

Mastogloia fallax Cleve

Pl. 27, figs. 1-2.

Dimensions: length 40.76 µm; width 17 µm; 8 loculi in 10 µm; 25 transapical striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 247, pl. 76, figs. 16-19.

Life form and distribution: Coasts of java, Borneo, Seychelles Islands, Mediterranean.

Salinity: Polyhalobe

Locality: BMS

Mastogloia elliptica (C. A. Agardh) Cleve

Pl. 27, figs. 3-6.

Dimensions: length 51.5-77 µm; width 16 µm; 7 loculi in 10 µm; 15 transapical striae in 10 µm.

Floras: Hustedt (1931-1959), p. 501, fig. 927 a. Witkowski *et al*. (2000), p. 245, pl. 83, figs. 15-16.

Comments: Although our specimens are much more elongated than the ones shown in the cited

literature, the center striae have the same patern (strongly radiate) which is to our knowledge quite exclusive. Other characterics are similar.

Locality: BMS

Mastogloia braunii Grunow

Pl. 27, figs. 7-10.

Dimensions: length 53.8 µm; width 17 µm; 3 loculi in 10 µm; 16 transapical striae in 10 µm.

Floras: Reyes-Vásquez (1975), pl. 4, fig. 26. Moreno *et al*. (1996), p. 89, pl. 24, fig. 4.

Life form and distribution: North Sea.

Salinity: Mesohalobe to polyhalobe

Locality: BMS

Mastogloia pseudoexigua Cholnoky

Pl. 27, figs. 11-14.

Dimensions: length 42 µm - 50 µm; width 11.5-14.5 µm; 3 loculi in 10 µm; 19-20 transapical striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 257, pl. 79, figs. 19-20.

Life form and distribution: New Guinea, British coasts of the Atlantic Ocean.

Locality: BMS

Mastogloia citrus Cleve

Pl. 27, figs. 15-16.

Dimensions: length 36 µm; width 23 µm; 9 loculi in 10 µm; 20 transapical striae in 10 µm.

Floras: Hustedt (1931-1959), p. 519, fig. 952. Foged (1984), p. 50, pl. 36, fig. 6. Witkowski *et al*. (2000), p. 241, pl. 78, figs. 3-4, 13-14.

Synonym(s): *Mastogloia suborbicularis* Leudiger-Fortmorel

Life form and distribution: Widespread on the coasts of warm water ocean areas, Mediterranean.

Salinity: Polyhalobe

Locality: COS, BMS

Mastogloia exilis Hustedt

Pl. 27, figs.17-18

Dimensions: length 30.7 µm; width 13.8 µm; 3 loculi in 10 µm; 22 transapical striae in 10 µm.

Floras: Hustedt (1931-1959), p. 553, fig. 985. Foged (1978), p. 78, pl. 18, fig. 10. Moreno *et al*. (1996), p. 89, pl. 24, fig. 6. Witkowski *et al*. (2000), p. 247, pl. 84, figs. 12-13.

Life form and distribution: Common in the Indomalayan Islands area, Gulf of California.

Locality: COS, NAT

Mastogloia sp. 2

Pl. 27, figs. 19-20

Dimensions: length 28.5 µm; width 9.5 µm; 4 loculi in 10 µm

Comments: This diatom was formerly identified as *Mastogloia beaufortiana* because of its resemblance to fig. 11, pl. 6, p. 19 in Hustedt (1955). However it does not correspond with those in in Simonsen (1987) and Witkowski *et al*. (2000).

Locality: BMS

PLATE 28

Parlibellus hagelsteinii Cox

Pl. 28, fig. 1.

Dimensions: length 54 µm; width 17 µm; dense striae.

Floras: Hustedt (1961-1966), p. 301. fig. 1421. Reyez-Vásquez (1975), p. 220, pl. 6, fig. 41. Foged (1984), p. 65, pl. 50, figs. 3-4. Cox (1988), p. 24.

Synonym(s): *Navicula tubulosa* sensu Halgestein non Brun

Life form and distribution: Marine especies, neritic, pantropical, so far known only from the Caribbean.

Salinity: Polyhalobe

Locality: NAT, BMS

Parlibellus rhombicula (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Pl. 28, fig. 2.

Dimensions: length 54 µm; width 8.5 µm; 14 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 327, fig. 1442. Witkowski *et al*. (2000), p. 325, pl. 103, fig. 3.

Basionym: *Navicula rhombicula* Hustedt

Life form and distribution: Marine species.

Locality: NAT

Frustulia asymmetrica (Cleve) Hustedt

Pl. 28, figs. 3-4.

Dimensions: length 84 µm; width 20 µm; dense striae.

Floras: Patrick & Reimer (1966), p. 305, pl. 22, fig. 4. Navarro (1982), p. 36, pl. 23, fig. 1.

Basionym: *Frustulia vulgaris* var. *asymmetrica* Cleve

Life form and distribution: Very rare, in warm waters.

Locality: NAT

Frustulia interposita (Lewis) De Toni

Pl. 28, figs. 5-6.

Dimensions: length 80.8 µm -123 µm; width 17-26 µm; 17-20 striae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 369, fig. 10. Soler *et al*. (2003), p. 156, pl. 52, fig. 6.

Basionym: *Navicula interposita* Lewis

Synonym(s): *Navicula interposita* Lewis

Life form and distribution: Very rare, in warm waters.

Locality: BMS

Chamaepinnularia clamans (Hustedt) Witkowski, Lange-Bertalot. et Metzeltin

Pl. 28, figs. 7-9.

Dimensions: length 17 µm -34.5 µm; width 7.7-10.8 µm; 16 striae in 10 µm.

Floras: Simonsen (1987), p. 257, pl. 379, figs. 20-22. Navarro (1982), p. 42, pl. 27, fig. 7 (as *Navicula clamans* Hustedt). Witkowski *et al*. (2000), p. 169, pl. 69, fig. 12.

Basionym: *Navicula clamans* Hustedt

Synonym(s): *Navicula clamans* Hustedt

Life form and distribution: Marine species widespread (cosmopolitan) in the coastal areas.

Locality: BMS

Navicula platyventris Meister

Pl. 28, figs. 10-11.

Dimensions: length 13 µm -25 µm; width 7-7.7 µm; 11-12 striae in 10 µm.

Floras: Navarro (1982), p. 46, pl. 30, figs. 4-5. Moreno *et al*. (1996), p. 97, pl. 25, figs. 20 a, b. Witkowski *et al*. (2000), p. 299, pl. 143, figs. 16-9.

Life form and distribution: Marine species, widespread alength warmer water sea coasts, in Europe know from the Mediterranean.

Locality: BMEM, BMER, BMS

Navicula lineola var. ***perlepida*** (Grunow) Cleve

Pl. 28, fig. 12.

Dimensions: length 40.8 µm; width 3.8 µm.

Floras: Hustedt (1961-1966), p. 73, figs. 1217 c-f. Witkowski *et al*. (2000), p. 288, pl. 156, figs. 12-14.

Life form and distribution: Marine species widespread in the Artic Ocean.

Locality: BMS

Diadesmis contenta (Grunow) D.G. Mann

Pl. 28, figs. 13-14.

Dimensions: length 8.5-9.2 µm; width 2.3-2.7 µm.

Floras: Navarro (1982), p. 43, pl. 30, figs. 1-3 (as *Navicula contenta* (Grunow) ex van Heurck).

Basionym: *Navicula contenta* Grunow ex van Heurck

Synonym(s): *Navicula trinodis* f. *minuta* Grunow, *N. contenta* Grunow ex van Heurck, *Schizonema contentum* (Grunow) Kuntze

Life form and distribution: Brackish and marine.

Locality: BMEM, BMER, BMS

Navicula ammophila Grunow

Pl. 28, fig. 15.

Dimensions: length 33.8 µm; width 7 µm; 13 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 92, pl. 12, fig. 13. Moreno *et al*. (1996), p. 92, pl. 25, fig. 3. Witkowski *et al*. (2000), p. 266, pl. 147, figs. 5-6.

Life form and distribution: Widespread European coasts.

Salinity: Marine to brackish-water species

Locality: BMS

Navicula meniscoides Hustedt

Pl. 28, figs. 16-17.

Dimensions: length 34.6 µm; width 11.5 µm; 9 striae in 10 µm.

Floras: Reyes-Vásquez (1975), pl. 6, fig. 40.

Life form and distribution: Marine littoral.

Locality: BMS

Navicula margalithii Lange-Bertalot

Pl. 28, fig. 21.

Dimensions: length 51.5 µm; width 7.7 µm; 10 striae in 10 µm.

Floras: Krammer, K. & Lange-Bertalot, H. (1986), pl. 26, figs 3-4, pl. 27, figs. 4-6

Life form and distribution: Marine littoral.

Locality: NAT

Proschkinia complanata (Grunow) D. G. Mann

Pl. 28, fig. 18.

Dimensions: length 86 µm; width 14.5 µm; 18-20 striae in 10 µm.

Floras: Hustedt (1955), p. 60, pl. 9, fig. 21. Witkowski *et al*. (2000), p. 341, pl. 60, figs. 29-32, pl. 147, figs. 8-11.

Basionym: *Amphora complanata* Grunow

Synonym(s): *Navicula complanata* Grunow

Life form and distribution: Marine species probably cosmopolitan.

Locality: BMS

Berkeleya scopulorum (Brébisson ex Kützing) Cox

Pl. 28, fig. 19.

Dimensions: length 246 µm; width 11.5 µm; 19-20 striae in 10 µm.

Floras: Hustedt (1961-1966), p. 25, fig. 1186. Witkowski *et al*. (2000), p. 157, pl. 62, figs. 3-5.

Basionym: *Navicula scopulorum* Brébisson

Synonym(s): *Navicula scopulorum* Brébisson

Life form and distribution: Marine species common on Atlantic European coasts and in the Mediterranean.

Locality: NAT

Gomphonemopsis littoralis (Hendey) Medlin

Pl. 28, fig. 20.

Dimensions: length 22 µm; width 3 µm; 15-16 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 221, pl. 61, figs. 15-16.

Basionym: *Gomphonema littorale* Hendey

Life form and distribution: apiphytic species described, but apparently widely distributed from the Artic to the tropics.

Locality: BMEM, BMER, BMS

PLATE 29

Pinnularia yarrensis (Grunow) Jurilj

Pl. 29, figs. 1-2.

Dimensions: length 57.7 µm - 80.77 µm; width 15.4 µm; 6 striae in 10 µm.

Floras: Navarro (1982), p. 48 (as *N. yarrensis* Grunow). Foged (1984), p. 72, pl. 46, fig. 1 (as *N. yarrensis* Grunow). Wah & Wee (1988), fig. 64 (as *N. yarrensis* Grunow). Witkowski *et al*. (2000), p. 338, pl. 146, fig. 11.

Basionym: *Naviculat yarrensis* Grunow

Life form and distribution: Rarely in high numbers of specimens, estuarine, neritic, cosmopolitan in temperate-tropical waters.

Salinity: Mesohalobe to polyhalobe

Locality: BMS

Parlibellus cruciculoides (Brockman) Witkowski, Lange-Bertalot. et Metzeltin

Pl. 29, fig. 3.

Dimensions: length 55.4 µm; width 10 µm; 14 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 321, pl. 108, figs. 4-5, pl. 134, figs. 17-19.

Basionym: *Navicula cruciculoides* Brockmann

Life form and distribution: Marine and brackish-water species.

Locality: BMS

Navicula longa (Gregory) Ralfs

Pl. 29, fig. 13-14.

Dimensions: length 108.5-122 µm; width 13.8-15.4 µm; 6-7 striae in 10 µm.

Floras: Reyes-Vásquez (1975), pl. 6, fig. 44. Foged (1978), p. 92, pl. 32, fig. 16. Navarro (1982), p. 45, pl. 28, fig. 5. Foged (1984), p. 66, pl. 45, fig. 4.

Synonym(s): *Pinnularia longa* Gregory

Salinity: Polyhalobe

Locality: BMER, BMS

Navicula longa var. ***irregularis*** Hustedt

Pl. 29, figs. 4, 12.

Dimensions: length 84.5-107.7 µm; width 13.84-17 µm; 7 striae in 10 µm.

Floras: Hustedt (1955), p. 28, pl. 9, fig. 1. Witkowski *et al*. (2000), p. 288, pl. 135, figs. ?7-12.

Life form and distribution: Rarely reported from the Caribbean and Bahamas.

Salinity: Marine

Locality: BMS

Navicula rostellata f. ***minor*** Gunow

Pl. 29, fig. 6.

Dimensions: length 52 µm; width 7.7 µm; 10 striae in 10 µm.

Floras: Cleve-Euler (1953, III), p. 158, figs. 818 d-e.

Life form and distribution: Neritic, epipelic.

Locality: BMS

Navicula diversistriata Hustedt

Pl. 29, fig. 7.

Dimensions: length 20.7 µm; width 8.5 µm; 14-15 striae in 10 µm.

Floras: Hustedt (1955), p. 28, pl. 9, figs. 6-9. Foged (1975), p. 38.

Life form and distribution: Previously only recorded from the Atlantic Ocean.

Locality: BAS, BMER, BMS

Navicula agnita Hustedt

Pl. 29, fig. 8.

Dimensions: length 48.5 µm; width 7 µm; 11 striae in 10 µm.

Floras: Hustedt (1955) p. 27, pl. 9, figs. 13-16. Foged (1984), p. 59, pl. 45, figs. 8-9. Moreno *et al*.

(1996), p. 92, pl. 25, fig. 2. Witkowski *et al*. (2000), p. 266, pl. 136, fig. 21, pl. 142, fig. 10.

Life form and distribution: Littoral.

Salinity: Polyhalobe

Locality: BMER, BMS

Navicula cancellata Donkin

Pl. 29, figs. 9-10.

Dimensions: length 88.5 µm; width 11.5 µm; 5-8 striae in 10 µm.

Floras: Hendey (1964), p. 203, pl. 30, figs. 18-20. Witkowski *et al*. (2000), p. 271, pl. 132, fig. ?1, pl. 138, figs. 1-3, pl. 144, figs. 1-7.

Life form and distribution: Neritic, cosmopolitan.

Salinity: Polyhalobe

Locality: BAS, BMEM, BMER, BMS

Navicula pennata A. Schmidt

Pl. 29, fig. 11.

Dimensions: length 101.5 µm; width 17 µm; 5 striae in 10 µm.

Floras: Hendey (1964), p. 203, pl. 30, fig. 21. Navarro (1982), p. 46, pl. 29. figs. 7-8. Wah & Wee (1988), fig. 58. Moreno *et al*. (1996), p. 97, pl. 26, fig. 1. Witkowski *et al*. (2000), p. 296, pl. 141, figs. 27-28.

Life form and distribution: Gulf of California, North Sea.

Locality: BAS, NAT, BMEM, BMER, BMS

Navicula sp. 1

Pl. 29, fig. 5.

Dimensions: length 44.6 µm; width 7.7 µm; 12 striae in 10 µm.

Locality: BMS

PLATE 30

Oestrupia powellii (Lewis) Heiden

Pl. 30, figs. 1-6.

Dimensions: length 59-90 µm; width 14-18.5 µm; 8-11 striae in 10 µm.

Floras: Patrick & Reimer (1966), p. 577, pl. 53, fig. 1. Reyes-Vásquez (1975), pl. 5, figs. 36 a-b. Witkowski *et al*. (2000), p. 318, pl. 155, fig. 1.

Basionym: *Navicula powellii* Lewis

Life form and distribution: Tychoplankton.

Locality: BMS

Navicula peregrina (Ehrenberg) Kützing

Pl. 30, fig. 8.

Dimensions: length 103 µm; width 19 µm; 7 striae in 10 µm.

Floras: Krammer & Lange-Bertalot (1986), p. 100, pl. 30, fig. 1.

Life form and distribution: Cosmopolitan, benthic, epipelic.

Salinity: Mesohalobous, in temperate waters

Locality: BMS

Navicula formenterae Cleve

Pl. 30, fig. 9.

Dimensions: length 74 µm; width 15 µm; 8-11 striae in 10 µm.

Floras: Hustedt (1955), p. 29, figs. 28-29. Foged (1984), p. 65, pl. 45, figs. 10-12.

Life form and distribution: recorded from the mediterranian and the Atlantic coast of North America.

Salinity: Polyhalobe

Locality: NAT

Caloneis zanardiniana (Grunow) Cleve

Pl. 30, figs. 10-13.

Dimensions: length 75-90 µm; width 97.5 µm; 8-10 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 79, pl. 14, fig. 10-11 (as *Navicula zanardiniana* Grunow).

Basionym: *Navicula zanardiniana* Grunow

Synonym(s): *Oestrupia zanardiniana* (Grunow) Hendey, *Pinnularia zanardiniana* (Grunow) Rabenhorst, *Navicula zanardiniana* Grunow, *Schizonema zanardinianum* (Grunow) Kuntze

Life form and distribution: Benthic, epipelic.

Locality: BMS

Navicula sp. 2

Pl. 30, fig. 7.

Dimensions: length 28.5 µm; width 14.5 µm; 9 striae in 10 µm.

Locality: NAT

PLATE 31

Caloneis westii (W. Smith) Hendey

Pl. 31, figs. 1-3.

Dimensions: length 77-119 µm; width 22-24.5 µm; 12-13 striae in 10 µm.

Floras: Hendey (1964), p. 230, pl. 45, figs. 1-13. Foged (1984), p. 24, pl. 6, fig.1, pl. 46 fig. 2 (as *Caloneis formosa* (Gregory) Cleve). Witkowski *et al*. (2000), p. 167, pl. 152, fig. 11.

Basionym: *Navicula westii* W. Smith

Synonym(s): *Navicula westii* W. Smith, *N. formosa* Gregory, *Caloneis liburnica* Grunow, *C. amphisbaena* var. *liburnica* (Grunow) Cleve, *C. formosa* (Gregory) Cleve, *C. formosa* var. *liburnica* (Grunow) A. Cleve-Euler

Life form and distribution: Neritic, cosmopolitan.

Salinity: Mesohalobe, marine-brackish and freshwater

Locality: BMS

Caloneis linearis (Grunow) Boyer

Pl. 31, figs. 4-5.

Dimensions: length 17-20 µm; width 3.8-8.5 µm; 21 striae in 10 µm.

Floras: Hendey (1964), p. 230. pl. 29, fig. 3. Reyes-Vásquez (1975), pl. 6, fig. 45. Witkowski *et al*. (2000), p. 166, pl. 160, fig. 12.

Basionym: *Navicula linearis* Grunow

Synonym(s): *Navicula linearis* Grunow, *Caloneis liber* var. *linearis* (Grunow) Cleve

Life form and distribution: Marine littoral, benthic.

Salinity: Polyhalobe

Locality: BAS, BMEM, BMER, BMS

Caloneis liber (W. Smith) Cleve

Pl. 31, fig. 6.

Dimensions: length 100 µm; width 15 µm; 13-14 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 9, fig. 6. Foged (1984), p. 25, pl. 44, fig. 3. Witkowski *et al*. (2000), p. 166, pl. 152, fig. 9.

Basionym: *Navicula liber* W. Smith

Life form and distribution: Marine littoral.

Salinity: Marine waters, polyhalobe

Locality: BMER, BMS

Caloneis elongata (Grunow) Boyer

Pl. 31, fig. 13.

Dimensions: length 88.5 µm; width 10 µm; 18 striae in 10 µm.

Floras: Simonsen (1974), p. 42, pl. 26, fig. 5. Navarro (1982), p. 33, pl. 21, fig. 8.

Life form and distribution: Very rare, in warm waters, sub and supra littoral.

Salinity: Marine waters

Locality: BMER, BMS

Staurophora salina (W. Smith) Mereschkowsky

Pl. 31, fig. 7.

Dimensions: length 50 µm; width 14.5 µm; 14 striae in 10 µm.

Floras: Hustedt (1930), p. 786, fig. 1133. Hendey (1964), p. 218. Witkowski *et al*. (2000), p. 720.

Basionym: *Stauroneis salina* W. Smith

Synonym(s): *Stauroneis salina* W. Smith, *Navicula salina* (W. Smith) Schütt, *Schizonema salinum* (W. Smith) Kuntze

Life form and distribution: Cells solitary, a common littoral species widely spread on all North Sea coasts. Common in the *Spartina* zone.

Locality: BMS

Pinnularia rectangulata (Gregory) Rabenhorst

Pl. 31, fig. 8.

Dimensions: length 65 µm; width 14 µm; 7 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 85, pl. 11, fig. 4, 6. Hendey (1964), p. 233, pl. 34, fig. 10.

Basionym: *Navicula rectangulata* Gregory

Synonym(s): *Navicula rectangulata* Gregory

Life form and distribution: Littoral, usually favours clean sandy shores.

Locality: BMS

Pinnularia trevelyana (A. S. Donkin) Rabenhorst

Pl. 31, fig. 14.

Dimensions: length 76 µm; 11 striae in 10 µm.

Floras: Hendey (1964), p. 232, pl. 34, fig. 11. Witkowski *et al*. (2000), p. 337, pl. 156, fig. 5.

Basionym: *Navicula trevelyana* Donkin

Synonym(s): *Navicula trevelyana* Donkin

Life form and distribution: Very rare, marine species widespread on European coasts including the Mediterranean and the western Baltic Sea, known also from Atlantic coasts of the United States and from the Indian Ocean.

Salinity: Marine waters

Locality: BMER, BMS

Biremis ambigua (Cleve) D. G. Mann

Pl. 31, figs. 9-11.

Dimensions: length 46-67 µm; width 6-8.5 µm; 9-10 striae in 10 µm.

Floras: Hendey (1964), p. 233, pl. 34, figs. 5-8. Witkowski *et al*. (2000), p. 158, pl. 155, figs. 2-6.

Basionym: *Pinnularia ambigua* Cleve

Synonym(s): *Navicula retusa* Brébisson

Life form and distribution: Littoral and epipelica, on sandy foreshores.

Salinity: Euryhaline

Locality: BMS

Cymatoneis sp. 1

Pl. 31, fig. 12.

Dimensions: length 46 µm; width 9 µm; 13 striae in 10 µm.

Locality: BMS

PLATE 32

Trachyneis aspera var. ***elliptica*** Hendey

Pl. 32, figs. 1-2.

Dimensions: length 57.5-96 µm; width 24.5-30.7 µm; 10-11 striae in 10 µm.

Floras: Hendey (1964), p. 236, pl. 29, figs. 11-12. Foged (1984), p. 101, pl. 51, fig. 4.

Life form and distribution: Benthic, epipelic and epilithic.

Salinity: Polyhalobe

Locality: BMS

Trachyneis aspera (Ehrenberg) Cleve

Pl. 32, figs. 3-5.

Dimensions: length 54-100 µm; width 11.5 µm; 14 striae in 10 µm.

Floras: Hendey (1964). p. 236, pl. 29, fig. 13. Reyes-Vásquez (1975), pl. 4, fig. 29. Wah & Wee (1988), fig. 88. Witkowski *et al*. (2000), p. 355, pl. ?14, pl. 159, figs. 1-6, 9.

Basionym: *Navicula aspera* Ehrenberg

Synonym(s): *Navicula aspera* Ehrenberg, *N. stauroneiformis* Leuduger-Fortmorel, *N. aspera* var. *genuna* (Cleve) Fricke, *Pinnularia aspera* (Ehrenberg) Ehrenberg, *Stauroptera aspera* Ehrenberg, *S. aspera* (Ehrenberg) Kützing, *S. achnanthes* (Ehrenberg) Kützing, *S. pulchella* W. Smith

Life form and distribution: Benthic (epipelic and epilithic).

Salinity: Marine; meioeuryhaline, polyhalobe

Locality: BMER, BMS

Trachyneis velata A. Schmidt

Pl. 32, figs. 6-7.

Dimensions: length 61.5-110.8 µm; width 19-21.5 µm; 12-15 striae in 10 µm.

Floras: Hustedt (1931-1959), p. 751, fig. 17. Foged (1984), p. 101, pl. 51, fig. 5, pl. 54, fig. 5. Navarro *et al*. (2000), pl. 32, fig.1.Witkowski *et al*. (2000), p. 356, pl. 159, figs. 7-8.

Life form and distribution: Marine species inhabiting warmer sea coasts, New Celedonia.

Salinity: Polyhalobe

Locality: BMEM, BMER, BMS

Plagiotropis pusilla (Gregory) Kuntze

Pl. 32, fig. 8.

Dimensions: length 65 μm; width 11.5 μm; 17 striae in 10 μm.

Floras: Cleve (1894), p. 26.

Synonym(s): *Amphiprora pusilla* Gregory

Life form and distribution: Tychoplankton.

Locality: BMS

Plagiotropis longa (Cleve) Kuntze

Pl. 32, fig. 10.

Dimensions: length 113 μm; width 20.8 μm; 17 striae in 10 μm.

Floras: Navarro (1982a), p. 325, figs. 77-80.

Basionym: *Tropidoneis longa* (Cleve) Cleve

Life form and distribution: Marine, neritic, cosmopolitan.

Locality: BMS

Entomoneis alata f. ***minor*** Ehrenberg

Pl. 32, fig. 9.

Dimensions: length 50 μm; width 23 μm; 14 striae in 10 μm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 37, pl. 37, figs. 8-9. Hendey (1964), p. 253, pl. 39, figs. 14-16 (as *Amphiprora alata* (Ehrenber) Kützing).

Life form and distribution: Cosmopolitan, littoral, periphytic.

Salinity: Mesohalobous, alkaliphilous, in high conductivity waters

Locality: BAS, BMS

PLATE 33

Pleurosigma rigidum W. Smith

Pl. 33, fig. 1.

Dimensions: length 184.5 μm; width 30.8 μm; 18 striae in 10 μm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 166, pl. 33, figs. 13-15. Navarro (1982), p. 49, pl. 32, fig. 2. Foged (1984), p. 88. pl. 38, fig. 2.

Life form and distribution: Neritic, cosmopolitan in temperate-tropical waters.

Salinity: Mesohalobe

Locality: BMS

Pleurosigma angulatum var. ***genuinum*** (Queckett) W. Smith

Pl. 33, figs. 2-3.

Dimensions: length 82-89 µm; width 17.8-19 µm; 20 striae in 10 µm.

Floras: Cleve-Euler (1952), p. 23, fig. 1372.

Life form and distribution: Gulf of California, tychoplankton.

Locality: NAT

Pleurosigma normanii Ralfs

Pl. 33, fig. 6.

Dimensions: length 100 µm; width 20.8 µm; 19-21 striae in 10 µm.

Floras: Sterrenburg (1991), p. 375, fig. 2. Wah & Wee (1988), p. 324, fig. 81. Moreno *et al*. (1996), p. 114, pl. 29, fig. 1.

Synonym(s): *Pleurosigma affine* Grunow

Life form and distribution: Gulf of California, Noth Sea, Escocia.

Locality: BMS

Pleurosigma salinarum Grunow

Pl. 33, fig. 8.

Floras: Hustedt (1930), p. 228, fig. 344. Foged (1984), p. 88, pl. 39, fig.344.

Salinity: Mesohalobe to polyhalobe, euryhaline, nearly fresh to moderately brackish water

Life form and distribution: Cosmopolitan, benthic.

Locality: BMER, BMS

Gyrosigma fasciola (Ehrenberg) Griffith & Henfrey

Pl. 33, fig. 4.

Dimensions: length 115 µm; width 14.5 µm; 18 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 173, pl. 34, fig. 34. Navarro (1982), p. 36, pl. 23, fig. 4.

Basionym: *Ceratoneis fasciola* Ehrenberg

Synonym(s): *Ceratoneis fasciola* Ehrenberg, *Pleurosigma fasciola* (Ehrenberg) W. Smith

Life form and distribution: Epipelic.

Locality: BMS

Gyrosigma scalproides var. ***eximia*** (Thwaites) Cleve

Pl. 33, fig. 5.

Dimensions: length 80.8 µm; width 23 µm; 19-21 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 24, pl. 8, fig. 27. Cleve-Euler (1952), p. 11, fig. 1334. Foged (1984), p. 45, pl. 5, fig. 6.

Synonym(s): *Gyrosigma eximia* (Thwaites) Boyer, *Pleurosigma eximium* (Thwaites) Cleve & Grun

Life form and distribution: Cosmopolitan, benthic.

Salinity: Halophil, alkalibiontic, indifferent, in temperate waters.

Locality: BAS, BMS

Gyrosigma peisonis (Grunow) Hustedt

Pl. 33, fig. 7.

Dimensions: length 103 μm; width 13.8 μm; 17-18 striae in 10 μm.

Floras: Hustedt, 1955, p 34, pl. 10, fig. 4-5. Navarro (1982), p. 37, pl. 23, figs. 5-6. Foged (1984), p. 45, pl. 5, fig. 4, pl. 39, fig. 5.

Life form and distribution: Benthic, epipelic.

Salinity: Mesohalobe, alkalibiontic

Locality: BAS, BMS

Gyrosigma balticum (Ehrenberg) Rabenhorst

Pl. 33, fig. 9.

Dimensions: length 180.8 μm; width 25.4 μm; 14 striae in 10 μm.

Floras: Hendey (1964), p. 284, pl. 35, fig. 9. Reyes-Vásquez (1975) pl. 2, figs. 9-11. Foged (1978), p. 73, pl. 21, fig. 1. Navarro (1982), p. 36. Wah & Wee (1988), figs. 43-44.

Basionym: *Navicula baltica* Ehrenberg

Synonym(s): *Navicula baltica* Ehrenberg, *Pleurosigma balticum* (Ehrenberg) W. Smith

Life form and distribution: Benthic, epilithic and epipelic; intertidal mud flats, tychopelagic, presumably cosmopolitan.

Salinity: Marine littoral, brackish waters; mesohalobous, euryhaline

Locality: BAS, NAT, BMER, BMS

PLATE 34

Amphora proteus Gregory

Pl. 34, figs. 1-2.

Dimensions: length 34.5-111.5 μm; width 7.7-19 μm; 10-14 striae in 10 μm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 200, pl. 44, figs. 24-27. Navarro (1982), p. 33, pl. 21, figs. 2-3. Moreno *et al*. (1996), p. 22, pl. 8, figs. 12-14. Witkowski *et al*. (2000), p. 148, pl. 161, figs. 1-2, pl. 162, figs. 5-6.

Synonym(s): *Amphora hexagonalis* Witt, *A. speciosa* Castracane

Life form and distribution: Neritic, cosmopolitan in temperate-tropical waters.

Salinity: Mesohalobe to polyhalobe, marine-brackish

Locality: BAS, NAT, BMEM, BMER, BMS

Amphora proteus var. ***contigua*** Cleve

Pl. 34, figs. 3-5.

Dimensions: length 53 µm; width 13.8 µm; 11 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 201, pl. 44, figs. 24-25.

Life form and distribution: Neritic.

Locality: NAT, BMER, BMS

Amphora terroris Ehrenberg

Pl. 34, figs. 6, 14.

Dimensions: length 46-57.5 µm; width 7.7-8.5 µm; 12-13 striae in 10 µm.

Floras: Moreno *et al*. (1996), p. 23, pl. 9, figs. 3-4

Life form and distribution: Neritic, cosmopolitan in temperate-tropical waters.

Salinity: Marine-brackish

Locality: BMS, NAT

Amphora caroliniana Giffen

Pl. 34, fig. 7.

Dimensions: length 70.7 µm; width 8.5 µm; 13 striae in 10 µm.

Floras: Hustedt (1955), p. 40, pl. 14, figs. 8-10, 26-27 (as *Amphora granulate* Gregory). Navarro (1982), p. 31, pl. 20, fig. 4. Foged (1984), p. 17, pl. 54, fig. 1, pl. 55, fig. 4. Witkowski *et al*. (2000), p. 132, pl. 167, fig. 2.

Synonym(s): *Amphora granulata* sensu Hustedt

Life form and distribution: Neritic.

Salinity: Polyhalobe

Locality: BMS

Amphora acutiuscula Kützing

Pl. 34, fig. 8.

Dimensions: length 71.5 µm; width 14 µm; 11 striae in 10 µm.

Floras: Krammer & Lange-Bertalot (1986), p. 348, fig. 151: 6 (as *Amphora coffeaeformis* var. *acutiuscula* (Kützing) Hustedt). Wah & Wee (1988), figs. 11-12. Witkowski *et al*. (2000), p. 128, pl. 161, figs. 10-13.

Life form and distribution: Neritic, benthic.

Synonym(s): *Amphora lineata* Gregory, *A. coffeaeformis* var. *acutiuscula* (Kützing) Rabenhorst, *A. coffeaeformis* var. *acutiuscula* (Kützing) Hustedt

Locality: BAS, BMS

Amphora tenerrima Aleem & Hustedt

Pl. 34, fig. 9.

Dimensions: length 13 µm; width 10.8 µm; 18 striae in 10 µm.

Floras: Hustedt (1955), p. 9, pl. 4, figs. 23-24. Witkowski *et al*. (2000), p. 152, pl. 164, fig. 20.

Life form and distribution: Widespread (cosmopolitan) species of the marine littoral.

Locality: BAS, BMS

Amphora amoena Hustedt

Pl. 34, fig. 10.

Dimensions: length 19 µm; width 5.4 µm; 16 striae in 10 µm.

Floras: Hustedt (1955), p. 39, pl. 14, figs. 11-12.

Life form and distribution: Neritic, tychopelagic.

Locality: NAT

Amphora bigibba Grunow

Pl. 34, fig. 13.

Dimensions: length 30.8 µm; width 5.3 µm; 19 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 227, pl. 50, fig. 36. Foged (1978), p. 32, pl. 35, fig. 4, pl. 36, fig. 13. Navarro (1982), pl. 20, fig. 3.

Synonym(s): *Amphora binodis* Gregory var. *bigibba* Grunow

Life form and distribution: Neritic, tychopelagic, pantropical, presumably cosmopolitan.

Salinity: Polyhalobe

Locality: BAS, BMEM, BMER, BMS

Amphora bigibba Grunow var. ***interrupta*** Grunow

Pl. 34, figs. 11-12.

Dimensions: length 14.5 µm; width 20 µm.

Floras: Hustedt (1955), p. 40, pl. 14, figs.19-25. Witkowski *et al*. (2000), p. 131, pl. 163, figs. 27-30.

Life form and distribution: Neritic, tychopelagic.

Locality: BMS

Amphora ostrearia Hendey var. ***ostrearia***

Pl. 34, fig. 20.

Floras: Hendey (1964), p. 266, pl. 38, fig. 5

Life form and distribution: Neritic, tychopelagic.

Locality: COS, BMS

Amphora ostrearia var. ***vitrea*** Cleve

Pl. 34, figs. 15, 17-18.

Dimensions: length 42-78.5 µm; width 9-22 µm; 11-12 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 220, pl. 49, fig. 14, 15. Foged (1984), p. 18, pl. 52, fig. 4, pl. 53, fig. 4.

Synonym(s): *Amphora nova caledonica* Grunow

Life form and distribution: Neritic.

Salinity: Polyhalobe

Locality: BAS, BMS

Amphora ostrearia var. ***lineata*** Cleve

Pl. 34, fig. 19.

Dimensions: length 88.5 µm; width 13 µm; 12 striae in 10 µm.

Floras: Hendey (1964), p. 268, pl. 38, fig. 14. Navarro (1982), p. 32, pl. 21, fig. 1.

Life form and distribution: Tychopelagic.

Locality: BMS

Amphora laevis Gregory

Pl. 34, fig. 16.

Dimensions: length 81 µm; width 13.8 µm; 12 striae in 10 µm.

Floras: Moreno *et al*. (1996), p. 20, pl. 8, figs. 7-8.

Synonym(s): *Amphora nobilis* Flogel

Life form and distribution: Marine species, widespread in the Arctic.

Locality: BAS, COS

Amphora decussata Grunow

Pl. 34, fig. 21.

Dimensions: length 92 µm; width 17.8 µm; 15 striae in 10 µm.

Floras: Hendey (1964), p. 266, pl. 37, fig. 9. Foged (1975), p. 10, pl. 25, fig. 9. Foged (1978), p. 32, pl. 36, fig. 2. Foged (1984), p. 17, pl. 53, fig. 2.

Life form and distribution: Benthic, littoral.

Locality: BAS, NAT

PLATE 35

Amphora arenaria Donkin

Pl. 35, figs. 1-2.

Dimensions: length 66-98.5 µm; width 14-15.5 µm; 17-18 striae in 10 µm.

Floras: Hendey (1964), p. 268, pl. 38, figs. 1-4. Foged (1975), p. 9, pl. 25, fig. 9. Moreno *et al*. (1996), p. 20, pl. 8, fig. 4.

Witkowski *et al*. (2000), p. 130, pl. 168, fig. 14.

Synonym(s): *Amphora arenaria* f. *typica* (Donkin) Cleve

Life form and distribution: European Atlantic Ocean coasts.

Salinity: Polyhalobe

Locality: BAS, NAT, BMER, BMS

Amphora ocellata Donkin

Pl. 35, fig. 3.

Dimensions: length 70 µm; width 10 µm.

Floras: Hendey (1964), p. 269, pl. 38, fig. 13. Foged (1984), p. 18, pl. 52 fig. 5.

Life form and distribution: Benthic.

Salinity: Polyhalobe

Locality: BMEM, BMER, BMS

Amphora cingulata Cleve

Pl. 35, figs. 4-6.

Dimensions: length 56-103.8 µm; width 20-20.8 µm; 16-17 striae in 10 µm.

Floras: Cleve (1894-95), p. 133, pl. 3, fig. 39. Foged (1984), p. 17, pl. 52. fig. 6.

Life form and distribution: Benthic, epipelic.

Salinity: Polyhalobe

Locality: BMER, BMS

Amphora angusta Gregory

Pl. 35, figs. 7-8.

Dimensions: length 60.8-97.8 µm; width 12.3-13 µm; 23 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 231, pl. 50, fig. 37

Life form and distribution: Littoral, benthic; intertidal mud flats and salt marshes.

Locality: BAS, NAT, BMEM, BMER

Seminavis ventricosa (Gregory) M. Garcia-Baptista

Pl. 35, figs. 9-12.

Dimensions: length 65.4-115.4 µm; width 12-15.4 µm; 13-14 striae in 10 µm.

Floras: Foged (1984), p. 20, pl. 54, fig. 7. Navarro (1982), p. 31, pl. 20, figs.1-2. Wah & Wee (1988), fig. 14. Garcia-Baptista, M. (1993).

Basionym: *Amphora ventricosa* Gregory

Synonym(s): *Amphora ventricosa* Gregory

Life form and distribution: Littoral, benthic; intertidal mud flats and salt marshes.

Salinity: Marine and brackish waters, polyhalobe.

Locality: BAS, NAT, BMEM, BMER, BMS

Amphora clevei Grunow

Pl. 35, fig. 13.

Dimensions: length 109 µm; width 14.5 µm; 9-10 striae in 10 µm.

Floras: Foged (1984), p. 17, pl. 52, fig. 4

Life form and distribution: Littoral, benthic; intertidal mud flats.

Salinity: Polyhalobe.

Locality: BMER

PLATE 36

Amphora spectabilis Gregory

Pl. 36, figs. 1-2.

Dimensions: length 61.5-123 µm; width 15.4-16 µm; 5 striae in 10 µm.

Floras: Hendey (1964), p. 268, pl. 38, figs. 8-9. Foged (1984), p. 19, pl. 54, fig. 2. Witkowski *et al*. (2000), p. 150, pl. 166, fig. 8, pl. 167, figs. 25-26.

Life form and distribution: Neritic, cosmopolitan.

Salinity: Marine

Locality: BAS, NAT, BMS

Amphora costata W. Smith

Pl. 36, figs. 3-4.

Dimensions: length 60.8-88.5 µm; width 17-17.7 µm; 7 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 228, pl. 50, figs. 18-19. Navarro (1982), p. 32, pl. 20, figs. 5-7. Witkowski *et al*. (2000), p. 134, pl. 169, fig. 9.

Life form and distribution: Marine species of world wide distribution.

Comments: Although it highly resembles Foged´s (1978; 1984) specimen of *A. eunotia* in plates 36 and 54, respectively, apparently in confusion from Peragallo´s (1897-1908) drawings.

Locality: BAS, BMER, BMS

Amphora proteus var. ***kariana*** Grunow

Pl. 36, figs. 5-6.

Dimensions: length 61.5-125.4 µm; width 13.6-19 µm; 9-11 striae in 10 µm.

Floras: Cleve-Euler (1953, III), pl. 93, figs. 637 b, c.

Life form and distribution: Cosmopolitan.

Locality: BAS, NAT, BMER, BMS

Amphora proteus var. ***contigua*** Cleve

Pl. 36, fig. 9.

Dimensions: length 53 µm; width 13.8 µm; 11 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 201, pl. 44, figs. 24-25.

Life form and distribution: Neritic.

Locality: NAT, BMER, BMS

Amphora immarginata Naguno

Pl. 36, figs. 8, 10.

Dimensions: length 43-67.8 µm; width 9.2-15.4 µm; 11-17 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 766, pl. 162, fig. 20.

Life form and distribution: Benthic.

Locality: NAT, BMER, BMS

Auricula intermedia Cleve

Pl. 36, fig. 11.

Dimensions: length 70.8 µm; width 23.9 µm; 15 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 193, pl. 42, figs. 12, 13.

Basionym: *Amphora intermedia* Lewis

Synonym(s): *Amphora intermedia* Lewis

Life form and distribution: Benthic.

Locality: BMS

Amphora sp. 1

Pl. 36, fig. 7.

Dimensions: length 65.4 µm; width 9.2 µm; 10 striae in 10 µm.

Locality: BMS

Cosmioneis grossepuncta (Hustedt) D. G. Mann

Pl. 36, fig. 12.

Dimensions: length 46 µm; width 15.4 µm; 14 striae in 10 µm.

Floras: Hustedt (1930), p. 765, fig. 1738 a. Round *et al*. (1990), p. 666.

Basionym: *Navicula grossepunctata* Hustedt

Synonym(s): *Navicula grossepuncta* Hustedt

Life form and distribution: Neritic, tychopelagic.

Locality: NAT

PLATE 37

Bacillaria socialis (Gregory) Ralfs

Pl. 37, figs. 1, 5-6.

Dimensions: length 61.5-123 μm; width 6.1-10.7 μm; 6-7 keel puncta in 10 μm; 17-21 striae in 10 μm.

Floras: Navarro (1982), p. 56, pl. 26, fig. 9 (as *Nitzschia socialis* Gregory). Foged (1984), p. 81, pl. 58, figs. 1, 5 (as *N. socialis* Gregory). Witkowski *et al*. (2000), p. 357, pl. 196, figs.5-7, pl. 207, fig. 9.

Life form and distribution: Benthic and epilithic, cosmopolitan.

Salinity: Marine to brackish waters (polyhalobe)

Locality: NAT, BMEM, BMER, BMS

Nitzschia sigma (Kützing) W. Smith

Pl. 37, figs. 2-4.

Dimensions: length 65.4-92 μm; width 6.1-6.9 μm; 8-9 keel puncta in 10 μm.

Floras: Foged (1984), p. 81, pl. 16, fig. 1, pl. 59, fig.5. Witkowski *et al*. (2000), p. 404, pl. 206, figs. 1-10.

Basionym: *Synedra sigma* Kützing

Synonym(s): *Synedra sigma* Kützing, *Homoeocladia sigma* (Kützing) Kuntze, *Sigmatella sigma* (Kützing) Frenguelli

Life form and distribution: Benthic, epilithic.

Salinity: Brackish water, also electrolyte-rich freswater; mesohalobe, holoeuryhaline.

Locality: BMER, BMS

Nitzschia sigma var. ***sigmatella*** (Gregory) Grunow

Pl. 37, fig. 9 (200X).

Dimensions: length 100 μm; width 4-25 μm; 19-38 keel puncta in 10 μm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 290, pl. 74, fig. 6.

Life form and distribution: Cosmopolitan, epiphytic on macroalgae.

Locality: BMER, BMS

Nitzschia dissipata (Kützing) Grunow

Pl. 37, fig. 7.

Dimensions: length 57.8 μm; width 8.5 μm; 5 keel puncta in 10 μm.

Floras: Schmidt *et al*. (1874-1959), pl. 332, figs. 22-24. Hustedt (1930), p. 412, fig. 789. Foged (1984), p. 75, pl. 15, figs. 13-14.

Life form and distribution: Cosmopolitan.

Salinity: Oligohalobe (indifferent), alkaliphil

Locality: BMEM, BMER, BMS

Nitzschia fluminensis Grunow

Pl. 37, fig. 8.

Dimensions: length 111.5 µm; width 11.5 µm; 6-7 keel puncta in 10 µm; 16 striae in 10 µm.

Floras: Boyer (1916), p. 120, pl. 32, fig. 16. Foged (1984), p. 75, pl. 58, fig. 4.

Life form and distribution: Neritic, cosmopolitan.

Salinity: Polyhalobe

Locality: NAT

Nitzschia longissima f. ***costata*** Hustedt

Pl. 37, fig. 10.

Floras: Foged (1978), p. 107, pl. 46, figs. 9-10. Moreno *et al*. (1996), p. 103, pl. 26, fig. 22.

Synonym(s): *Nitzschia ventricosa* Kitton

Life form and distribution: Neritic, tychopelagic, cosmopolitan in temperate-tropical waters.

Salinity: Marine

Locality: BMS

Nitzschia grossestriata Hustedt

Pl. 37, fig. 11.

Dimensions: length 28.5 µm; width 3 µm; 7 keel puncta in 10 µm; 16 striae in 10 µm.

Floras: Hustedt (1955), p. 46, pl. 16, figs. 8-10. Witkowski *et al*. (2000), p. 384, pl. 201, figs. 14-16.

Life form and distribution: Neritic, tychopelagic.

Locality: BMEM, BMER, BMS

Nitzschia amphibia Grunow

Pl. 37, fig. 12.

Dimensions: length 44.5 µm; width 3.8 µm; 10 keel puncta in 10 µm; 18 striae in 10 µm.

Floras: Hustedt (1930), p. 414, fig. 793. Foged (1984), p. 74, pl. 15, figs. 11-12.

Synonym(s): *Bacillaria amphibia* (Grunow) Elmore, *Homoeocladia amphibia* (Grunow) Kuntze

Life form and distribution: Cosmopolitan.

Locality: BMER, BMS

Nitzschia scalpelliformis Grunow

Pl. 37, fig. 13.

Dimensions: length 42 µm; width 4.6 µm; 10 keel puncta in 10 µm.

Floras: Hustedt (1930), p. 422, fig. 817 b. Foged (1984), p. 79, pl. 16, fig. 2.

Synonym(s): *Nitzschia obtusa* var. *scalpelliformis* Grunow, *N. obtusa* var. *scalpelliformis* (Grunow) Grunow

Life form and distribution: Cosmopolitan.

Salinity: Mesohalobe to polyhalobe
Locality: BMER, BMS

Nitzschia distans Gregory
Pl. 37, fig. 14.
Dimensions: length 38.5 µm; width 3.8 µm; 4 keel puncta in 10 µm.
Floras: Foged (1984), p. 75, pl. 58, fig. 13. Witkowski *et al*. (2000), p. 378, pl. 203, figs. 7-9.
Life form and distribution: Neritic.
Locality: BMS

Nitzschia lanceolata var. ***minima*** Grunow
Pl. 37, fig. 15.
Dimensions: length 52 µm; width 8.5 µm; 9 keel puncta in 10 µm.
Floras: Cleve-Euler (1952), p. 84, fig. 1491 e. (as *Nitzschia lanceolata* var. *minor* Grunow)
Life form and distribution: Neritic.
Locality: BAS, BMEM, BMER

Nitzschia granulata Grunow
Pl. 37, figs. 16-18.
Dimensions: length 20-42 µm; width 12.3-17.8 µm; 7 areolae in 10 µm.
Floras: Navarro (1982), p. 53, pl. 34, fig. 9. Foged (1984), p. 76, pl. 15, fig. 15, pl. 54, fig. 8, pl. 58, fig. 11. Wah & Wee (1988), figs. 65-67. Moreno *et al*. (1996), p. 102, pl. 26, fig. 17. Witkowski *et al*. (2000), p. 383, pl. 189, figs. 1-5.
Life form and distribution: Gulf of California, Newark.
Salinity: Polyhalobe
Locality: NAT, BMER

Tryblionella hyalina (Amossé) T. Ohtsuka
Pl. 37, fig. 19-20.
Dimensions: length 34.6-51.5µm; width 17-18.5 µm; 6 striae in 10 µm.
Floras: Navarro (1982), p. 53, pl. 34, fig. 10. T. Ohtsuka (2005), figs. 50-51.
Basionym: *Nitzschia granulata* var. *hyalina* Amossé
Life form and distribution: Gulf of California, benthic.
Locality: COS, NAT, BMER, BMS

Nitzschia lorenziana var. ***subtilis*** Grunow
Pl. 37, fig. 21.
Dimensions: length 77 µm; width 5.4 µm; 13 striae in 10 µm.

Floras: Cleve-Euler (1952), p. 93, fig. 1510. Foged (1978), p. 107, pl. 46, fig. 8.

Life form and distribution: Cosmopolitan.

Salinity: Mesohalobe, euryhaline

Locality: BMS

Nitzschia pellucida Grunow

Pl. 37, fig. 22.

Dimensions: length 81.5 µm; width 8.5 µm; 8 keel puncta in 10 µm.

Floras: Krammer & Lange-Bertalot (1988), p. 63, pl. 47, figs. 4-6. Witkowski *et al*. (2000), p. 399, pl. 191, figs. ?1-7, 11.

Life form and distribution: Benthic, cosmopolitan.

Locality: BAS

Hantzschia virgata (Roper) Grunow

Pl. 37, figs. 23-24.

Dimensions: length 63-81.5 µm; width 7.8-12.3 µm; 8-10 striae in 10 µm.

Floras: Foged (1984), p. 47, pl. 56, fig. 1. Witkowski *et al*. (2000), p. 364, pl. 175, fig. 10, pl. 176, figs. 1-3.

Basionym: *Nitzschia virgata* Roper

Synonym(s): *Nitzschia virgata* Roper

Life form and distribution: Cosmopolitan.

Salinity: Mesohalobe, euryhaline

Locality: BMS

Hantzschia pseudomarina Hustedt

Pl. 37, fig. 25.

Dimensions: length 63 µm; width 7.8 µm; 8-10 striae in 10 µm.

Floras: Witkowski *et al*. (2000), p. 364, pl. 175, figs. 8-9, pl. 178, figs. 12-13.

Life form and distribution: Brackish-water and freshwater whit high ion content, Gulf of Gdansk.

Salinity: Mesohalobe, euryhaline

Locality: BMS

PLATE 38

Nitzschia plana W. Smith

Pl. 38, fig. 1.

Dimensions: length 150 µm; width 23 µm; 19 striae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 270, pl. 70, fig. 18.

Comments: Although the reffered image is not very clear, it shows that both raphe keels are visible

in the same focus. Striae are equaly fine and coincide in number.
Life form and distribution: Benthic.
Locality: BMS

Nitzschia compressa (J. W. Bailey) C. S. Boyer
Pl. 38, fig. 8.
Dimensions: length 22 µm; width 11.5 µm; 10 striae in 10 µm.
Floras: Moreno *et al*. (1996), p. 101, pl. 26, fig. 12. Poulin et al. (1990), p. 96, fig.98.
Basionym: *Pyxidicula compressa* J. W. Bailey
Synonym(s): *Pyxidicula compressa* J. W. Bailey, *Tryblionella punctata* W. Smith, *Nitzschia punctata* (W. Smith) Grunow, *N. compressa* (J. W. Bailey), C. S. Boyer, *Homoeocladia punctata* (W. Smith) Kuntze, *Zotheca punctata* (W. Smith) Pantocsek
Life form and distribution: Morbihan, Languedoc, Adriatic Sea.
Locality: BMS

Tryblionella acuminata W. Smith
Pl. 38, fig. 9.
Dimensions: length 61.5 µm; width 9.2 µm; 15 striae in 10 µm.
Floras: Cleve-Euler (1952), p. 61, fig. 1436 a. Foged (1984), p. 73, pl. 59, fig. 9. Round (1990), p. 614, fig. a. Witkowski *et al*. (2000), p. 366, pl. 188, figs. 1-3.
Synonym(s): *Nitzschia acuminata* (W. Smith) Grunow
Life form and distribution: Cosmopolitan.
Salinity: Polyhalobe
Locality: BMER, BMS

Nitzschia sp. 1
Pl. 38, fig. 7.
Dimensions: length 23.8 µm; width 6 µm; 28 striae in 10 µm.
Locality: BMEM, BMER, BMS

Psammodictyon panduriforme (Gregory) D. G. Mann
Pl. 38, figs. 2-5.
Dimensions: length 66-94.5 µm; width 28.5-35 µm; 11-15 striae in 10 µm.
Floras: Foged (1978), p. 108, pl. 44, fig. 2. Navarro (1983), p. 394, figs. 31-36. Moreno *et al*. (1996), p. 117, pl. 29, fig. 9 (as *Psammodictyon panduriforme* (Gregory) D. G. Mann var. *panduriforme*).
Basionym: *Nitzschia panduriformis* W. Gregory
Synonym(s): *Nitzschia panduriformis* W. Gregory
Life form and distribution: Neritic, estuarine, cosmopolitan.

Salinity: Marine
Locality: NAT, BMER, BMS

Psammodictyon panduriforme var. ***abruptum*** (Peragallo) D. G. Mann
Pl. 38, fig. 12.
Dimensions: length 61.5 µm; width 17 µm; 18 striae in 10 µm.
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 269, pl. 70, fig. 7.
Life form and distribution: Neritic.
Locality: BMEM

Psammodictyon bombiforme (Grunow) D. G. Mann
Pl. 38, fig. 6.
Dimensions: length 39 µm; width 13.8 µm; 16 striae in 10 µm.
Floras: Foged (1984), p. 74, pl. 57, fig. 3. Round *et al*. (1990), p. 676.
Basionym: *Nitzschia constricta* var. *bombiformis* Grunow
Synonym(s): *Nitzschia constricta* var. *bombiformis* Grunow
Life form and distribution: Neritic.
Salinity: Polyhalobe
Locality: BMER

Psammodictyon constrictum (Kützing) D. G. Mann
Pl. 38, figs. 13-14.
Dimensions: length 27.7-28.5 µm; width 9.2-12 µm; 15-16 striae in 10 µm.
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 270, figs. 8-10. Round *et al*. (1990), p. 676. Moreno *et al*. (1996), p. 116, pl. 29, fig. 8.
Basionym: *Tryblionella constricta* Gregory
Synonym(s): *Tryblionella constricta* Gregory
Life form and distribution: Epipelic, neritic, cosmopolitan.
Salinity: Marine
Locality: BMEM, BMER, BMS

Psammodictyon puncta var. ***coarctata*** D. G. Mann
Pl. 38, fig. 15.
Dimensions: length 36 µm; width 13 µm; 11 striae in 10 µm.
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 268, pl. 69, fig. 26, 27.
Basionym: *Nitzschia coarctata* Grunow
Life form and distribution: Epipelic, neritic.
Locality: BMS

Tryblionella littoralis (Grunow) D. G. Mann

Pl. 38, fig. 10.

Dimensions: length 57 µm; width 11.5 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 267, pl. 69, figs. 15-18. Round *et al*. (1990), p. 678.

Basionym: *Nitzschia littoralis* Grunow

Synonym(s): *Nitzschia littoralis* Grunow

Life form and distribution: Epipelic.

Locality: BMS

Tryblionella marginulata var**. *didyma*** (Grunow) D. G. Mann

Pl. 38, fig. 11.

Dimensions: length 57 µm; width 13.8 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 270, pl. 70, fig. 14-17(as *Nitzschia marginulata* var*. didyma* Grunow). Witkowski *et al*. (2000), p. 393, pl. 183, figs. 4-5 (as *N. marginulata* var*. didyma* Grunow).

Synonym(s): *Nitzschia marginulata* var*. didyma* Grunow

Life form and distribution: Epipelic.

Locality: NAT, BMS

Triblionella coarctata (Grunow) D. G. Mann

Pl. 38, figs. 16-17.

Dimensions: length 40-42 µm; width 13-14.5 µm; 11-16 striae in 10 µm.

Floras: Navarro (1982), p. 52, figs. 6-7. Navarro (1983), p. 394, figs. 12-15. Round (1990), p. 678.

Basionym: *Nitzschia coarctata* Grunow

Synonym(s): *Nitzschia coarctata* Grunow

Life form and distribution: Neritic, cosmopolitan.

Salinity: Marine

Locality: NAT, BMS

PLATE 39

Rhopalodia acuminata Krammer

Pl. 39, figs. 1, 5.

Dimensions: length 19.2-65.4 µm; width 8.5-10 µm; 4-6 costae in 10 µm.

Floras: Lange-Bertalot & Krammer (1987), p. 75, pl. 47, figs. 1-11.

Basionym: *Rhopalodia gibberula* var*. baltica* O. Müller

Life form and distribution: Neritic.

Locality: BMS

Rhopalodia musculus (Kützing) O. Müller

Pl. 39, figs. 2-4.

Dimensions: length 27-50 µm; width 9-13 µm; 5 costae in 10 µm; 12 areolae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 77, figs. 6-10.

Foged (1978), p. 123, pl. 42, figs. 11, 13. Navarro (1982), p. 50, pl. 32, figs. 3-6, pl. 33 fig. 1 (as *Rhopalodia operculata* var*. operculata* (Agardh) Häkansson). Foged (1984), p. 92, pl. 14, fig. 4, pl. 55, figs.7, 10. Witkowski *et al*. (2000), p. 411, pl. 214, figs. ?5-8, 9-11.

Basionym: *Epithemia musculus* Kützing

Synonym(s): *Epithemia musculus* Kützing, *Eunotia westermanni* var*. musculus* (Kützing) G.L. Rabenhorst, *Cystopleura musculus* (Kützing) Kuntze, *Rhopalodia gibberula* var*. musculus* (Kützing) Muschler, *R. gibberula* var*. musculus* (Kützing) Cleve-Euler

Life form and distribution: Cosmopolitan.

Salinity: Mesohalobe, euryhaline

Locality: BMS

Rhopalodia gibberula (Ehrenberg) O. Müller

Pl. 39, fig. 6.

Dimensions: length 29 µm; width 7.7 µm; 7 costae in 1

Floras: Foged (1978), p. 123. Navarro (1982), p. 50, pl. 33, figs. 4-6. Foged (1984), p. 92, pl. 14, fig. 7, pl. 55, fig. 8.

Basionym: *Eunotia gibberula* Ehrenberg

Synonym(s): *Eunotia gibberula* Ehrenberg, *Epithemia gibberula* (Ehrenberg) Kützing, *Cystopleura gibberula* (Ehrenberg) Kunze, *Rhopalodia musculus* var*. gibberula* (Ehrenberg) Peragallo & Peragallo

Life form and distribution: Neritic, cosmopolitan.

Salinity: Mesohalobe to polyhalobe (marine, brackish-water and freshwater).

Locality: NAT

Campylodiscus crebrecostatus var*.* ***speciosa*** Eulenstein

Pl. 39, figs. 7-9.

Dimensions: diameter 45-53 µm; 4 costae in 10 µm (margin); 10 costae in 10 µm (center).

Floras: Schmidt *et al*. (1874-1959), pl. 15, fig. 16.

Life form and distribution: Neritic.

Locality: BMS

Campylodiscus simulans Gregory

Pl. 39, figs. 10-11.

Dimensions: diameter 30 µm; 3 costae in 10 µm (margin); 13 costae in 10 µm (center).

Floras: Floras: Schmidt *et al*. (1874-1959), pl. 17, fig. 12-14.

Life form and distribution: Neritic, tychoplankton.

Salinity: Polyhalobe

Locality: BMER, BMS

Campylodiscus ralfsii W. Smith

Pl. 39, fig. 12.

Dimensions: diameter 30.8 µm; 10 costae in 10 µm.

Floras: Foged (1984), p. 27, pl. 60, fig. 5. Witkowski *et al*. (2000), p. 413, pl. 214, fig. 16.

Life form and distribution: Neritic, tychoplankton.

Salinity: Polyhalobe

Locality: BMS

PLATE 40

Surirella febigeri Lewis

Pl. 40, fig. 1.

Dimensions: length 190 µm; width 67 µm; 2 costae in 10 µm.

Floras: Schmidt *et al*. (1874-1959), pl. 20, fig. 9. Navarro (1983), p. 396, figs. 73-74. Moreno *et al*. (1996), p. 127, pl. 32, fig. 1

Life form and distribution: Gulf of California.

Locality: NAT

Petrodictyon gemma (Ehrenberg) D. G. Mann

Pl. 40, fig. 2.

Dimensions: length 201.5 µm; width 69 µm; 3 costae in 10 µm.

Floras: Moreno *et al*. (1996), p. 127, pl. 32, fig. 2 (as *Surirella gemma* Ehrenberg). Witkowski *et al*. (2000), p. 413, pl. 216, figs. 8-9.

Basionym: *Surirella gemma* Ehrenberg

Synonym(s): *Surirella gemma* Ehrenberg

Life form and distribution: Presumably cosmopolitan.

Salinity: Mesohalobe

Locality: BAS, NAT, BMS

PLATE 41

Surirella fastuosa (Ehrenberg) Kützing

Pl. 41, figs. 4(630X)-5 (630X).

Floras: Navarro (1982), p. 57, pl. 37, fig. 4-6. Foged (1984), p. 96, pl. 60, figs. 3-4. Witkowski *et al*. (2000), p. 414, pl. 215, figs. 1-3.

Basionym: *Navicula fastuosa* Ehrenberg

Synonym(s): *Navicula fastuosa* Ehrenberg

Life form and distribution: Benthic, neritic, estuarine, tychopelagic.

Locality: BMER, BMS

Surirella fastuosa var**. *suborbicularis*** Grunow

Pl. 41, figs. 1-2, 3 (630X).

Dimensions: diameter 57.7 µm; 3 costae in 10 µm.

Floras: H. Peragallo & M. Peragallo (1897-1908), p. 248, pl. 59, fig. 1.

Comments: This variety is more rounded and costae are somewhat irregular, producing a narrow undefined sternum.

Life form and distribution: Benthic, neritic, estuarine, tychopelagic.

Locality: BMER, BMS

PLATE 42

Surirella fastuosa (Ehrenberg) Kützing

Pl. 42, figs. 1, 2 (630X), 3-5.

Dimensions: length 56-12.8 µm; width 43.8-59 µm; 2-3 costae in 10 µm.

Floras: Navarro (1982), p. 57, pl. 37, fig. 4-6. Foged (1984), p. 96, pl. 60, figs. 3-4. Witkowski *et al*. (2000), p. 414, pl. 215, figs. 1-3.

Basionym: *Navicula fastuosa* Ehrenberg

Synonym(s): *Navicula fastuosa* Ehrenberg

Life form and distribution: Benthic, neritic, estuarine, tychopelagic.

Locality: BMER, BMS

PLATE 43

Petrodictyon gemma (Ehrenberg) D. G. Mann

Pl. 43, figs. 1-2.

Dimensions: length 103.8 µm; width 53 µm; 3 costae in 10 µm.

Floras: Moreno *et al*. (1996), p. 127, pl. 32, fig. 2 (as *Surirella gemma* Ehrenberg). Witkowski *et al*. (2000), p. 413, pl. 216, figs. 8-9.

Basionym: *Surirella gemma* Ehrenberg

Synonym(s): *Surirella gemma* Ehrenberg

Life form and distribution: Presumably cosmopolitan.

Salinity: Mesohalobe

Locality: BAS, NAT, BMS

Surirella lata W. Smith

Pl. 43, fig. 3 (630X).

Dimensions: length 63 µm; width 28.33 µm; 3 costae in 10 µm.

Floras: Navarro (1983), p. 396, fig. 77.

Life form and distribution: Marine, neritic, cosmopolitan in temperate-tropical waters.

Locality: BAS

Surirella fastuosa var. ***recedens*** (A. Schmidt) Cleve

Pl. 43, figs. 4-5.

Dimensions: length 42-69 µm; width 26-41.5 µm; 2-3 costae in 10 µm.

Floras: Schimdt *et al*. (1874-1959), pl. 19, figs. 2-4 (as *Surirella recedens* A. Schmidt). Foged (1975), p. 53, pl. 31, fig. 8 (as *S. recedens* A. Schmidt). Moreno *et al*. (1996), p. 126, pl. 31, fig. 12.

Basionym: *Surirella recedens* A. Schmidt

Life form and distribution: Recorded from the West Indies, the Indian Ocean and the Persian Gulf, Gulf of California.

Locality: NAT

Surirella armoricana H. Peragallo & M. Peragallo

Pl. 43, fig. 6.

Dimensions: length 40.7 µm; width 25.4 µm; 3 costae in 10 µm.

Floras: Hendey (1964), p. 289, pl. 40, fig. 6. Foged (1975), p. 53, pl. 30, figs. 3-5. Wah & Wee (1988), p. 326, fig. 84.

Locality: BMS

Surirella febigeri Lewis

Pl. 43, fig. 7 (630X).

Floras: Schmidt *et al*. (1874-1959), pl. 20, fig. 9. Navarro (1983), p. 396, figs. 73-74. Moreno *et al*. (1996), p. 127, pl. 32, fig. 1

Life form and distribution: Tychoplanktonic; Gulf of California.

Locality: BMS

7. TAXA NOT REPRESENTED IN THE ICONOGRAPHIC SECTION

1. ***Achnanthidium biasolettianum*** (Grunow) F.E. Round & L. Bukhtiyarova
   Floras: Hustedt (1931-1959), p. 379, fig. 823.
   Basonym: *Achnanthes biasolettiana* (Kützing) Grunow
   Synonym(s): *Synedra biasolettiana* Kützing, *Falcatella biasolettiana* (Kützing) Rabenhorst, *Achnanthes biasolettiana* Grunow, *Microneis biasolettiana* (Kützing) Cleve, *M. biasolettiana* (Kützing) Meister, *Achnanthidium biasolettianum* (Kützing) Bukhtiyarova, *A. biasolettianum* (Grunow) Lange-Bertalot
   Locality: NAT

2. ***Achnanthes cuneata*** (Grunow) Grunow
   Floras: Cleve & Grunow (1880), p. 19. Witkowski *et al*. (2000), p. 87, pl. 44, figs. 14-15.
   Locality: BMS

3. ***Achnanthes kuwaitensis*** Hendey
   Floras: Witkowski *et al*. (2000), p. 91, pl. 43, figs. 13-15.
   Locality: BMEM, BMER

4. ***Achnanthes lanceolata*** var. ***minor*** (Schülz) Lange-Bertalot
   Floras: Cleve-Euler (1953, III), p. 26 fig. 527.
   Locality: COS

5. ***Achnanthes lanceolata*** var. ***rostrata*** Hustedt
   Floras: Hustedt (1931-1959), p. 410, figs. 863 i-m.
   Locality: BAS

6. ***Achnanthes lemmermannii*** Hustedt
   Floras: Hustedt (1931-1959), p. 390, fig. 837. Witkowski *et al*. (2000), p. 91, pl. 48, figs. 35-41, pl. 51, figs. 32-33.
   Locality: BMS

7. ***Achnanthes submarina*** Hustedt
   Floras: Simonsen (1987), p. 435, pl. 652, figs. 12-24. Witkowski *et al*. (2000), p. 96, pl. 51, figs. 17-18.
   Synonym(s): *Achnanthes biceps* Hustedt, *A. pseudobiceps* H. Håkansson
   Locality: BAS

8. ***Achnanthes triconfusa*** van Landingham
   Floras: Cleve-Euler (1953, III), p. 38, fig. 12. van Landingham, 1967, p. 54, fig. 17.
   Locality: COS

9. ***Achnanthidium minutissimum*** (Kützing) Czarnecki
   Floras: Foged (1984), p. 14, pl. 3, figs. 13-14.
   Basionym: *Achnanthes minutissima* Kützing
   Synonym(s): *Achnanthes minutissima* Kützing, *A. minutissima* var. *cryptocephala* Grunow, *Achnanthidium altergracillima* (Lange-Bertalot) Round & L. Bukhtiyarova, *A. microcephalum* Kützing, *A. lineare* W. Smith, *A. lanceolatum* f. *minutissima* (Kützing) Tömösvary, *Cocconeis minutissima* (Kützing) Schönfeldt, *Microneis minutissima* (Kützing) Cleve, *M. minutissima* (Kützing) Meister.
   Locality: BMER

10. ***Actinocyclus octonarius*** var. ***ralfsii*** (Ehrenberg) W. Smith
    Floras: Hendey (1964), pl. 24, figs. 1-2, 4.
    Basionym: *Eupodiscus ralfsii* W. Smith

Locality: NAT

11. ***Adlafia suchlandtii*** (Hustedt) Moser, Lange-Bertalot & Metzeltin
Floras: Schmidt *et al*. (1874-1959), pl. 399, figs. 24-28 (as *Navicula suchlandtii* Hustedt).
Basionym: *Navicula suchlandtii* Hustedt
Synonym(s): *Navicula suchlandtii* Hustedt
Locality: BMER, BMS

12. ***Amphora beaufortiana*** Hustedt
Floras: Hustedt (1955) p. 38, pl. 14, figs. 1-6. Witkowski *et al*. (2000), p. 131, pl. 168, figs. 10-11.
Locality: BMS

13. ***Amphora catharinaria*** Cholnoky
Floras: Foged (1984), p. 10, pl. 25, fig. 8.
Locality: BMS

14. ***Amphora coffeaeformis*** var. ***angularis*** Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 229, pl. 50, fig. 13. (as *Amphora angulosa* H. Peragallo & M. Peragallo)
Synonym(s): *Amphora angulosa* Grunow
Locality: BAS

15. ***Amphora coffeaeformis*** var. ***borealis*** (Kützing) Cleve
Floras: Witkowski *et al*. (2000), p. 132, pl. 166, fig. 18 (as *Amphora borealis* Kützing)
Basionym: *Amphora borealis* Kützing
Locality: BAS.

16. ***Amphora coffeaeformis*** var. ***exigua*** (Gregory) Rabenhorst
Floras: Hendey (1964), p. 266. Witkowski *et al*. (2000), p. 137, pl. 161, figs. 15-17.
Locality: BAS, NAT, BMER

17. ***Amphora coffeaeformis*** var. ***salina*** (W. Smith) Schönfeldt
Floras: Cleve-Euler (1953, III), p. 97, fig. 685 a.
Basionym: *Amphora salina* W. Smith
Locality: BAS, NAT, BMER, BMEM, BMS

18. ***Amphora copulata*** (Kützing) Schoeman & Archibald
Floras: Cleve-Euler (1953, III), p. 90, figs. 666 e-h. (as *Amphora libyca* var. *baltica* (Brébisson) Cleve) Schoeman, F.R. & Archibald, R.E.M. (1986), p.429.
Locality: BAS

19. ***Amphora crassa*** Gregory
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 208, pl. 44, fig. 5.
Locality: COS

20. ***Amphora crassa*** var. ***punctata*** A. Grunow
Floras: Schmidt et al. 1875, pl. 28, fig. 30-33.
Locality: BAS

21. ***Amphora delicatissima*** Krasske
Floras: Krammer & Lange-Bertalot (1986), p. 351, pl. 152, figs. 19-23. Witkowski *et al*. (2000), p. 137, pl. 163, figs. 11-?12, pl. 168, fig. ?8.
Locality: BAS

22. ***Amphora elegantula*** Hustedt
Floras: Hustedt (1955), p. 41, pl. 14, fig. 7.
Locality: BMER

23. ***Amphora graeffeana*** Hendey
Floras: Hendey (1972), p. 317, figs. 12-19. Witkowski *et al*. (2000), p. 138, pl. 166, fig. 24, pl. 172, figs. 6-9.
Synonym(s): *Amphora graeffei* Cleve
Locality: BMS

24. ***Amphora holsatica*** Hustedt
Floras: Cleve-Euler (1953, III), p. 99, fig. 688. Foged (1984), p. 17, pl. 11 fig. 9, pl. 51 fig.10. Wah & Wee (1988), fig. 15.
Locality: BAS.

25. ***Amphora hyalina*** Kützing
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 226, pl. 50, fig 7. Hendey (1964), p. 265, pl. 37, fig. 10. Witkowski *et al*. (2000), p. 140, pl. 163, fig. 22.
Locality: BAS

26. ***Amphora laevis*** Greg**.** var**.** ***laevissima*** (Gregory) Cleve
Floras: Cleve-Euler (1953, III), p. 102, figs. 698 e-g. Witkowski *et al*. (2000), p. 142, pl. 168, figs. 5-7 (as *A. laevissima* Gregory)
Locality: BMS

27. ***Amphora obtusa*** Gregory
Floras: Hagelstein (1938), p. 325. Foged (1984), p. 18, pl. 54, fig. 5.
Locality: NAT

28. ***Amphora obtusa*** Gregory var**.** ***rectangulata*** H**.** Peragallo & M**.** Peragallo
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 216, pl. 48, fig. 2.
Locality: BMER

29. ***Amphora pusilla*** Gregory
Floras: Greville, D. (1857), pl. 6, fig. 95.
Locality: NAT

30. ***Amphora proteus*** var**.** ***mexicana*** (A. Schmidt) Cleve
Floras: Schmidt *et al*. (1874-1959), pl. 27, figs. 47-48. Witkowski *et al*. (2000), p. 144, pl. 169, figs. 1-4.
Basionym: *Amphora mexicana* Schmidt
Locality: COS

31. ***Amphora proteus*** var**.** ***robusta*** (Gregory) Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 202, pl. 54, figs. 33, 34. Cleve 1883, p. 493
Basionym: *Amphora robusta* Gregory
Locality: COS

32. ***Amphora rhombica*** Kitton
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 224, pl. 50, fig. 4. Witkowski *et al*. (2000), p. 149, pl. 168, figs. 12-13.
Locality: BAS

33. ***Amphora robusta*** Gregory var**.** ***hemicostata*** H**.** Peragallo & M**.** Peragallo
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 202, pl. 44, fig. 35.

Locality: BMER

34. ***Amphora tenuissima*** Hustedt
Floras: Hustedt (1955), p. 39, Pl. 14, Fig. 16.
Locality: BMER, BMS

35. ***Amphora staurophora*** Juhlin-Dannfelt
Floras: Cleve-Euler (1953, III), p. 103, fig. 704 a. Witkowski *et al*. (2000), p. 150, pl. 163, figs. 34-35.
Locality: BMS

36. ***Amphora tomiakae*** Witkowski, Lange-Bertalot & Metzeltin
Floras: Foged (1984), p. 20, pl. 53 fig. 11 (as *Amphora wisei* (Salah) Simonsen). Witkowski *et al*. (2000), p. 153, pl. 169, figs. 12-14.
Synonym(s): *Amphora wisei* (Salah) Simonsen
Locality: BMS

37. ***Anaulus americanus*** Hustedt
Floras: Hustedt (1955), p. 9, pl. 4, figs. 23-24.
Locality: BAS

38. ***Anorthoneis hummii*** Hustedt
Floras: Hustedt (1955), p. 15, pl. 2, fig. 6, pl. 5, figs. 18-19. Witkowski *et al*. (2000), p. 97, pl. 42, fig. 22.
Locality: BMS

39. ***Ardissonea formosa*** (Hantzsch) Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 310, pl. 78, fig. 6 (as *Surirella formosa* Hantzsch). Hustedt (1931-1959), p. 233, fig. 720 (as *S. formosa* Hantzsch). Witkowski *et al*. (2000), p. 43, pl. 30, fig. 12.
Basionym: *Synedra formosa* Hantzsch
Locality: BAS

40. ***Ardissonea fulgens*** var. ***mediterranea*** (Grunow) Mereschkowsky
Floras: Hustedt (1931-1959), p. 230, figs. 717 d, e. Moreno *et al*. (1996), p. 127, pl. 32, figs. 4 a, b.
Locality: BAS

41. ***Astartiella punctifera*** (Hustedt) Witkowski, Lange-Bertalot & Metzeltin
Floras: Hustedt (1955), p. 18, pl. 5, figs. 26-28. Witkowski *et al*. (2000), p. 101, pl. 52, figs. 11-19.
Basionym: *Achnanthes punctifera* Hustedt
Locality: BMS

42. ***Bacillaria paradoxa*** J. F. Gmelin
Floras: Witkowski *et al*. (2000), p. 357, pl. 212, figs. 9-12. (as *Bacillaria paxillifer* var. *paxillifer* (O. F. Müller) Hendey)
Locality: NAT, BMER, BMS

43. ***Bacillaria longa*** (Grunow) De Toni
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 279, pl. 72, fig. 5. Moreno *et al*. (1996), p. 103, pl. 26, figs. 18-19.
Basionym: *Nitzschia longa* Grunow
Locality: BMER

44. ***Bacillaria obtusa*** (W. Smith) Elmore
Floras: Hendey (1964), p. 282. Foged (1984), p. 78, pl. 58, fig. 2, pl. 59, figs. 2, 6.
Basionym: *Nitzschia obtusa* W. Smith

Locality: BMER

45. ***Berkeleya rutilans*** (Trentepohl) Grunow
Floras: Hendey (1964), p. 240. Navarro (1982), p. 33, pl. 21, fig. 6-7. Witkowski *et al*. (2000), p. 157, pl. 62, fig. 14-17.
Basionym: *Conferva rutilans* Trentepohl
Locality: BAS

46. ***Biddulphia mobiliensis*** (J. W. Bailey) Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 382, pl. 97, figs. 1, 5. Hendey (1964), p. 104, pl. 20, fig. 3. Foged (1975), p. 15, pl. 5, fig. 1.
Basionym: *Zygoceros mobiliensis* J. W. Bailey
Synonym(s): *Biddulphia baileyi* W. Smith
Locality: NAT

47. ***Biddulphia reticulata*** Roper
Floras: Schmidt *et al*. (1874-1959), pl. 78, figs. 21-23.
Locality: BMS

48. ***Biremis circumtexta*** (Meister ex Hustedt) Lange-Bertalot & Witkowski
Floras: Patrick & Reimer (1966), p. 442, pl. 39, fig.3. Witkowski *et al*. (2000), p. 158, pl. 154, fig. 8.
Basionym: *Navicula circumtexta* F. Meister ex Hustedt
Locality: BMS

49. ***Biremis lucens*** (Hustedt) Sabbe, Witkowski & Vyverman
Floras: Simonsen (1987), p. 174, pl. 275, figs. 27-29. Witkowski *et al*. (2000), p. 159, pl. 155, figs. 9-15.
Basionym: *Navicula lucens* Hustedt
Locality: BMS

50. ***Biremis ridicula*** (Giffen) D. G. Mann
Floras: Round *et al*. (1990), p. 664. Witkowski *et al*. (2000), p. 159, pl. 154, figs. 14-16.
Basionym: *Amphora ridicula* M. H. Giffen
Locality: BMS

51. ***Caloneis*** cf. ***consimilis*** (A. Schmidt) Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 70, pl. 9, figs. 1-2.
Locality: BMS

52. ***Caloneis latiuscula*** (Kützing) Cleve
Floras: Krammer & Lange-Bertalot (1986), p. 385, fig. 169: 1-3.
Locality: BMER

53. ***Caloneis permagna*** (J. W. Bailey) Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 76, pl. 10, fig. 8. Moreno *et al*. (1996), p. 32, pl. 11, fig. 10.
Basionym: *Pinnularia permagna* J. W. Bailey, *P. permagna* J. W. Bailey, *Navicula permagna* (J. W. Bailey) A.M. Edwards, *N. oregonica* var. *bivittata* Pantocsek, *Caloneis bivittata* (Pantocsek) Cleve, *Schizonema permagnum* (J. W. Bailey) Kuntze
Locality: NAT, BMER

54. ***Campylodiscus brightwellii*** Grunow
Floras: Navarro (1982), p. 395, figs. 50-51.
Locality: BAS

55. ***Campylodiscus ecclesianus*** Greville
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 239, pl. 53, fig. 3.
Locality: BAS

56. ***Campylodiscus fastuosus*** Ehrenberg
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 57, fig. 4-9 (as *Campylodiscus thuretii* Brébisson)
Synonym(s): *Campylodiscus parvulus* W. Smith, *Campylodiscus thuretii* Brébisson
Locality: BAS, BMEM, BMS.

57. ***Campylodiscus samoensi*** Grunow
Floras: Schmidt *et al*. (1874-1959), pl. 207, fig. 14.
Locality: BMER

58. ***Catenula adhaerens*** (Mereschkowsky) Mereschkowsky
Floras: Moreno *et al*. (1996), p. 34, pl. 12, fig. 5. Witkowski *et al*. (2000), p. 168, pl. 170, figs. 1-12.
Locality: BMER, BMS

59. ***Catenula pelagica*** Mereschkowsky
Floras: Drebes G. & Elbrächter M. (1976), pl. 19, figs. 75-83.
Locality: BMEM, BMS

60. ***Chamaepinnularia calida*** (Hendey) Lange-Bertalot
Floras: H. Lange-Bertalot & S.I. Genkal (1999) in H. Lange-Bertalot (ed.), Iconographia Diatomologica, 6: 35.
Basionym: *Navicula calida* Hendey.
Locality: BMS

61. ***Chamaepinnularia justa*** (Hustedt) Witkowski
Floras: Simonsen (1959), p. 77, pl. 11, fig. 22 (as *Navicula injusta* Hustedt). Witkowski *et al*. (2000), p. 170, pl. 69, figs. 21-23.
Locality: BAS

62. ***Cocconeis*** cf. ***moronensis*** A. Schmidt
Floras: Schmidt *et al*. (1874-1959), pl. 194, fig. 9.
Locality: BMS

63. ***Cocconeis convexa*** Giffen
Floras: Navarro (1982), p. 322, pl. 17, figs. 3-6, pl. 18, fig. 1. Witkowski *et al*. (2000), p. 104, pl. 37, figs. 5-6, pl. 41, figs. 1-4.
Locality: BAS

64. ***Cocconeis diruptoides*** Hustedt
Floras: Hustedt (1931-1959), p. 356, fig. 810.
Locality: BMS.

65. ***Cocconeis disculus*** (Schumann) Cleve
Floras: Cleve-Euler (1953, III), p. 10, figs. 495 a-b. Hendey (1964), p. 178, pl. 28, fig. 19.
Basionym: *Navicula disculus* Schumann
Synonym(s): *Navicula disculus* Schumann, *Cocconeis thomasiana* Brun
Locality: BAS, BMS

66. ***Cocconeis distans*** Gregory
Floras: Hustedt (1931-1959), p. 343, fig. 797. Foged (1984), p. 29,

pl. 31 figs. 7-8. Witkowski *et al*. (2000), p. 106, pl. 38, figs. 12-13.
Locality: BAS, BMER, BMS

67. ***Cocconeis latestriata*** Hustedt
Floras: Hustedt (1955), pl. 5, figs. 1-3.
Locality: COS

68. ***Cocconeis neodiminuta*** Krammer
Floras: Hustedt (1930), p. 190, fig. 265 (as *Cocconeis diminuta* Pantocsek). Krammer, 1990: 151;fig.1, 2 part, 8-20, 40-45
Synonym(s): *Cocconeis disculus* var. *diminuta* (Pantocsek) Scheschukova, *C. disculus* var. *diminuta* (Pantocsek) Cleve-Euler
Locality: BAS, NAT, BMER, BMS

69. ***Cocconeis pediculus*** Ehrenberg
Floras: Hustedt (1931-1959), p. 350, fig. 804. Foged (1984), p. 29. Moreno *et al*. (1996), p. 52, pl. 16, figs. 8-9.
Synonym(s): *Cocconeis communis* f. *pediculus* (Ehrenberg) Chmielevski, *Encyonema caespitosum* var. *pediculus* (Ehrenberg) De Toni
Locality: BAS

70. ***Cocconeis peltoides*** Hustedt
Floras: Hustedt (1931-1959), p. 606, figs. 23-27. Witkowski *et al*. (2000), p. 112, pl. 38, figs. 1-9.
Locality: BMER, BMS

71. ***Cocconeis placentula*** Ehrenberg
Floras: Foged (1981) pl. 13, figs. 13-14.
Synonym(s): *Cocconeis pediculus* var. *placentula* (C.G. Ehrenberg) A. Grunow, *C. communis* f. *placentula* (Ehrenberg) Chmielevski
Locality: BMEM, BMER, BMS

72. ***Cocconeis pseudomarginata*** Gregory
Floras: Moreno *et al*. (1996), p. 53, pl. 16, fig. 11. Witkowski *et al*. (2000), p. 113, pl. 34, figs. 9-19, pl. 35, figs. 1-4.
Locality: BMEM, BMER, BMS

73. ***Cocconeis scutellum*** var. ***parva*** (Grunow) Cleve
Floras: Sullivan (1981), p. 390. Witkowski *et al*. (2000), p. 114, pl. 38, fig. 10, pl. 42, figs. 17-19.
Locality: BMEM, BMER, BMS

74. ***Cylindrotheca gracilis*** var. ***major*** Grunow
Floras: Cleve-Euler (1952), p. 95, fig. 1518 a.
Locality: BAS

75. ***Cymatosira belgica*** Grunow
Floras: Hustedt (1931-1959), p. 121, fig. 649. Navarro (1982), p. 13, fig. 1, pl. 6, fig. 5. Witkowski *et al*. (2000), p. 27, pl. 10, figs. 18-22.
Locality: NAT

76. ***Delphineis surirelloides*** (Simonsen) Andrews
Floras: Simonsen (1974), p. 35, pl. 23, figs. 2-8. Witkowski *et al*. (2000), p. 46, pl. 22, fig. 10.
Synonym(s): *Rhaphoneis surirelloides* Simonsen
Locality: NAT

77. ***Denticula kuetzingii*** Grunow
Floras: Krammer & Lange-Bertalot (1988). p. 143, pl. 100, figs. 1-14.
Synonym(s): *Nitzschia denticula* Grunow, *Denticula denticula* (Grunow) Schonfeldt
Locality: BMEM

78. ***Denticula subtilis*** Grunow
Floras: Navarro (1982), p. 51, pl. 34, figs. 1-2. Witkowski *et al*. (2000), p. 359, pl. 216, figs. 16-17.
Synonym(s): *Denticula rainierensis* Sovereign
Locality: BMEM, BMS

79. ***Denticula tenuis*** var. ***genuina*** Grunow
Floras: Cleve-Euler (1952), p. 33, figs. 1405 a, g-i.
Locality: BAS

80. ***Dimeregramma marinum*** var. ***lanceolatum*** (H. Peragallo) Hustedt
Floras: Cleve-Euler (1953, II), p. 26, fig. 333 e.
Locality: BAS, NAT

81. ***Dimeregramma minor*** var. ***elliptica*** Cleve
Floras: Cleve-Euler (1953, II), p. 27, fig. 334 f.
Locality: BAS

82. ***Dimeregramma minor*** var. ***nanum*** (Gregory) van Heurck
Floras: Hustedt (1931-1959), p. 119, fig. 641. Witkowski *et al*. (2000), p. 29, pl. 11, figs. 3-9.
Synonym(s): *Denticula nana* Gregory, *Dimeregramma nanum* (Gregory) Ralfs
Locality: BAS

83. ***Diploneis bomboides*** (A. Schmidt) Cleve
Floras: Hustedt (1931-1959), p. 712, figs. 1089 a-c (as *Diploneis splendida* (Gregory) Cleve). Droop (1996), p. 405, figs. 2-3, 10-16. Moreno *et al*. (1996), p. 66, pl. 19, fig. 11 (*D. splendida* (Gregory) Cleve). Witkowski *et al*. (2000), p. 183, pl. 91, figs. 11-13.
Synonym(s): *Diploneis splendida* (Gregory) Cleve, *Navicula bomboides* A. Schmidt, *N. williamsonii* van Heurck
Locality: BMER

84. ***Diploneis crabro*** var. ***separabilis*** (A. Schmidt) Cleve
Floras: Cleve-Euler (1953, III), p. 86, fig. 660 c.
Locality: BMS

85. ***Diploneis decipiens*** var. ***parallela*** Cleve
Floras: Cleve-Euler (1953, III), p. 77, figs. 645 c-e. Witkowski *et al*. (2000), p. 185, pl. 88, figs. 9-10, pl. 94, fig. 8.
Locality: NAT

86. ***Diploneis eudoxia*** (A. Schmidt) E. Jorg.
Floras: Hustedt (1931-1959), p. 595, fig. 1013.
Locality: BAS

87. ***Diploneis incurvata*** (Gregory) Cleve
Floras: Hustedt (1931-1959), p. 593, figs. 1012 b-d. Witkowski *et al*. (2000), p. 187, pl. 86, figs. 5-6, pl. 87, fig. 4.
Synonym(s): *Navicula incurvata* Gregory
Locality: BMS

88. ***Diploneis interrupta*** (Kützing) Cleve
Floras: Hustedt (1931-1959), p. 602, fig. 1019 a. Witkowski *et al*. (2000), p. 188, pl. 94, figs. 17-19.
Basionym: *Navicula interrupta* Kützing
Synonym(s): *Navicula interrupta* Kützing, *Schizonema interruptum* (Cleve) Kuntze
Locality: BAS

89. ***Diploneis littoralis*** (Donkin) Cleve
Floras: Hendey (1964), p. 226, pl. 32, fig. 9. Foged (1984), p. 36, pl. 41 fig. 5.
Synonym(s): *Navicula littoralis* Donkin
Locality: BMER

90. ***Diploneis littoralis*** var. ***clathrata*** (Østrup) Cleve.
Floras: Hustedt (1931-1959), p. 666, figs. 1062 b, c. Witkowski *et al*. (2000), p. 188, pl. 89, figs. 5, 7-13.
Synonym(s): *Navicula clathrata* Ostr., *Diploneis littoralis* ver. *arctica* Cleve
Locality: BAS.

91. ***Diploneis papula*** var. ***constricta*** Hustedt
Floras: Hustedt (1931-1959), p. 680, fig. 1071 d. Witkowski *et al*. (2000), p. 191. Locality: BMS

92. ***Diploneis smithii*** var. ***pumila*** (Grunow) Hustedt
Floras: Hustedt (1931-1959), p. 650, figs. 1052 d, e. Foged (1984), p. 38, pl. 7, fig. 1.
Locality: BAS

93. ***Diploneis subadvena*** Hustedt
Floras: Hustedt (1931-1959), p. 634, fig. 1042.
Locality: BAS

94. ***Diploneis suborbicularis*** var. ***intermedia*** Cleve
Floras: Cleve-Euler (1953, III), p. 69, fig. 626 c.
Locality: BAS, BMEM

95. ***Diploneis vacillans*** (A. Schmidt) Cleve
Floras: Hustedt (1931-1959), p. 798, figs. 1060 a-d. Moreno *et al*. (1996), p. 66, pl. 19, fig. 12.
Locality: BAS, BMER, BMS

96. ***Diploneis weissflogii*** (A. Schmidt) Cleve
Floras: Hustedt (1931-1959), p. 703, fig. 1085. Navarro (1982), p. 35, pl. 22, fig. 11. Wah & Wee (1988), fig. 40. Moreno *et al*. (1996), p. 66, pl. 19, fig. 13. Witkowski *et al*. (2000), p. 197, pl. 92, figs. 4-5, pl. 12 fig. 13.
Locality: NAT

97. ***Donkinia thumii*** (Cleve) Peragallo
Floras: H. Peragallo & M. Peragallo (1891-1908), p. 30, pl. 9, fig. 10.
Locality: BAS.

98. ***Encyonema lunatum*** (W. Sm. in Grev.) van Heurck
Floras: Cleve-Euler (1955), p. 129, fig. 1184 c. Foged (1984), p. 32 (as *Cymbella gracilis* var. *lunata* W. Sm. in Grev.)
Synonym(s): *Cymbella gracilis* var. *lunata* W. Sm. in Grev., *C. lunata* W. Sm., *C. ventricosa* var. *lunata* W. Sm.
Locality: BAS

99. ***Encyonema silesiacum*** (Bleisch ex Rabenh.) D. G. Mann in Round, Crawford & Mann
Floras: Foged (1984), p. 34, pl. 12, fig. 9.
Synonym(s): *Cymbella minuta* var. *silesiaca* (Bleisch ex Rabenh.) C. W. Reimer, *C. ventricosa* C. Agardh
Locality: BMER

100. ***Encyonema subturgidum*** (Hustedt) D.G. Mann
Floras: Schmidt *et al*. (1874-1959), pl. 374, fig. 4 (as *Cymbella subturgida* Hustedt)
Basionym: *Cymbella subturgida* Hustedt
Synonym(s): *Cymbella subturgida* Hustedt
Locality: BMER

101. ***Entomoneis paludosa*** (W. Smith) Reimer
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 38, figs. 12-15.
Synonym(s): *Amphiprora paludosa* W. Smith
Locality: NAT

102. ***Entomoneis paludosa*** var. ***duplex*** (Donking) Czarnecki & Reinke
Floras: Cleve-Euler (1952), p. 31, fig. 1400 e.
Locality: BAS

103. ***Entomoneis punctulata*** (Grunow) Osada & Kobayashi
Floras: Witkowski *et al*. (2000), p. 199, Pl. 173, fig. 4-7.
Locality: BMS

104. ***Eucampia zodiacus*** Ehrenberg
Floras: Moreno *et al*. (1996), p. 70, pl. 20, fig. 7.
Synonym(s): *Eucampia britannica* W. Smith, *E. nodosa* A. Schmidt
Locality: BMS.

105. ***Fallacia amphipleuroides*** (Hustedt) D. G. Mann
Floras: Foged (1984), p. 59, pl. 50, fig. 15 (as *Navicula amphipleuroides* Hustedt). Navarro (1982), p. 42, pl. 27, fig. 2-3 (as *N. amphipleuroides* Hustedt). Witkowski *et al*. (2000), p. 200, pl. 71, figs. 43-44.
Basionym: *Navicula amphipleuroides* Hustedt
Synonym(s): *Navicula amphipleuroides* Hustedt
Locality: BMS

106. ***Fallacia clypeiformis*** (König) D. G. Mann
Floras: Witkowski *et al*. (2000), p. 202, pl. 70, figs. 46-47.
Locality: BMS

107. ***Fallacia dithmarsica*** (König) D. G. Mann
Floras: Witkowski *et al*. (2000), p. 204, pl. 71, figs. 21-22.
Basionym: *Navicula dithmarsica* König ex Hustedt
Synonym(s): *Navicula dithmarsica* König ex Hustedt
Locality: BMS

108. ***Fallacia fenestrella*** (Hustedt) D. G. Mann
Floras: Hustedt (1955), p. 30, pl. 5, fig. 32.
Basionym: *Navicula fenestrella* Hustedt
Synonym(s). *Navicula fenestrella* Hustedt
Locality: BAS

109. ***Fallacia florinae*** (Møller) Witkowski
Floras: Hustedt (1961-1966), p. 660, fig. 1660 (as *Navicula florinae* Moeller). Wit-

kowski *et al*. (2000), p. 204, pl. 71, figs. 45-49.
Locality: BAS, NAT, BMER, BMS

110. ***Fallacia lucens*** (Hustedt) D.G. Mann
Floras: Hustedt (1931-1959), p. 177, fig. 1311. Schmidt *et al*. (1874-1959), pl. 400, figs. 30-32.
Basionym: *Navicula lucens* Hustedt
Synonym(s): *Navicula lucens* Hustedt
Locality: COS

111. ***Fallacia oculiformis*** (Hustedt) D. G. Mann
Floras: Hustedt (1955), p. 22, pl. 8, figs. 6-7. Witkowski *et al*. (2000), p. 210, pl. 71, figs. 23-30.
Basionym: *Navicula oculiformis* Hustedt
Synonym(s): *Navicula oculiformis* Hustedt
Locality: BAS

112. ***Fallacia pseudoforcipata*** (Hustedt) D. G. Mann
Floras: Hustedt (1931-1959), p. 536, fig. 1572.
Basionym: *Navicula pseudoforcipata* Hustedt
Synonym(s): *Navicula pseudoforcipata* Hustedt
Locality: BAS.

113. ***Fallacia pygmaea*** (Kützing) Stickle & D. G. Mann
Floras: Moreno *et al*. (1996), p. 72, pl. 21, fig. 5. Witkowski *et al*. (2000), p. 211, pl. 72, figs. 28-30.
Basionym: *Navicula pygmaea* Kützing
Synonym(s): *Navicula pygmaea* Kützing, *Schizonema pygmaeum* (Kützing) Kuntze, *Lyrella pygmaea* (Kützing) Makarova & Karajeva
Locality: BMS

114. ***Fragilaria famelica*** (Kützing) Lange-Bertalot
Floras: Witkowski *et al*. (2000), p. 49, pl. 28, figs. 28-34.
Basionym: *Synedra famelica* Kützing
Synonym(s): *Nitzschia famelica* (Kützing) Rabenhorst, *N. palea* f. *famelica* (Kützing) Rabenhorst , *N. palea* var. *famelica* (Kützing) M. Peragallo *Synedra famelica* Kützing, *S. minuscula* Grunow
Locality: COS

115. ***Fragilaria tenera*** (W. Smith) Lange-Bertalot
Floras: Patrick & Reimer (1966), p. 137, pl. 5, fig. 5 (as *Synedra tenera* W. Smith var. *tenera*).
Synonym(s): *Synedra tenera* W. Smith
Locality: BAS

116. ***Fragilaria vaucheriae*** var. ***fallax*** Grunow
Floras: Cleve-Euler (1953, II), p. 42, figs. 353 s-x.
Locality: COS

117. ***Fragilariopsis doliolus*** (Wallich) Medlin & Sims
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 306, pl. 82, fig. 27. Witkowski *et al*. (2000), p. 360, pl. 213, figs. 38-39.
Basionym: *Synedra doliolus* Wallich
Synonym(s): *Synedra doliolus* Wallich, *Pseudo-eunotia doliolus* (Wallich) Grunow
Locality: BAS

118. ***Gomphonema clevei*** var. ***javanica*** Hustedt
Floras: Simonsen (1987), p. 237, pl. 345, figs. 1-5.
Locality: COS

119. ***Gomphonema lanceolatum*** Ehrenberg
Floras: Cleve-Euler (1955), p. 184, figs. 1280 a-e.
Locality: COS.

120. ***Gomphonema parvulum*** (Kützing) Kützing
Floras: Moreno *et al*. (1996), p. 76, pl. 21, fig. 13.
Locality: COS

121. ***Grammatophora oceanica*** (Ehrenberg) Grunow
Floras: Moreno *et al*. (1996), p. 77, pl. 21, fig. 17. Witkowski *et al*. (2000), p. 59, pl. 15, fig. 13-14, pl. 16, fig. 12, pl. 17, figs. 3-4.
Locality: NAT

122. ***Grunoviella parva*** (Grunow) Peragallo
Floras: H. Peragallo & M. Peragallo (1897-1908) p. 327, pl. 83, fig. 5.
Locality: COS

123. ***Gyrosigma acuminatum*** var. ***lacustre*** Meister
Floras: Cleve-Euler (1952), p. 15, figs. 1346 a, b.
Locality: BAS

124. ***Gyrosigma distortum*** var. ***marinum*** Cleve
Floras: Cleve-Euler (1952), p. 12, fig. 1338 a.
Locality: BAS

125. ***Gyrosigma simile*** (Grunow) Boyer
Floras: Foged (1984), p. 46, pl. 40, fig. 4. Wah & Wee (1988), fig. 46.
Locality: BMS.

126. ***Gyrosigma spenceri*** (J.W. Bailey ex Quekett) Griffith & Henfrey
Floras: Hustedt (1930) p. 225, fig. 336. Foged (1984), p. 46.
Basionym: *Navicula spencerii* J.W. Bailey ex Quekett
Synonym(s): *Gyrosigma kuetzingii* (Grunov) Cleve, *G. spenceri* (W. Smith) Griffith & Henfrey, *Navicula spencerii* J.W. Bailey ex Quekett, *P. kuetzingii* Grunow, *Pleuorsigma spencerii* W. Smith, *P. spencerii* (Bailey ex Quekett) W. Smith, *P. spenceri* var. *kuetzingii* (Grunow) Grunow, *Scalptrum spenceri* (Quekett) Kuntze.
Locality: COS

127. ***Gyrosigma variistriatum*** Hagelstein
Floras: Navarro (1982), p. 37, pl. 23, fig. 7, pl. 24, figs. 1-5.
Locality: COS

128. ***Gyrosigma wansbeckii*** (Donkin) Cleve
Floras: Hendey (1964), p. 248, pl. 35, fig. 5.
Basionym: *Pleurosigma wansbeckii* Donkin
Synonym(s): *Pleurosigma wansbeckii* Donkin, *P. balticum* var. *wansbeckii* (Donkin) van Heurck
Locality: BAS, BMS

129. ***Huttoniella reichardtii*** (Grunow) Hustedt
Floras: Hustedt (1930), p. 863, fig. 514. Hustedt (1955), p. 9, pl. 4, figs.23-24. Foged (1984), p. 47, pl. 25, fig. 6. Witkowski *et al*. (2000), p. 33, pl. 3, figs. 10-11.

Basionym: *Cerataulus reichardtii* Grunow
Locality: BMER

130. ***Licmophora flabellata*** Agardh
Floras: Navarro (1982), p. 22, pl. 12, fig. 3. Witkowski *et al*. (2000), p. 478, figs. 2 c-f.
Basionym: *Exilaria flabellata* Greville
Locality: BAS

131. ***Licmophora gracilis*** (Ehrenberg) Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 346, pl. 84, fig. 10.
Basionym: *Podosphenia gracilis* Ehrenberg
Locality: BMS

132. ***Licmophora gracilis*** var. ***anglica*** (Kützing) H. Peragallo & M. Peragallo
Floras: Hustedt (1931-1959), p. 60, fig. 583. Witkowski *et al*. (2000), p. 65, pl. 20, figs. 11-13.
Basionym: *Rhipidophora anglica* Kützing
Synonym(s): *Rhipidophora anglica* Kützing, *Podosphenia anglica* (Kützing) Rabenhorst, *Licmophora anglica* (Kützing) Grunow
Locality: BAS

133. ***Lyrella hennedyi*** var. ***nebulosa*** (Gregory) Stickle & D.G. Mann
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 139, pl. 25, figs. 2, 3.
Basionym: *Navicula hennedyi* W. Smith
Locality: COS

134. ***Lyrella impercepta*** (Hustedt) Moreno
Floras: Hustedt (1961-1966), p. 471, fig. 1530. Moreno *et al*. (1996), p. 86, pl. 23, fig. 10. Witkowski *et al*. (2000), p. 233, pl. 99, figs. 2-3.
Locality: BMS

135. ***Lyrella praetexta*** (Ehrenberg) D. G. Mann
Floras: Navarro (1982), p. 47, pl. 30, figs. 6-7 (as *Navicula praetexta* Ehrenberg).
Basionym: *Navicula praetexta* Ehrenberg
Synonym(s): *Navicula praetexta* Ehrenberg
Locality: BMS

136. ***Martyana atomus*** (Hustedt) Snoeijs
Floras: Simonsen (1987) p. 129, pl. 211, figs. 19-24. Sullivan (1981), p. 390. Witkowski *et al*. (2000), p. 47, pl. 24, figs. 32-39.
Basionym: *Fragilaria atomus* Hustedt
Synonym(s): *Fragilaria atomus* Hustedt
Locality: COS

137. ***Martyana martyi*** (Héribaud) Round
Floras: Hustedt (1931-1959), p. 135, fig. 654 (as *Opephora martyi* Héribaud). Krammer & Lange-Bertalot (1991) p. 160, pl. 133, figs. 29-31 (as *O. martyi* Héribaud).
Basionym: *Opephora martyi* Héribaud
Synonym(s): *Opephora martyi* Héribaud, *Fragilaria mutabilis* var. *intercedens* f. *martyi* (J. Héribaud) A. Cleve-Euler, *F. mutabilis* f. *martyi* (Héribaud) Cleve-Euler, *F. mutabilis* var. *intercedens* (Héribaud) Cleve-Euler, *F. leptostauron* var. *martyi* (Héribaud) Lange-Bertalot, *F. martyi* (Héribaud) Lange-Bertalot, *Staurosirella martyi* (Héribaud) E.A. Morales & K.M. Manoylov
Locality: BAS

138. ***Mastogloia acutiuscula*** Grunow
Floras: Foged (1984), p. 49, pl. 37, fig. 19. Moreno *et al*. (1996), p. 88, pl. 24, fig. 2.
Locality: NAT

139. ***Mastogloia acutiuscula*** var. ***elliptica*** (Grunow) Hustedt
Floras: Hustedt (1931-1959), p. 516, figs. 947 c-d. Navarro (1982), p. 37, pl. 25, figs. 1-2. Witkowski *et al*. (2000), p. 236, pl. 78, figs. 11-12, pl. 81, figs. 23-24.
Locality: BAS, NAT

140. ***Mastogloia tenuis*** Hustedt
Floras: Hustedt (1930-66), p. 570, fig. 1004. Foged (1975), p. 34, pl. 16, fig. 11.
Locality: BMS

141. ***Mastogloia exigua*** Lewis
Floras: Hustedt (1931-1959) p. 569, fig. 1003. Navarro (1982), p. 39, pl. 26, fig. 1-2. Foged (1984), p. 53, pl. 37, fig. 12-13. Witkowski *et al*. (2000), p. 246, pl. 83, fig. 7-10.
Locality: BAS, BMS.

142. ***Mastogloia gieskesii*** Cholnoky
Floras: Witkowski *et al*. (2000), p. 248, pl. 74, figs. 9-10.
Locality: BMS

143. ***Mastogloia lanceolata*** Thwaites
Floras: Hustedt (1931-1959), p. 497, fig. 922. Reyes-Vásquez (1975) pl. 4, fig. 4. Witkowski *et al*. (2000), p. 251, pl. 73, figs. 6-9.
Locality: COS

144. ***Mastogloia mediterranea*** Hustedt
Floras: Hustedt (1931-1959), p. 570, fig. 1005.
Locality: BAS

145. ***Mastogloia obliqua*** Hagelstein
Floras: Witkowski *et al*. (2000), p. 254, pl. 74, figs. 11-12.
Locality: BMS

146. ***Mastogloia pumila*** (Cleve & Möller) Cleve
Floras: Hustedt (1931-1959), 553, fig. 983. Foged (1984), p. 55, pl. 3, fig. 12. Witkowski *et al*. (2000), p. 258, pl. 73, figs.11, 17, pl. 18, figs. 5-6.
Basionym: *Mastogloia braunii* var. *pumila* Cleve-Euler
Synonym(s): *Mastogloia braunii* var. *pumila* Grunow, *M. braunii* var. *pumila* Cleve-Euler
Locality: NAT

147. ***Melosira lyrata*** Ehrenberg
Floras: Schmidt *et al*. (1874-1959), pl. 181, fig. 69-71.
Locality: BMS

148. ***Melosira nummuloides*** Agardh
Floras: Hendey (1964), p. 72, pl. 1, fig. 1. Wah & Wee (1988), fig. 51. Witkowski *et al*. (2000), p. 35, pl. 1, figs. 3-5, 11-12.
Locality: BAS, NAT, BMEM

149. ***Meridion circulare*** (Greville) Agardh
Floras: Cleve-Euler (1953, II), p. 14, figs. 312 a-r.
Basionym: *Echinella circularis* Greville

Synonym(s): *Echinella circularis* Greville, *Exilaria circularia* (Greville) Greville, *Exilaria circularis* (Greville) C. Agardh
Locality: BMS

150. ***Navicula ammophila*** var. ***intermedia*** Grunow
Floras: Cleve-Euler (1953, III), p. 131, fig. 757.
Locality: BAS

151. ***Navicula auriculata*** Hustedt
Floras: Simonsen (1987), p. 314, Pl. 472, fig. 10-12.
Locality: BMER

152. ***Navicula cincta*** (Ehrenberg) Ralfs
Floras: Cleve-Euler (1953, III), p. 152, figs. 809 d-f.
Basionym: *Pinnularia cincta* Ehrenberg
Synonym(s): *Navicula cincta* var. *heufleri* Grunow, *N. inutilis* Krasske, *N. umida* Bock, *N. cari* var. *cincta* (Ehrenberg) Lange-Bertalot, *Schizonema cinctum* (Ehrenberg) Kuntze.
Locality: BAS.

153. ***Navicula cryptocephala*** Kützing
Floras: Cleve-Euler (1953, III), p. 154, figs. 813 c-e, k.
Synonym(s): *Schizonema cryptocephalum* (Kützing) Kuntze, *Navicula cryptocephala* f. *terrestris* Lund, *N. cryptocefalsa* Lange-Bertalot
Locality: COS

154. ***Navicula digitoradiata*** (Gregory) Ralfs
Floras: Hustedt (1930), p. 301, fig. 518. Witkowski *et al*. (2000), p. 274, pl. 114, figs. 1-6.
Basionym: *Pinnularia digitoradiata* Gregory
Locality: COS

155. ***Navicula diserta*** Hustedt
Floras: Simonsen (1987), pl. 379, figs. 28-32.
Locality: BAS

156. ***Navicula eidrigiana*** Carter
Floras: Witkowski *et al*. (2000), p. 276, pl. 121, figs. 1-6, pl. 133, figs. 3-4.
Locality: BMS

157. ***Navicula galea*** Brun
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 89, pl. 13, fig. 27.
Locality: COS

158. ***Navicula gastrum*** (Ehrenberg) Kützing
Floras: Schmidt *et al*. (1874-1959), pl. 272, figs. 10-19. Moreno *et al*. (1996), p. 95, pl. 25, figs. 12 a, b.
Basionym: *Pinnularia gastrum* Ehrenberg
Locality: BMEM

159. ***Navicula gelida*** Grunow
Floras: Cleve-Euler (1953, III), p. 128, fig. 748. Witkowski *et al*. (2000), p. 279, pl. 128, figs. 12-13.
Locality: BMS

160. ***Navicula grevilloides*** Hustedt
Floras: Hustedt (1930-66), p. 191, pl. 30, fig. 1. Foged (1975), p. 39.

Locality: NAT

161. ***Navicula tripuncta*** (O. F. Müller) Bory
Floras: Cleve-Euler (1953, III), p. 130, figs. 756 a-d.
Basionym: *Vibrio tripunctatus* O.F. Müller
Synonym(s): *Vibrio tripunctatus* O.F. Müller, *Navicula gracilis* Ehrenberg
Locality: BAS

162. ***Navicula gregaria*** var. ***thruholmensis*** (J. Dannf.) Cleve
Floras: Cleve-Euler (1953, III), p. 130, fig. 755 d.
Locality: BAS.

163. ***Navicula grimmei*** Krasske
Floras: Hustedt (1930-66), p. 769, figs. 1742 a, b. Foged (1984), p. 65, pl. 9, fig. 10. Moreno *et al*. (1996), p. 95, pl. 25, fig. 14.
Locality: BMER

164. ***Navicula halophilioides*** Hustedt
Floras: Hustedt (1931-1959), p. 68, fig. 1213.
Locality: BAS

165. ***Navicula trivialis*** Lange-Bertalot
Floras: Cleve-Euler (1953, III), p. 134, fig. 772 a. Moreno *et al*. (1996), p. 96, pl. 25, figs. 16-17. (as *Navicula lanceolata* (Agardh) Kützing).
Synonym(s): *Navicula lanceolata* (C. Agardh) Kützing
Locality: BAS

166. ***Navicula libellus*** Gregory
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 64, pl. 5, figs. 16-17.
Locality: COS

167. ***Navicula mayeri*** Cleve
Floras: Cleve-Euler (1953, III), p. 153, fig. 812 a.
Locality: BAS

168. ***Navicula menisculus*** var. ***upsaliensis*** Grunow
Floras: Krammer & Lange-Bertalot, (1986), p 105, pl. 32, figs. 16-17.
Locality: BAS

169. ***Navicula pavillardii*** Hustedt
Floras: Hustedt (1939), p. 635, figs. 86-90. Witkowski *et al*. (2000), p. 295, pl. 116, figs. 5-6, pl. 130, fig. 18, pl. 131, fig. 2-6.
Locality: BMER, BMS

170. ***Navicula radiosa*** Kützing
Floras: Krammer & Lange-Bertalot, (1986), p 99, pl. 29, figs. 1-4.
Synonym(s): *Navicula gracilis* var. *radiosa* (Kützing) Rabenhorst, *Schizonema radiosum* (Kützing) Kuntze
Locality: BAS

171. ***Navicula rhombica*** Gregory
Floras: Hendey, (1974), pl. 54, figs. 277-300.
Locality: COS, NAT.

172. ***Navicula salinarum*** Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 99, pl. 12, fig. 33. Navarro (1982), p. 47, pl. 31, fig. 6. Witkowski *et al*. (2000), p. 304, pl. 123.

Synonym(s): *Schizonema salinarum* (Grunow) Kuntze
Locality: BAS, BMEM, BMER, BMS

173. ***Navicula salinicola*** Hustedt
Floras: Hustedt (1939), p. 638, figs. 61-69. Witkowski *et al*. (2000), p. 304, pl. 125, figs. 1-8,? 9-11, pl. 133, figs. 15-16.
Synonym(s): *Navicula incerta* Grunow in van Heurck, *N. incertata* Lange-Bertalot
Locality: BMS

174. ***Navicula schoenfeldii*** Hustedt
Floras: Hustedt (1930), p. 300, fig. 520.
Locality: BAS

175. ***Navicula sparsistriata*** Hustedt
Floras: Hustedt (1931-1959), p. 547, fig. 1585.
Locality: BAS

176. ***Navicula stundlii*** Hustedt
Floras: Simonsen (1987), pl. 687, figs. 5-11.
Locality: BAS

177. ***Navicula subinflatoides*** Hustedt
Floras: Hustedt (1961-1966), p. 294, fig. 1416. Moreno *et al*. (1996), p. 98, pl. 26, fig. 3.
Locality: BMS

178. ***Navicula veneta*** Kützing
Floras: Moreno *et al*. (1996), p. 99, pl. 26, fig. 5. Witkowski *et al*. (2000), p. 315, pl. 125, figs. 40-46.
Synonym(s): *Navicula lancettula* Schumann, *N. cryptocephala* var. *lancettula* (Schumann) Grunow, *N. cryptocephala* f. *veneta* (Kützing) Hustedt
Locality: NAT

179. ***Navicula vimineoides*** Giffen
Floras: Witkowski *et al*. (2000), p. 315, pl. 136, figs. 37-33, pl. 141, figs. 13-15.
Locality: BMS

180. ***Nitzschia acicularis*** (Kützing) W. Smith
Floras: Cleve-Euler (1953, III), p. 92, figs. 1509 a-c.
Basionym: *Synedra acicularis* Kützing
Synonym(s): *Synedra acicularis* Kützing, *Nitzschiella acicularis* (Kützing) Rabenhorst, *Homoeocladia acicularis* (Kützing) Kuntze
Locality: BAS

181. ***Nitzschia hybrida*** Grunow
Floras: Schmidt *et al*. (1874-1959), pl. 346, figs. 24-26.
Locality: BMS.

182. ***Nitzschia angularis*** W. Smith
Floras: Hendey (1964), p. 281, pl. 39, fig. 6. Moreno *et al*. (1996), p. 100, pl. 26, fig. 8. Witkowski *et al*. (2000), pl. 199, figs. 5-6.
Locality: BMEM, BMER, BMS

183. ***Nitzschia brittonii*** Halgestein
Floras: Navarro (1982), p. 52, pl. 34, fig. 7.
Locality: BMEM, BMER

184. ***Nitzschia circumsuta*** (J. W. Bailey) Grunow
Floras: Cleve-Euler (1952), p. 62, fig. 1440.
Basionym: *Surirella circumsuta* J.W. Bailey
Locality: BAS

185. ***Nitzschia closterium*** (Ehrenberg) W. Smith
Floras: Hustedt (1955), p. 48, pl. 16, figs. 16-18. Witkowski *et al*. (2000), p. 374, pl. 212, figs. 4-6.
Basionym: *Ceratoneis closterium* Ehrenberg
Synonym(s): *Ceratoneis closterium* Ehrenberg, *Nitzschiella closterium* (Ehrenberg) Rabenhorst, *N. longissima* var. *closterium* (Ehrenberg) Peragallo & Peragallo, *Nitzschia longissima* var. *closterium* (Ehrenberg) van Heurck, *N. curvirostris* var. *closterium* (Ehrenberg) De Toni, *Homoeocladia closterium* (Ehrenberg) Kuntze, *Cylindrotheca closterium* (Ehrenberg) Reimann & Lewin
Locality: BAS, BMS

186. ***Nitzschia dissipata*** (Kützing) Grunow
Floras: Cleve-Euler (1952), p. 71, figs. 1463 a-d. Moreno *et al*. (1996), p. 101, pl. 26, fig. 13.
Basionym: *Synedra dissipata* Kützing
Synonym(s): *Synedra dissipata* Kützing, *Nitzschia dissipata* (Kützing) Rabenhorst, *N. palea* f. *dissipata* (Kützing) Rabenhorst, *Homoeocladia dissipata* (Kützing) Kuntze, *N. palea* var. *dissipata* (Kützing) Schonfeldt
Locality: BAS

187. ***Nitzschia fasciculata*** Grunow
Floras: Schmidt *et al*. (1874-1959), pl. 332, figs. 11-13.
Locality: BMER

188. ***Nitzschia filiformis*** (W. Smith) van Heurck
Floras: Cleve-Euler (1952), p. 78, figs. 1478 a, b.
Synonym(s): *Homeocladia filiformis* W. Smith.
Locality: BAS

189. ***Nitzschia fonticola*** (Grunow) Grunow
Floras: Krammer & Lange-Bertalot, (1986), p 103, pl. 75, figs. 1-22, ?23.
Basionym: *Nitzschia palea* var. *fonticola* Grunow
Synonym(s): *Nitzschia palea* var. *fonticola* Grunow, *N. kützingiana* var. *fonticola* Grunow
Locality: COS

190. ***Nitzschia fonticola*** var. ***pelagica*** Hustedt
Floras: Schmidt *et al*. (1874-1959), pl. 349, figs. 15-16.
Locality: BMS

191. ***Nitzschia frustulum*** (Kützing) Grunow
Floras: Navarro (1982), p. 53, pl. 34, figs. 11-12. Moreno *et al*. (1996), p. 101, pl. 26, fig. 14. Witkowski *et al*. (2000), p. 382, pl. 209, figs. 13-17.
Locality: BAS, NAT, BMER, BMS

192. ***Nitzschia fusoides*** Ehrlich
Floras: Ehrlich (1975), p. 275, pl. 3, figs. 17-20.
Locality: NAT

193. ***Nitzschia gandersheimiensis*** Krasske
Floras: Moreno et al. (1996), p. 102, pl. 26, figs. 15-16.
Locality: BMER

194. ***Nitzschia gracilis*** Hantzsch
Floras: Cleve-Euler (1952), p. 85, fig. 1493 a.
Synonym(s): *Homoeocladia gracilis* (Hantzsch) Kuntze
Locality: BMER, BMS

195. ***Nitzschia habirshawii*** Febiger
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 290, pl. 74, fig. 5.
Synonym(s): *Nitzschia sigma* var. *habirshawii* (Febiger ex Cleve) Grunow
Locality: COS

196. ***Nitzschia hybridaeformis*** Hustedt
Floras: Wah & Wee (1988), fig. 68.
Locality: BMER

197. ***Nitzschia insignis*** Gregory
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 295, pl. 75, fig. 5. Witkowski *et al.* (2000), p. 387, pl. 202, fig. 5, pl. 204, figs. 1-7.
Locality: BAS, BMS

198. ***Nitzschia insignis*** var. ***adriatica*** (Gregory) Grunow
Floras: Hustedt (1955) p. 45, pl. 15, figs. 18-20. Foged (1984), p. 76, pl. 59, figs. 3-4.
Locality: BMS

199. ***Nitzschia insignis*** var. ***spathulifera*** Grunow
Floras: Cleve-Euler (1952), p. 68, fig. 1454 a. H. Peragallo & M. Peragallo (1897-1908), p. 297, pl. 75, figs. 7-9.
Locality: BAS

200. ***Nitzschia laevis*** Hustedt
Floras: Hustedt (1939), p. 662, figs. 116-118. Witkowski *et al*. (2000), p. 387, pl. 189, figs. 13-15, pl. 190, figs. 1-6.
Locality: NAT

201. ***Nitzschia lanceolata*** W. Smith
Floras: Navarro (1982), p. 53, pl. 35, figs. 1-2. Foged (1984), p. 77, pl. 57, figs. 5-7.
Locality: BMS, BAS, BMEM, BMER

202. ***Nitzschia linearis*** var. ***subtilis*** (Grunow) Hustedt
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 73, fig. 15.
Synonym(s): *Nitzschia subtilis* (Kützing) Grunow, *Synedra subtilis* Kützing, *S. tenuis* var. *subtilis* (Kützing) Brun, *Bacillaria subtilis* (Kützing) Elmore
Locality: BMEM

203. ***Nitzschia longissima*** (Brébisson) Ralfs
Floras: 54. Witkowski *et al*. (2000), p. 391, pl. 207, figs. 6-7.
Locality: NAT, BMS

204. ***Nitzschia lorenziana*** Grunow
Floras: Navarro (1982), p. 54, pl. 35, fig. 4. Witkowski *et al*. (2000), p. 392, pl. 210, figs. 24-25, pl. 211, fig. 3, pl. 212, figs. 1-3.
Locality: BMS

205. ***Nitzschia macilenta*** Gregory
Floras: Cleve-Euler (1952), p. 73, fig. 1465. Witkowski *et al*. (2000), p. 392, pl. 203, figs. 11-14, pl. 207, figs. 1-5.
Locality: BAS

206. ***Nitzschia microcephala*** Grunow
Floras: Cleve-Euler (1952), p. 88, figs. 1499 a, b.
Locality: BMS

207. ***Nitzschia obtusa*** var. ***brevissima*** (Grunow) van Heurck
Floras: Wah & Wee (1988), fig. 69.
Locality: BMEM

208. ***Nitzschia obtusa*** f. ***parva*** Hustedt
Floras: Navarro (1982), p. 55, pl. 35, figs. 8-10.
Locality: BMER.

209. ***Nitzschia ovalis*** Arnott
Floras: Krammer & Lange-Bertalot (1988), p. 110, pl. 79, figs. 7-11. Moreno *et al*. (1996), p. 103, pl. 26, fig. 24. Witkowski *et al*. (2000), p. 397, pl. 207, figs. 18-19.
Locality: BAS, BMER

210. ***Nitzschia panduriformis*** Gregory var. ***continua*** Grunow
Floras: Krammer & Lange-Bertalot (1988), pl. 38, figs. 6-7.
Synonym(s): *Psammodictyon panduriforme* (Grunow) Snoeijs var. *continua.*
Locality: BMS

211. ***Nitzschia rhopalodioides*** Hustedt
Floras: Hustedt (1955), p. 45, pl. 15, fig. 16. Witkowski *et al*. (2000), p. 402, pl. 179, fig. 7.
Locality: BAS

212. ***Nitzschia salinarum*** Grunow
Floras: Cleve-Euler (1952), p. 81, fig. 1483 f.
Locality: COS

213. ***Nitzschia sigma*** var. ***diminuta*** (Peragallo & Peragallo) Grunow
Floras: Cleve-Euler (1952), p. 75, fig. 1470 i.
Basionym: *Nitzschia rigida* var. *rigidula* Peragallo & Peragallo
Locality: BMS

214. ***Nitzschia sigma*** var. ***rigidula*** Grunow
Floras: Cleve-Euler (1952), p. 75, fig. 147.
Locality: BAS

215. ***Nitzschia socialis*** var. ***massiliensis*** Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 280, pl. 72, fig. 10.
Locality: BAS

216. ***Nitzschia spathulata*** W. Smith
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 284, pl. 73, fig. 4. Hendey (1964), p. 281. Moreno *et al*. (1996), p. 105, pl. 27, fig. 7. Witkowski *et al*. (2000), p. 405.
Locality: BMS

217. ***Nitzschia tryblionella*** var. ***suborbicularis*** Cleve
Floras: Cleve-Euler (1952), p. 58, fig. 1430 h.
Locality: BAS

218. ***Nitzschia vitrea*** Norman
Floras: Foged (1984), p. 81, pl. 15, fig. 2.
Synonym(s): *Homoeocladia vitrea* (Norman) Kuntze, *Nitzschia linearis* var. *vitrea* (Norman) Hustedt
Locality: COS, BMER, BMS

219. ***Nitzschia vitrea*** var. ***salinarum*** Grunow
Floras: Krammer & Lange-Bertalot (1988), p. 72, pl. 56, figs. 1-2. Witkowski *et al*. (2000), p. 409, pl. 193, figs. 6-8, pl. 194, fig. 8.
Locality: BMS

220. ***Nitzschia vitrea*** var. ***subvitrea*** (Hustedt) Wood
Floras: Foged (1984), p. 81, pl. 16, fig. 8.
Synonym(s): *Nitzschia subvitrea* Hustedt
Locality: BMER

221. ***Nitzschia vivax*** W. Smith
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 277, pl. 21, figs. 2-7.
Locality: COS

222. ***Odontella regia*** (Schultze) Simonsen
Floras: Moreno *et al*. (1996), p. 107, pl. 27, figs. 13-14. Bérard-Therriault *et al*., Poulin & Bossé (1999), pl. 128, fig. 387.
Basionym: *Denticella regia* Schultze
Synonym(s): *Denticella regia* Schultze, *Biddulphia regia* (Schultze) Ostenfeld
Locality: NAT

223. ***Odontinium marinum*** Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 342, pl. 82, fig. 34.
Basionym: *Meridion marinum* Gregory
Locality: BMEM, BMER, BMS

224. ***Oestrupia ergadensis*** (Gregory) Witkowski
Floras: Hendey (1964), p. 216, pl. 29, figs. 14-15 (as *Navicula ergadensis* (Gregory) Ralfs). Foged (1984), p. 64, pl. 48, fig. 3 (as *N. ergadensis* (Gregory) Ralfs). Witkowski *et al*. (2000), p. 318, pl. 109, fig.?18, pl. 153, fig. 4.
Locality: BMEM, BMER

225. ***Opephora krumbeinii*** Witkowski, Witak & Stachura
Floras: Lange-Bertalot & Genkal (1999), p. 80, pl. 3, figs. 1-17, pl. 4, figs. 1-3. Witkowski *et al*. (2000), p. 71, pl. 27, fig. 13.
Locality: BMS

226. ***Opephora marina*** (Gregory) Petit
Floras: Hustedt (1931-1959), p. 136, fig. 656. Foged (1984), p. 82, pl. 28, figs. 8, 10. Moreno *et al*. (1996), p. 108, pl. 27, fig. 16. Witkowski *et al*. (2000), p. 71, pl. 2, fig. 43.
Locality: BMER

227. ***Paralia sulcata*** var. ***crenulata*** Grunow
Floras: Cleve-Euler (1953-1968), p. 35.
Locality: BMEM, BMS

228. ***Parlibellus grevilleoides*** (Hustedt) Cox
Floras: Hustedt (1961-1966), p. 305, fig. 1424. Moreno *et al*. (1996), p. 95, pl. 25, fig. 13 (as *Navicula grevilleoides* Hustedt). Witkowski *et al*. (2000), p. 322, pl. 103, figs. 1-2.
Basionym: *Navicula grevilleoides* Hustedt

Locality: NAT

229. ***Perissonoë cruciata*** (Janisch & Ehrenberg) Andrews & Stoelzel
Floras: Andrews & Stoelzel (1984), p. 226, pl. 1, figs. 1-8.
Basionym: *Amphitetras cruciata* C. Janisch & C.G. Ehrenberg
Locality: BAS

230. ***Pinnularia microstauron*** (Ehrenberg) Cleve
Floras: Cleve-Euler (1953, III), p. 130, figs. 754 a-d.
Basionym: *Stauroptera microstauron* Ehrenberg
Synonym(s): *Navicula bicapitata* var. *hybrida* Grunow, *N. microstauron* (Ehrenberg) Héribaud, *N. microstauron* (Ehrenberg) O'Meara, *N. parva* (Ehrenberg) Ralfs, *N. stauroptera* f. *parva* (Ehrenberg; Grunow) Cleve, *N. subcapitata* var. *hybrida* (Grunow) Frenguelli, *Pinnularia brebissonii* (Kützing) Rabenhorst, *P. brebissonii* var. *hybrida* (Grunow) Cleve-Euler, *P. brebissonii* var. *subproducta* van Heurck, *P. gibba* var. *parva* (Ehrenberg) Hustedt, *P. parva* (Ehrenberg) Gregory, *P. parva* (Ehrenberg) Schaarschmidt, *P. subcapitata* var. *hybrida* (A. Grunow) J. Frenguelli, *Schizonema microstauron* (Ehrenberg) Kuntze, *Stauroneis microstauron* (C.G. Ehrenberg) Kützing, *Stauroptera microstauron* Ehrenberg, *S. parva* Ehrenberg
Locality: BAS, NAT, BMER, BMS

231. ***Pinnularia molaris*** (Grunow) Cleve
Floras: Cleve-Euler (1953-1968), p. 18, fig. 1005.
Locality: COS

232. ***Plagiogramma laeve*** (Gregory) Ralfs
Floras: Hustedt (1959), p. 112, fig. 637.
Locality: BAS

233. ***Plagiogramma pulchellum*** Greville
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 338, pl. 82, figs. 1-2. Moreno *et al*. (1996), p. 110, pl. 28, fig. 8.
Locality: NAT, BAS

234. ***Plagiotropis vitrea*** (W. Smith) Cleve
Floras: Cleve-Euler (1953-1968), p. 28, figs. 1388 a, b. Moreno *et al*. (1996), p. 111, pl. 28, fig. 1.
Locality: BAS, BMER

235. ***Plagiotropis vitrea*** var. ***scaligera*** (Grunow) H. Peregallo
Floras: Cleve-Euler (1953-1968), p. 28, fig. 1388 c.
Locality: BAS

236. ***Planktoniella blanda*** (A. Schmidt) Syvertsen & Hasle
Floras: Desikachary (1989), pl. 6, fig. 9.
Synonym(s): *Coscinodiscus blandus* A. Schmidt, *C. latimarginatus* Guo, *Thalassiosira blanda* Desikachary & Gowthaman, *T. bipartita* (Rattray) G. M. Hallegraeff
Locality: NAT

237. ***Planktoniella muriformis*** (Loeblich) Wight & Darley
Floras: Round (1990), p. 134, fig. b.
Locality: NAT

238. ***Planothidium ellipticum*** (Cleve) M. B. Edlund
Floras: Edlund *et al*. (2001):88.
Basionym: *Achnanthes lanceolata* var. *elliptica* Cleve

Synonym(s): *Achnanthes lanceolata* var. *elliptica* Cleve, *Planothidium ellipticum* (Cleve) Round & L. Bukhtiyarova
Locality: BMS

239. ***Planothidium delicatulum*** (Kützing) Round & L. Bukhtiyarova
Basionym: *Achnanthidium delicatulum* Kützing
Synonym(s): *Achnanthidium delicatulum* Kützing, *Falcatella delicatula* (Kützing) Rabenhorst, *Achnanthes delicatula* (Kützing) Grunow, *Microneis delicatula* (Kützing) Cleve, *Achnantheiopsis delicatula* (Kützing) Lange-Bertalot

240. ***Pleurosigma aestuarii*** var. ***candida*** (Schumann) H. Peragallo
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 164, pl. 33, fig. 10.
Locality: NAT

241. ***Pleurosigma carinatum*** Donkin
Floras: Foged (1984), p. 48. pl. 40, figs. 1-2, pl. 41, fig. 1.
Synonym(s): *Donkinia carinata* Ralfs
Locality: BMS

242. ***Pleurosigma cuspidatum*** Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 165, pl. 33, fig. 8.
Locality: BAS

243. ***Pleurosigma formosum*** W. Smith
Floras: Wah & Wee (1988), fig. 80. Moreno *et al*. (1996), p. 113, pl. 28, fig. 18.
Synonym(s): *Pleurosigma australicum* Witt, *P. tahitense* Witt
Locality: BAS, BMER

244. ***Pleurosigma intermedium*** W. Smith
Floras: Navarro (1982), p. 48, pl. 32, fig. 1.
Synonym(s): *Pleurosigma nubecula* W. Smith, *P. nubecula* var. *intermedium* (W. Smith) Cleve, *P. intermedium* var. *nubecula* (W. Smith) Grunow ex van Heurck
Locality: NAT, BAS

245. ***Pleurosigma naviculaceum*** Brébisson
Floras: Hustedt (1955), p. 35, pl. 11, fig. 6. Foged (1984), p. 87, pl. 38, fig. 3.
Synonym(s): *Pleurosigma transversale* W. Smith, *P. japonicum* Castracane
Locality: NAT, BAS

246. ***Pleurosigma rigidum*** var. ***genuinum*** Cleve
Floras: Cleve-Euler (1953-1968), p. 21, fig. 1363.
Locality: BMS

247. ***Pleurosigma strigosum*** W. Smith
Floras: Cleve-Euler (1953-1968), p. 22, fig. 1369 a. H. Peragallo & M. Peragallo (1897-1908), p. 163, pl. 32, fig. 22.
Synonym(s): *Pleurosigma angulatum* var. *strigosum* (W. Smith) van Heurck
Locality: BAS

248. ***Podosira montagnei*** Kützing
Floras: Foged (1984), p. 89, pl. 18, fig. 1.
Locality: BMER

249. ***Proschkinia complanatoides*** (Hustedt) D. G. Mann
Floras: Hustedt (1961-1966), p. 340, fig. 1451. Round *et al*. (1990), p. 675. Witkowski *et al*. (2000), p. 341, pl. 150, fig. 23.

Basionym: *Navicula complanatoides* Hustedt
Locality: BAS, BMS

250. ***Psammodictyon panduriformis*** var. ***delicatulum*** (Grunow) M. Poulin
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 269, pl. 70, fig. 13.
Locality: BAS

251. ***Psammodictyon panduriformis*** var. ***lata*** (Witt.) D.G. Mann
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 269, pl. 70, fig. 1.
Locality: BAS.

252. ***Psammodictyon panduriformis*** var. ***peralbata*** (Peragallo) D.G. Mann
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 269, pl. 70, fig. 2.
Locality: BAS

253. ***Rhaphoneis grossepuncta*** Hustedt
Floras: Simonsen (1987), pl. 603, figs. 10-14.
Locality: BMS

254. ***Rhaphoneis liburnica*** Grunow
Floras: Schmidt *et al*. (1874-1959), pl. 193, figs. 14-15.
Locality: BMS

255. ***Rhaphoneis nitida*** (Gregory) Grunow
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 83, fig. 34.
Locality: BMER

256. ***Rhopalodia constricta*** (W. Smith) Krammer
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 303, pl. 77, figs. 11-17.
Basionym: *Epithemia constricta* W. Smith
Synonym(s): *Epithemia constricta* W. Smith, *Rhopalodia gibberula* var. *constricta* (W. Smith) Karsten, *R. musculus* var. *constricta* (W. Smith) H. & M. Peragallo, *R. gibberula* var. *constricta* (W. Smith) Cleve-Euler
Locality: BMS

257. ***Seminavis strigosa*** (Hustedt) Danieledis & Economou-Amilli
Floras: Hustedt (1949), p. 44, pl. 1, figs. 30-33. Witkowski *et al*. (2000), p. 151, pl. 164, figs. 1-4, pl. 166, figs. 5-7.
Basionym: *Amphora strigosa* Hustedt
Locality: BMEM, BMS

258. ***Stauroneis legleri*** Hustedt
Floras: Hustedt (1959) p. 793, fig. 1138.
Locality: COS.

259. ***Staurophora amphioxys*** (Gregory) D. G. Mann
Floras: Witkowski et al. (2000), p. 353, pl. 149, fig. 13.
Basionym: *Stauroneis amphioxys* Gregory
Locality: BMEM

260. ***Staurosirella pinnata*** (Ehrenberg) Williams & Round
Floras: Krammer & Lange-Bertalot (1991) p. 156, pl. 133, figs. 1-18, 32 a (as *Fragilaria pinnata* Ehrenberg).
Basionym: *Fragilaria pinnata* Ehrenberg
Synonym(s): *Fragilaria pinnata* Ehrenberg, *F. pinnata* var. *pinnata* Ehren-

berg, *F. pinnata* var. *lancettula* (Schumann) Hustedt, *F. pinnata* var. *intercedens* (Grunow) Hustedt, *Punctastriata pinnata* (Ehrenberg) Williams & Round
Locality: BMER

261. ***Surirella brebissonii*** Krammer & Lange-Bertalot
Floras: Witkowski *et al*. (2000), p. 413, pl. 217, figs. 4-5.
Locality: BAS

262. ***Surirella hybrida*** var. ***contracta*** H. Peragallo & M. Peragallo
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 253, pl. 64, figs. 5-6.
Locality: BAS

263. ***Surirella intermedia*** Cleve
Floras: Cleve-Euler (1952), p. 126, fig. 1572.
Locality: BAS

264. ***Surirella minuta*** Brébisson
Floras: Cleve-Euler (1952), p. 122, fig. 1566 d.
Synonym(s): *Novilla pinnata* (W. Smith) Lagerstedt, *N. ovata* (Kützing) Heiberg, *Surirella minuta* var. *pinnata* (W. Smith) A. Grunow, *S. pinnata* W. Smith, *S. ovalis* f. *ovata* (Kützing) Mayer, *S. ovata* Kützing, *S. ovata* var. *pinnata* (W. Smith) Brun, *S. ovata* var. *pinnata* (W. Smith) Hustedt, *S. ovalis* var. *pinnata* (W. Smith) van Heurck, *S. ovalis* var. *ovata* (Kützing) van Heurck, *Suriraya pinnata* (W. Smith) Schaarschmidt, *S. ovalis* var. *pinnata* (W. Smith) Gutwinski, *S. ovalis* var. *ovata* (Kützing) Gutwinski, *S. ovata* (Kützing) Tömösváry.
Locality: BAS

265. ***Synedra nana*** Meister
Floras: Cleve-Euler (1953, II), p. 57, figs. 374 a-e. Schweiz (1980), Nova Hedwigia. 33, p. 746, pl. 8, fig. 9.
Synonym: *Fragilaria nanana* Lange-Bertalot.
Locality: BAS

266. ***Synedra tabulata*** var. ***affinis*** (Kützing) Cleve
Floras: Cleve-Euler (1952), p. 71, figs. 710 a-d.
Locality: BMER

267. ***Tabularia fasciculata*** (C. Agardh) D.M. Williams & Round
Floras: H. Peragallo & M. Peragallo (1897-1908), pl. 80, fig. 19. (as *Synedra affinis* Kützing)
Basionym: *Diatoma fasciculata* C.A. Agardh.
Synonym(s): *Diatoma fasciculata* C.A. Agardh, *D. tabulatum* C. Agardh, *D. tabulata* C. A. Agardh, *D. tabulata* C. Agardh, *Echinella fasciculata* (Agardh) Jurgens, *Exilaria fasciculata* (C. Agardh) Greville, *E. fasciculata* Kützing, *Fragilaria fasciculata* (C. Agardh) Lange-Bertalot, *F. tabulata* (C.Agardh) Lange-Bertalot, *Lyngbyea fasciculata* (C. Agardh) Sommerfelt, *Synedra fasciculata* (Agardh) Kützing, *S. tabulata* (C. Agardh) Kützing, *S. tabulata* var. *fasciculata* (C. Agardh) Hustedt, *Tabularia tabulata* (C. Agardh) Snoeijs
Locality: BMS

268. ***Thalassiosira leptopus*** (Grunow) Hasle & Fryxell
Floras: Hasle and Fryxell (1977), figs. 1-14. Barron (1980), pl. 9, fig. 6. Hasle & Syvertsen (1996), pl. 10. Moreno *et al*. (1996), p. 134, pl. 33, fig. 11.
Basionym: *Coscinodiscus leptopus* Grunow
Synonym(s): *Coscinodiscus lineatus* Ehrenberg, *C. leptopus* Grunow, *C. pseudolineatus* Pantocsek, *C. leptopus* var. *discrepans* Rattray, *C. praelineatus* Jousé
Locality: BMEM

269. ***Trachyneis aspera*** var. ***intermedia*** (Grunow) Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 150, pl. 29, figs. 5-6.
Basionym: *Navicula aspera* var. *intermedia* Grunow ex Schmidt
Locality: BMS

270. ***Trachyneis clepsydra*** (Donkin) Cleve
Floras: Hustedt (1931-1959), p. 750, fig. 13.
Synonym(s): *Navicula clepsydra* Donkin
Locality: BMER

271. ***Trachysphenia acuminata*** Peragallo
Floras: Navarro (1982), p. 26, pl. 14, fig. 12. Witkowski *et al*. (2000), p. 84, pl. 24, fig. 17-19.
Locality: BMS

272. ***Tropidoneis lepidoptera*** var. ***proboscidea*** Cleve
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 188, pl. 39, fig. 8-9.
Locality: BMS

273. ***Tryblionella apiculata*** Gregory
Floras: Foged (1984), p. 74, pl. 14, fig. 10 (as *Nitzschia apiculata* (Gregory) Grunow). Witkowski *et al*. (2000), p. 377, pl. 187, figs. 8-12.
Synonym(s): *Homoeocladia apiculata* (Gregory) Kuntze, *Nitzschia constricta* (Kützing) Ralfs, *N. dubia* var. *constricta* (Kützing) Carruthers, *N. apiculata* (Gregory) Grunow, *Synedra constricta* Kützing, *Tryblionella constricta* (Kützing) Poulin
Locality: BAS, BMER

274. ***Tryblionella hungarica*** (Grunow) Frenguelli
Floras: Foged (1984), p. 240, pl. 59, fig. 8.
Basionym: *Nitzschia hungarica* Grunow
Synonym(s): *Nitzschia hungarica* Grunow, *Homoeocladia hungarica* (Grunow) Kuntze, *Tryblionella hungarica* (Grunow) Mann
Locality: NAT

275. ***Tryblionella limicola*** (Grunow) D. G. Mann
Floras: H. Peragallo & M. Peragallo (1897-1908), p. 75, fig. 16.
Basionym: *Nitzschia limicola* Grunow
Locality: COS

8. DISCUSSION

Much work is yet to be done with benthic diatoms in México, particularly within an ecological framework. However, there has recently been a considerable progress in floristics for the NW region, comprising mainly the southern region of the Gulf of California, for which a series of studies have been carried out related to various substrata found in mangrove environments (Siqueiros-Beltrones, 2002).

It has been determined that the rhizosphere area of the mangrove forests constitutes a favourable environment for the development of microbial mats and of microphytobenthos in general. Here, diatoms are usually a primary component due to their abundance and diversity, both in the sediments surrounding the roots of the different mangrove taxa, as on the roots as well.

Unfortunately, these extremely diverse floras have barely been studied, which is needless to say unjustified, because we are dealing with a component of the community in large part responsible of much of the primary production in the mangrove system. This is reflected in the offshore influence zones of the mangrove systems inasmuch their diatom flora have been tracked down far into oceanic waters on both sides of the Baja California peninsula. In particular Martínez López *et al*. (2004) observed and quantified numerous tychoplanktonic diatoms down to 39900m deep and 200 km offshore. There origin strongly pointing out to the Bahía Magdalena mangrove system. Likewise, in Moreno *et al*. (1996) the origin of tychoplanktonic diatoms collected in the Gulf of California appears to be the mangrove habitats of the continental coast.

In general, the species composition of benthic diatoms from the mangrove systems in the southern part of the Baja California peninsula is quite similar to other mangrove systems in the world. Up to 44 and 50 % of the taxa recorded by Wah and Wee (1988) and Navarro and Torres (1987), respectively are shared. In spite of many of the taxa being considered ubiquitous, the fact that the species composition in distinct mangrove systems is similar indicates that a particular diatom flora characterizes these environments, as for marsh habitats on the coasts of the U. S. A., where the existence of a typical diatom flora has been suggested (Sullivan, 1978; Cook & Whipple, 1982).

In any case, more research on the subject is needed to support the existence of a diatom flora typical of these systems, both in the Mexican coasts and throughout the world.

REFERENCES

ABOAL, M., ALVAREZ COBELAS, M., CAMBRA, J. & ECTOR, L. (2003). Floristic list of non-marine diatoms (Bacillariophyceae) of Iberian Peninsula, Balearic Islands and Canary Islands. Updated taxonomy and bibliography. *Diat. Monogr*. 4: 1-639

ANDREWS & STOELZEL (1984). Morphology and evolutionary significance of Perissonoe, a new marine diatom genus. *In*: Mann, D. G. (ed.). *Proceedings of the Seventh International Diatom Symposium*, Philadelphia 1982. *Koenigstein*. 82 pls.76 figs. II, 542 p.

BARRON, J. A. (1980). Upper Pliocene and Quaternary diatom biostratigraphy of Deep Sea Drilling Project Leg 54, tropical eastern Pacific, 455-485. *In*: Rosendahl, B.R., Hekinian, R. Init. Repts. DSDP, 54 Washington (U.S. Govt. Printing Office).

BÉRARD-THERRIAULT, L., M. POULIN & L. BOSSÉ (1999). Guide d'identification du phytoplancton marin de l'estuaire et du Golfe du Saint-Laurent incluant également certains protozoaires. 128: 387. Ottawa: CNRC-NRC

BLASCO, F. (1984). Climatic factors and the biology of mangrove plants, 18-35. *In*: Snedaker, S. and J. Snedaker (eds.). *The mangrove ecosystem.* Research Methods. UNESCO/SCOR. 525 pp.

BROCKMANN, C. (1950). Die Watt-Diatomeen der schleswig-holsteinischen Westkueste. *Abh. senckenberg. naturforsch. Ges.* 478:3-26, Frankfurt.

CAHOON, L. B. &. K. A. SAFIR (2002). Distribution and biomass of benthic microalgae in Manukau Harbor, New Zealand. *New Zealand Journal of Marine and Freshwater Research,* 36: 257-266.

CASTRO-AGUIRRE, J. L. & R. TORRES (1993). Consideraciones acerca del origen de la ictiofauna de Bahía Magdalena-Almejas, un sistema lagunar de la costa occidental de Baja California Sur, México. *Anales Escuela Nacional de Ciencias Biológicas*, 38(1-4): 67-73.

CLEVE-EULER, A. (1951-1955). Die Diatomeen von Schweden und Finnland. Reprint *In*: *Bibliotheca Phycologica*. Band 5. Vols. I-V. Wesley & Wesley, New York. 963 pp.

COMPÉRE, P. (1982). Taxonomic revision of the diatom genus *Pleurosira* (Eupodiscaceae). *Bacillaria*, 5: 165-190.

COX, E. J. (1987). Placoneis Mereschkowsky: the re-evaluation of a diatom genus characterized by its chloroplast type. *Diatom Research*, 2:145-157.

COX, E. J. (1988). Taxonomic studies on the diatom genus *Navicula* V. The establishment of *Parlibellus* gen. nov. for some members of *Navicula* sect. microstigmaticae. *Diatom Research*, 3: 9-38.

CUPP, E.E. (1943). Marine plankton diatoms of the west coast of North America. *In*: H.U. Sverdrup (Ed.) *Bulletin of the Scripps Institution of Oceanography of the University of California, La Jolla, California*. University of California Press. Berkeley. Volume 5, No. 1. 238 pp.

DESIKACHARY, T.V. (1987). Marine diatoms from the Arabian Sea and Indian Ocean. In: Desikachary, T.V. (Ed.), *Atlas of Diatoms* (Vol. IV). Madras (Madras Sci. Found).

DESIKACHARY, T. V. (1988). Marine Diatoms of the Indian Ocean Region. *In*: Desikachary, T.V. (Ed.), *Atlas of Diatoms* (Vol. V). Madras (Madras Sci. Found).

DESIKACHARY, T.V., S. GOWTHAMAN & Y. LATHA (1987). Diatom flora of some sediments from the Indian Ocean region. *In*: Desikachary, T.V. (Ed.), *Atlas of Diatoms* (Vol. II). Madras (Madras Sci. Found).

DREBES, G. & M. ELBRÄCHTER (1976). A checklist of planktonic diatoms and dinoflagellates from Helgoland and List (Sylt), German Bight. *Botanica Marina*, 19: 75-83.

EDLUND, M.B., SONINKHISHIG, N., WILLIAMS, R.M. & STOERMER, E.F. (2001). Biodiver-

sity of Mongolia: Checklist of diatoms, including new distributional reports of 31 taxa. *Nova Hedwigia*, 72: 59-90

EHRLICH, A. (1975). The diatoms from the surface sediments of the Bardawil Lagoon (Northern Sinai)-Paleoecological significance. 253-280. *In*: Simonsen, R. (Ed.) *Third Symposium on Recent and Fossil Marine Diatoms*, Kiel, sept. 1974.

FLORES-VERDUGO, F. J. (1989). Algunos aspectos sobre la ecología, uso e importancia de los ecosistemas de manglar. *In*: Rosa Vélez, J. de la & F. González Farías (Eds.). *Temas de Oceanografía Biológica en México*. Universidad Autónoma de Baja California, Ensenada. 337 pp.

FOGED, N. (1975). Some littoral diatoms from the coast of Tanzania. *Bibliotheca Phycologica*, 47: 225 pp.

FOGED, N. (1978). Diatoms in Eastern Australia. *Bibliotheca Phycologica*, 41: 243 pp.

FOGED, N. (1984). Freshwater and littoral diatoms from Cuba. *Bibliotheca Diatomologica,* Germany. 5: 243 pp.

GARCIA-BAPTISTA, M. (1993). Psammic algae from Praia Azul, Brazil. *Bibliotheca Phycologica,* 94(1-167):49.

GIFFEN, M.H. (1970). Contribution to the diatom flora of South Africa IV. The marine littoral diatoms of the Estuary of the Kowie River, Port Alfred, Cape Province. *Nova Hedwigia*, 31:259-312.

GONZÁLEZ-ACOSTA, A. F. (1998). *Ecologia de la comunidad de peces asociada al manglar del estero El Conchalito, Ensenada de La Paz, Baja California Sur, México.* M. Sc. Thesis, Centro Interdisciplinario de Ciencias Marinas del Instituto Politécnico Nacional. 125 pp.

GREGORY, W.(1857). On new forms of marine Diatomaceae found in the Firth of Clyde and in Loch Fyne, illustrated by numerous figures drawn by K.K. GREVILLE, LL. D., F. R. S. E. *Transactions of the Royal Society of Edinburgh*, 21: 473-542.

GUTIÉRREZ SÁNCHEZ, S. S. (1987). *Geomorfología, agua y sedimentos de la caleta-laguna de Balandra, Baja California Sur*. Proffesional Thesis. Universidad Autónoma de Baja California Sur. 66 pp.

HAJÓS, M. (1973). The Mediterranean diatoms, Deep Sea Drilling Project, Leg 13. *In:* Ryan, W.B.F., Hsü, K.J., Init. Repts. DSDP, 13: 944-970. Washington (U.S. Govt. Printing Office).

HAGELSTEIN, R. (1938). The diatomaceae of Puerto Rico and the Virgin Islands. Scientific Survey of Puerto Rico and the Virgin Islands. *N. Y. Acad. Sci*. 8: 313-450.

HASLE, G. R. & E. E. SYVERTSEN (1996). *Marine diatoms. In:* Tomas, C.R. (Ed.), *Identifying Marine Diatoms and Dinoflagellates*: New York (Academic Press), 5-386 pp.

HASLE, G. R. & B. R. HEIMDAL (1970). Some species of the centric diatom genus *Thalassiosira* studied in the light and electron microscopes. *Nova Hedwigia, Beihefte,* 31: 543-581.

HASLE, G. R. & E. E. SYVERTSEN (1997). Marine Diatoms. *In*: Tomas, C.R. (Ed.), *Identifying Marine Phytoplankton*, San Diego, Academic Press. 5-386 pp.

HENDEY, N. I. (1951). Littoral diatoms of Chichester Harbour with special reference to fouling. *J. Roy. Micr. Soc.,* 71: 1-86.

HENDEY, N. I. (1964). An introductory account of the smaller algae of Brittish coastal waters. Part V: Bacillarophyceae (Diatoms). *Fisheries Investigation Series* IV: HMSO. London. 317 pp.

HIFFEN, M. H. (1970). New and intetesting marine litoral diatoms from Seapoint, near Cape Town, South Africa. *Botanica Marina*, 16: 32-48

HOLMES, R. W., C. J. WILSON & M. C. AMSPOKER (1981). Techniques for preparing permanent preparations of cleaned an uncleaned diatoms using Culmar R-9, a cumarone-indene resin. *Bacillaria*, 4: 21-28.

HUSTEDT, F. (1930). Bacillariophyta (Diatomae). *In*: A. Pascher, (Ed.) *Die Süsswasser-Flora Mitteleuropas*. Heft 10. Gustav Fischer Verlag, Jena. 466 pp.

HUSTEDT, F. (1955). Marine littoral diatoms of Beaufort North Carolina. *Duke University Marine Station Bulletin*, 6: 1-67.

HUSTEDT, F. (1959). Die Kieselalgen Deutschlands, Östrrreichs und der Schweiz. *In*: L. Rabenhorst (Ed.). Kryptogamenflora. Band VII: 1, 2, 3. Johnson Rep. Co. New York.

HUSTEDT, F. (1961-66). Die Kieselalgen Deutschlands, Österreichs und der Schweiz. *In*: L. Rabenhorst (Ed.), *Kryptogamen-Flora*, Band VII, III Teil. Koeltz Scientific Books (Rep. 1991). Germany. 816 pp.

KRAMMER, K. (1980). Morphologic and taxonomic investigations of some freshwater species of the diatom genus Amphora Ehr. *Bacillaria*, 3:197-204.

KRAMMER, K. (1988). The Gibberula-group in the genus *Rhopalodia* O. Müller (Bacillariophyceae) II. Revision of the group and new taxa. *Nova Hedwigia*, 47: 159-205.

KRAMMER, K. (1990). Zur Identität von *Cocconeis diminuta* Pantocsek und *Cocconeis thumensis* Mayer. 145-156. *In*: . (Eds) Ricard, M. & Coste, M. *Ouvrage dédié a Henri Germain*. Koeltz Scientific Books.

KRAMMER, K. (1992). *Pinnularia*: eine Monographie der europäischen Taxa. *Bibliotheca Diatomologica,* 26: 1-353.

KRAMMER, K. & H. LANGE-BERTALOT (1986). Bacillariophyceae 1. Teil: Naviculaceae. *In*: *Süsswasserflora von Mitteleuropa*, Band 2. Gustav Fischer Verlag, Stuttgart & New York. 876 pp.

KRAMMER, K. & H. LANGE-BERTALOT (1987). Morphology and taxonomy of *Surirella ovalis* and related taxa. *Diatom Research*, 2(1): 77-95.

KRAMMER. K. & H. LANGE-BERTALOT (1988). Bacillariophyceae, 2. Teil: Bacillariaceae, Epithemiaceae, Surirellaceae. *In*: Band (ed) *Süsswasserflora von Mitteleuropa*, 2, Gustav Fischer Verlag, Stuttgart & New York. 596 pp.

KRAMMER, K. & H. LANGE-BERTALOT (1991). Bacillariophyceae 3. Teil: Centrales, Fragilariaceae, Eunotiaceae. *In*: Band (ed) *Süsswasserflora von Mitteleuropa,* 2. Gustav Fischer Verlag, Stuttgart & New York. 576 pp.

LANGE-BERTALOT, H. & M. RUPPEL (1980). Zur Revision taxonomisch problematischer, ökologisch jedoch wichtiger Sippen der Gattung Achnanthes Bory. *Archiv für Hydrobiologie, Suppl.*, 60: 1-31.

LANGE-BERTALOT, H. & K. KRAMMER (1987). Bacillariaceae, Epithemeaceae, Surirellaceae. *Bibliotheca Diatomologica*, 15: 1-289.

MAPLES, R. S. (1983). Community structure of diatoms epiphytic on pneumatophores of the black mangrove Avicennia germinans in a Louisiana USA salt marsh. *Gulf. Res. Rep.*, 7: 225-260.

MARTÍNEZ, L. A., D. A. Siqueiros-Beltrones, & N. SILVERBERG (2004). Offshore transport of benthic diatoms beyond the continental shelf of the Baja California peninsula. *Ciencias Marinas*, 30(4): 503-513.

MCINTIRE, C. D. & C. W. REIMER (1974). Some Marine and Brackish-Water Achnanthes from Yaquina Estuary, Oregon (U. S. A.). *Botanica Marina,* 17: 164-175.

MORENO, J. L., S. LICEA & H. SANTOYO (1996). *Diatomeas del Golfo de California*. UABCS. SEP-FOMES-PROMARCO. México. 273 pp.

MOSER, G., H. LANGE-BERTALOT & D. METZELTIN (1998). Insel der Endemiten. Geobotanisches Phänomen Neukaledonien. *Bibliotheca Diatomol*ogica, 38: 1-464.

NAVARRO, J. N. (1981). A survey of the marine diatoms of Puerto Rico. I. Suborders Coscinodiscineae and Rhizosoleniineae. *Botanica Marina*, 24(8): 427-440.

NAVARRO, J. N. (1982). Marine Diatoms Associated with Mangrove Prop Roots in the Indian River, Florida, U. S. A. *Bibliotheca Phycologica*, 61: 1-151.

NAVARRO, N. J. (1982a). A survey of the marine diatoms of Puerto Rico. V. Suborder Raphidineae: Families Achnanthaceae and Naviculaceae (Excluding *Navicula* and *Mastogloia*). *Botanica Marina*, 25: 321-338.

NAVARRO, J. N. (1983). A survey of the marine diatoms of Puerto Rico. VI. Suborder Raphidineae: Family Naviculaceae (Genera Haslea, *Mastogloia* and *Navicula*). *Botanica Marina*, 26: 119-136.

NAVARRO, J. N. (1988). Diatomeas en tapetes microbianos de Puerto Rico. *Guyana Bot*., 45(1-4): 275-281

NAVARRO, J. N & R. TORRES (1987). Distribution and community structure of marine diatoms associated with mangrove prop roots in the Indian River, Florida, U.S.A. *Nova Hedwigia*, 45: 101-112.

NAVARRO J. N. (1990). Observations on *Biddulphia tridens* Ehrenberg. 181-190, *In*: Ricard M (Ed.). *Ouvrage dedie a la Memoire du Prof. H. Germain (1903-1989)*. Koeltz Scientific Books, Germany,

NAVARRO, J. N., C. J. MICHELI & A. O. NAVARRO (2000). Benthic diatoms of Mona Island (Isla de Mona), Puerto Rico. *Acta Científica*, 14(3): 103-143.

PADDOCK, T. B. (1988). *Plagiotropis* Pfitzer and *Tropidoneis* Cleve, a summary account. *Bibliotheca Diatomologica*, 16: 1-152, 37 plates.

PANKOW, H. (1990). *Ostsee-Algenflora*. Gustav Fischer Verlag, Jena. 648 pp.

PATRICK, R. & C. W. REIMER (1966). *The Diatoms of the United States*, Volume 1. Monographs of the Academy of Natural Sciences of Philadelphia. 13: xi+1-688.

PATRICK, R. & C. W. REIMER (1975). *The Diatoms of the United States*, Volume 2, Part 1. Monographs of the Academy of Natural Sciences of Philadelphia. 13: ix+1-213.

PERAGALLO, H. & M. PERAGALLO (1897-1908). *Diatomées marines de France et districts maritimes voisins*. Ed. M. J. Tempere, France. 491 pp.

POULIN, M., L. BERNARD-THERIAULT & A. CARDINAL (1984a). Les diatomees benthiques de substrats durs des eaux marines et saumatres du Quebec. 2. Tabellarioideae et Diatomoideae (Fragilariales, Fragilariaceae) *Naturaliste canadien*, 111: 275-295.

POULIN, M., L. BERNARD-THERIAULT & A. CARDINAL (1984b). Les diatomees benthiques de substrats durs des eaux marines et saumatres du Quebec. 3. Fragilarioideae (Fragilariales, Fragilariaceae) *Naturaliste canadien,* 111: 349-367.

POULIN, M., L., BERNARD-THERRIAULT & A. CARDINAL (1987). Les diatomees (Bacillariophyceae) benthiques de substrats durs des eaux marines et saumatres du Quebec. 7. Naviculales (les genres Plagiotropis et Entomoneis), Epithemiales et Surirellales. *Naturaliste canadien*, 114: 67-80.

POULIN, M., L. BERNARD-THERRIAULT, A., CARDINAL & P. B. HAMILTON (1990). Les diatomees (Bacillariophyta) benthiques de substrats durs des eaux marines et saumatres du

Quebec. 8. Bacillariaceae. *Naturaliste canadien,* 117: 73-101.

REYES-VÁSQUEZ, G. (1975). Diatomeas litorales de la Familia Naviculaceae de la Laguna La Restinga, Isla de Margarita, Venezuela. *Bol. Inst. Oceanogr. Univ. Oriente*, 14: 199-225.

RIAUX-GOBIN, C. & O. ROMERO (2003). Marine *Cocconeis* Ehrenberg (Bacillariophyceae) species and related taxa from Kerguelen's Land (Austral Ocean, Indian Sector). *Bibliotheca Diatomologica*, 47: 1-188.

ROUND, F. E. (1991). On striae patterns in *Fragilaria* and *Syndera*. *Diatom Research,* 6: 147-154.

ROUND, F. E., & L. BUKHTIYAROVA (1996). Four new genera based on Achnanthes (Achnanthidium) together with a re-definition of Achnanthidium. *Diatom Research*, 11: 345-361.

ROUND, F. E., R. M. CRAWFORD & D. G. MANN (1990). *The Diatoms: Biology & Morphology of the Genera*. Cambridge University Press, Cambridge. 747 pp.

SABBE, K. & W. VYVERMAN (1995). Taxonomy, morphology and ecology of some widespread representatives of the diatom genus *Opephora*. *European Journal of Phycology*, 30: 235-249.

SAR. E. A., O. E. ROMERO & I. SUNESEN. (2003). *Cocconeis* Ehrenberg and *Psammococconeis* Garcia (Bacillariophyta) from the Gulf of San Matías, Patagonia, Argentina. *Diatom Research*, 18(1): 79-106.

SCHMIDT, A., M. SCHMIDT., F. FRICKE., H. HEIDEN., O. MÜLLER & F. HUSTEDT (1874-1959). *Atlas der Diatomaceen-Kunde*. R. Reisland, Leipzig, Heft 1-120, Tafeln 1-480.

SIMONSEN, R. (1987). *Atlas and catalogue of the diatom types of* F. Hustedt I, II, III. J. Cramer. Berlin, Germany.

SIQUEIROS-BELTRONES, D. A. (2002). *Diatomeas bentónicas de la península de Baja California; diversidad y potencial ecológico*. Oceánides-CICIMAR-IPN-UABCS. México. 102 pp.

SIQUEIROS-BELTRONES, D. A. & F. O. LÓPEZ-FUERTE (2006). Epiphytic diatoms on red mangrove (*Rhizophora mangle* L.) prop roots in Bahía Magdalena, B. C. S, México. *Biología Tropical*, 54(2): 287-297.

SIQUEIROS-BELTRONES, D. A. & H. MORZARIA-LUNA (1999). New records of marine benthic diatom species for the North-Western Mexican Region. *CICIMAR Oceánides*, 14(2): 89-95.

SIQUEIROS-BELTRONES, D. A. & E. SÁNCHEZ-CASTREJÓN (1999). Structure of benthic diatom assemblages from a mangrove environment in a Mexican Subtropical Lagoon. *Biotropica*, 31(1): 48-70.

SIQUEIROS-BELTRONES, D. A., E. SERVIERE-ZARAGOZA & U. ARGUMEDO HERNÁNDEZ. (2002). Epiphytic diatoms of *Macrocystis pyrifera* (L.) Ag. from the Baja California peninsula. *CICIMAR Oceánides*, 17(1): 3-39.

SIQUEIROS-BELTRONES, D. A., F. O. LOPEZ-FUERTE & I. GARATE-LIZARRAGA (2005). Structure of diatom assemblages living on prop roots of the red mangrove (*Rhizophora mangle*) from the west coast of Baja California Sur, México. *Pacific Science*, 59(1): 79-96.

SOLER, B. A., A. M. PÉREZ & G. E. AGUILAR (2003). *Diatomeas de las costas del pacífico de Panamá*. Universidad de Panamá. 383 pp.

SNOEIJS, P. (1992). Studies in the *Tabularia fasciculata* complex. *Diatom Research*. 7: 313-344.

SNOEIJS, P. & J. BALASHOVA (1998). *Intercalibration and distribution of diatom species in the Baltic Sea Volume 5. (including check-list)*. Opulus Press Uppsala, 141 pp.

SNOEIJS, P. & M. POTAPOVA (1995). *Intercalibration and distribution of diatom species in the Baltic Sea Volume 3*. Opulus Press Uppsala, 125 pp.

SNOEIJS, P. & S. VILBASTE (1994). *Intercalibration and distribution of diatom species in the Baltic Sea Volume 2*. Opulus Press Uppsala, 125 pp.

STERRENBURG, F. A. (1991). Studies on the genera *Gyrosigma* and *Pleurosigma* (Bacillariophyceae). Light microscopical criteria for taxonomy. *Diatom Research*, 6: 367-389.

STERRENBURG, F. A. (1993a). Studies on the genera *Gyrosigma* and *Pleurosigma* (Bacillariophyceae). The identity of *Pleurosigma obscurum* W. Smith. *Diatom Research*, 8: 447-456.

STERRENBURG, F. A. (1993b). Studies on the genera *Gyrosigma* and *Pleurosigma* (Bacillariophyceae). Rules controlling raphe fissure morphogenesis in *Gyrosigma*. *Diatom Research*, 8: 457-463.

STERRENBURG, F. A. (1994). Studies on the genera *Gyrosigma* and *Pleurosigma* (Bacillariophyceae). The species of Sillivant and Wormley 1859, synonymy and differentiation from other *Gyrosigma* taxa. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 145: 217-236.

STERRENBURG, F. A. (1995). Studies on the genera *Gyrosigma* and *Pleurosigma* (Bacillariophyceae). *Gyrosigma acuminatum* (Kützing) Rabenhorst, *Gyrosigma spenceri* (Quekett) Griffith, and *G. rautenbachiae* Cholnoky. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 146: 467-480.

STEPHENS, F. C. & R. A. GIBSON (1979). Ultrastructural studies on some *Mastogloia* (Bacillariophyceae) species belengthing to the group Ellipticae. *Botanica Marina*, 22: 499-509.

STOERMER, E. F. (1967). Polymorphism in *Mastogloia*. *Journal of Phycology*, 3: 73-77.

STOERMER, E. F., R. G. KREIS, JR., & N. A. ANDRESEN. (1999). Checklist of Diatoms from the Laurentian Great Lakes, II. *Journal of Great Lakes Research*, 25(3): 515-566.

SULLIVAN, M. J. (1980). Taxonomy and community structure of diatoms epiphytic on red and black mangroves and turtle grass in Bimini Harbour, Bahamas. *Journal of Phycology*, 16 (Suppl.):1-43.

SULLIVAN, M. J. (1981). Community structure of diatoms epiphytic on mangroves and Thalassia in Bimini Harbour, Bahamas. 385-389, *In*: R. Ross (Ed.). *Proc. Sixth Symp. Living & Fossil Diatoms*, Budapest, 1980. Koeltz Sci. Pub, Koenigstein.

VAN LANDINGHAM, S. L. 1967. *Catalogue of the Fossil and Recent Genera and Species of Diatoms and their Synonyms*. Verlag Von J. Cramer. 493 pp. Part 1.

VAN HEURCK, H. (1880–1885). *Synopsis des Diatomées de Belgique*. Texte et Atlas. H. van Heurck, Anvers. 235 pp.

VICENCIO AGUILAR, M. D. (1979). *Estudio ictiológico de dos lagunas costeras de la zona norte de Sinaloa, México*. Proffesional Thesis. Universidad Nacional Autónoma de México. 116 pp.

WAH, T. T. & C. WEE (1988). Diatoms from mangrove environments of Singapore and southern peninsular Malaysia. *Botanica Marina*, 31:317-327.

WILLIAMS, D. M., & F. E. ROUND (1986). Revision of the genus *Synedra* Ehrenb. *Diatom Research*, 1: 313-339.

WILLIAMS, D. M., & F. E. ROUND (1987). Revision of the genus *Fragilaria*. *Diatom Research*, 2: 267-288.

WITKOWSKI, A., H. LANGE-BERTALOT & D. METZELTIN (2000). *Diatom flora of marine coasts I*. Gantner Verlag, Ruggell. 925 pp.

Plates

Most of the micrographs were taken at 1000X magnification.

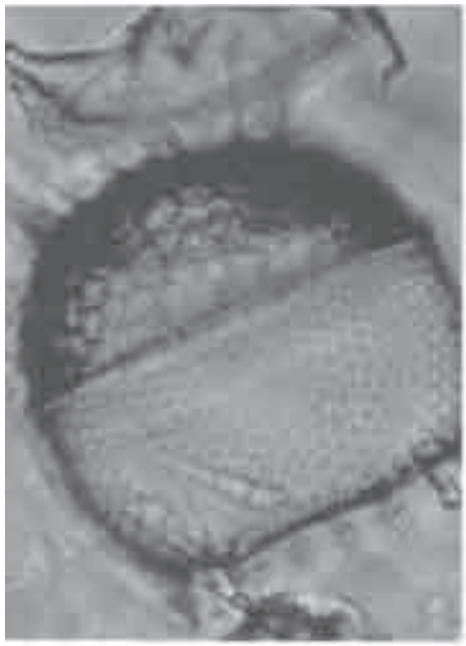
If otherwise the specific maginification appears alength with the taxon name.

Plate 1

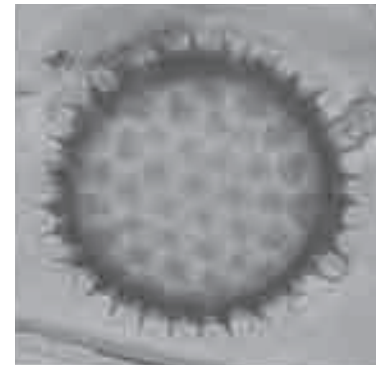
Figs. 1-2. *Stephanopyxis palmeriana* (Greville) Grunow; and resting spores 3-4

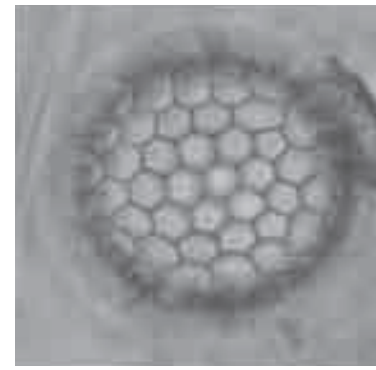
Fig. 5. *Biddulphia alternans* (J.W. Bailey) van Heurck

Fig. 6. *Pleurosira laevis* (Ehrenberg) Compére



1





3-4

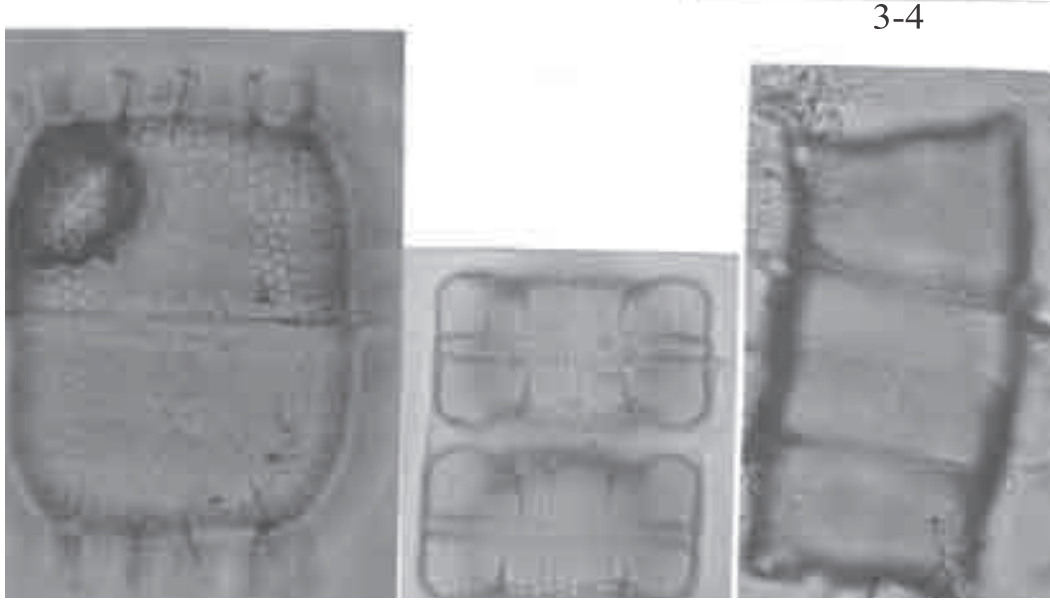


Plate 2

Fig. 1. *Planktoniella sol* (Wallich) Schütt

Fig. 2. *Asteromphalus heptactis* (Brébisson) Ralfs

Fig. 3. *Asteromphalus flabellatus* (Brébisson) Greville

Fig. 4. *Psammodiscus nitidus* (Gregory) Round & Mann

Fig. 5. *Ehrenbergia granulosa* (Grunow) Witkowski, Lange-Bertalot & Metzeltin

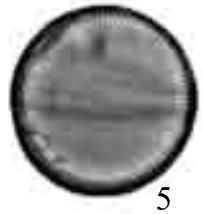
Figs. 6-7. *Triceratium favus* Ehrenberg

1

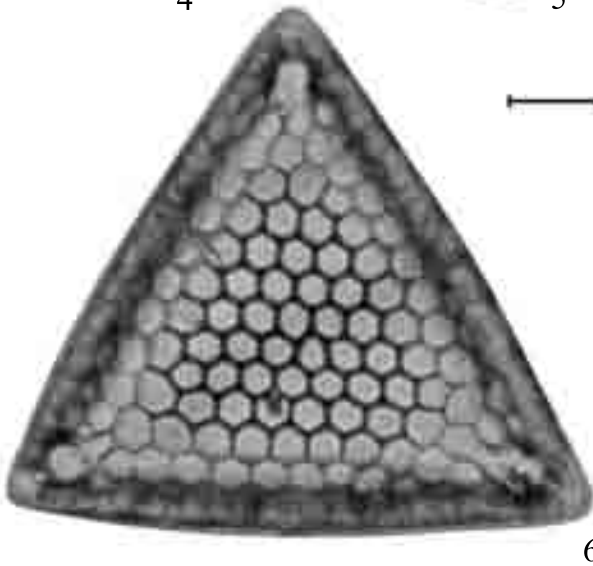
2

3

4



5



6-7

Plate 3

Figs. 1-4. *Thalassiosira eccentrica* (Ehrenberg) Cleve

Figs. 5-8. *Thalassiosira oestrupii* (Ostenfeld) Hasle

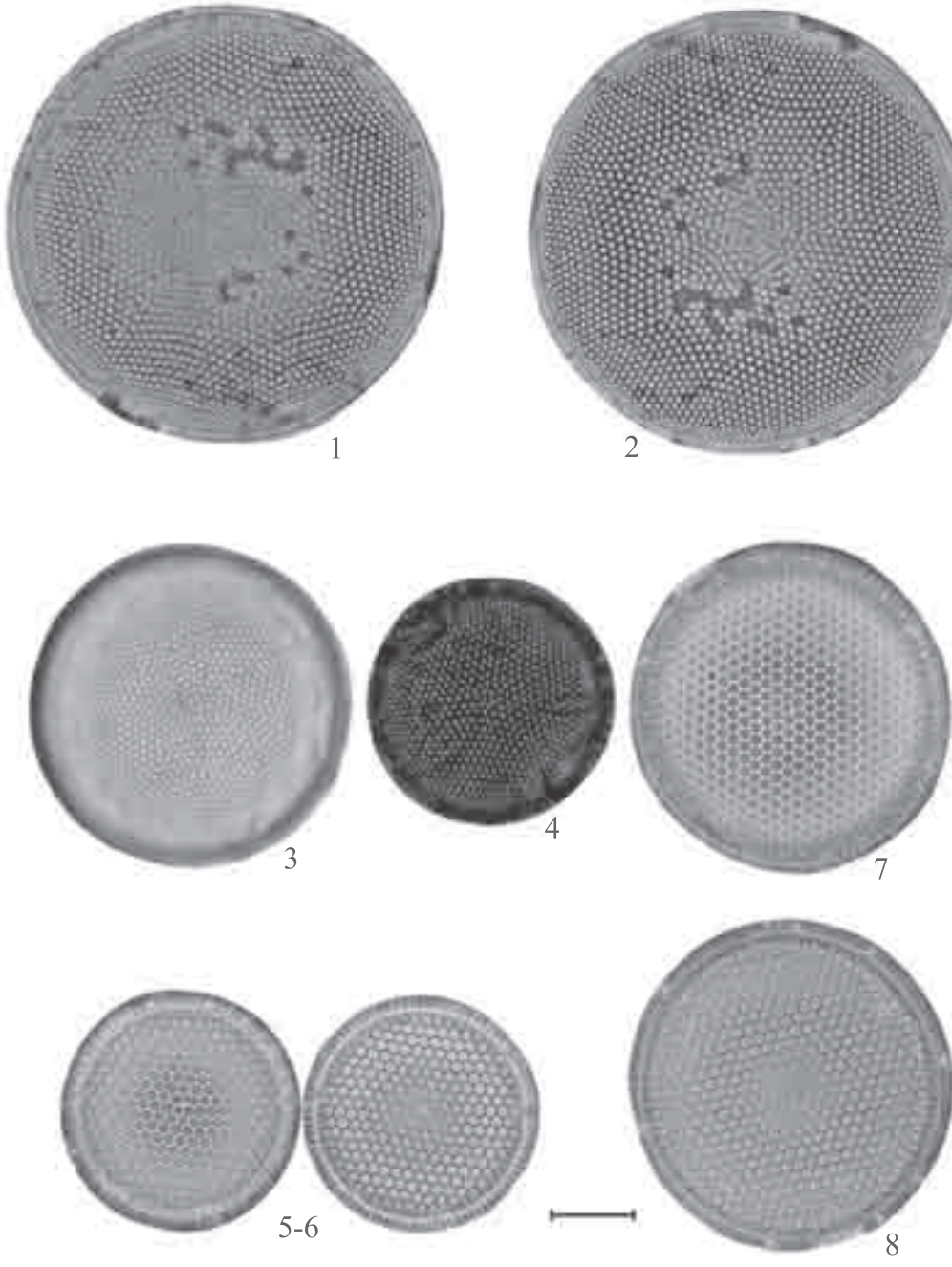

1
2
3
4
7
5-6
8

Plate 4

Fig. 1. *Cerataulus californicus* A. Schmidt

Figs. 2-4. *Coscinodiscus radiatus* Ehrenberg

Fig. 5. *Thalassiosira decipiens* (Grunow) Joergensen

Fig. 6. *Coscinodiscus apiculatus* Ehrenberg

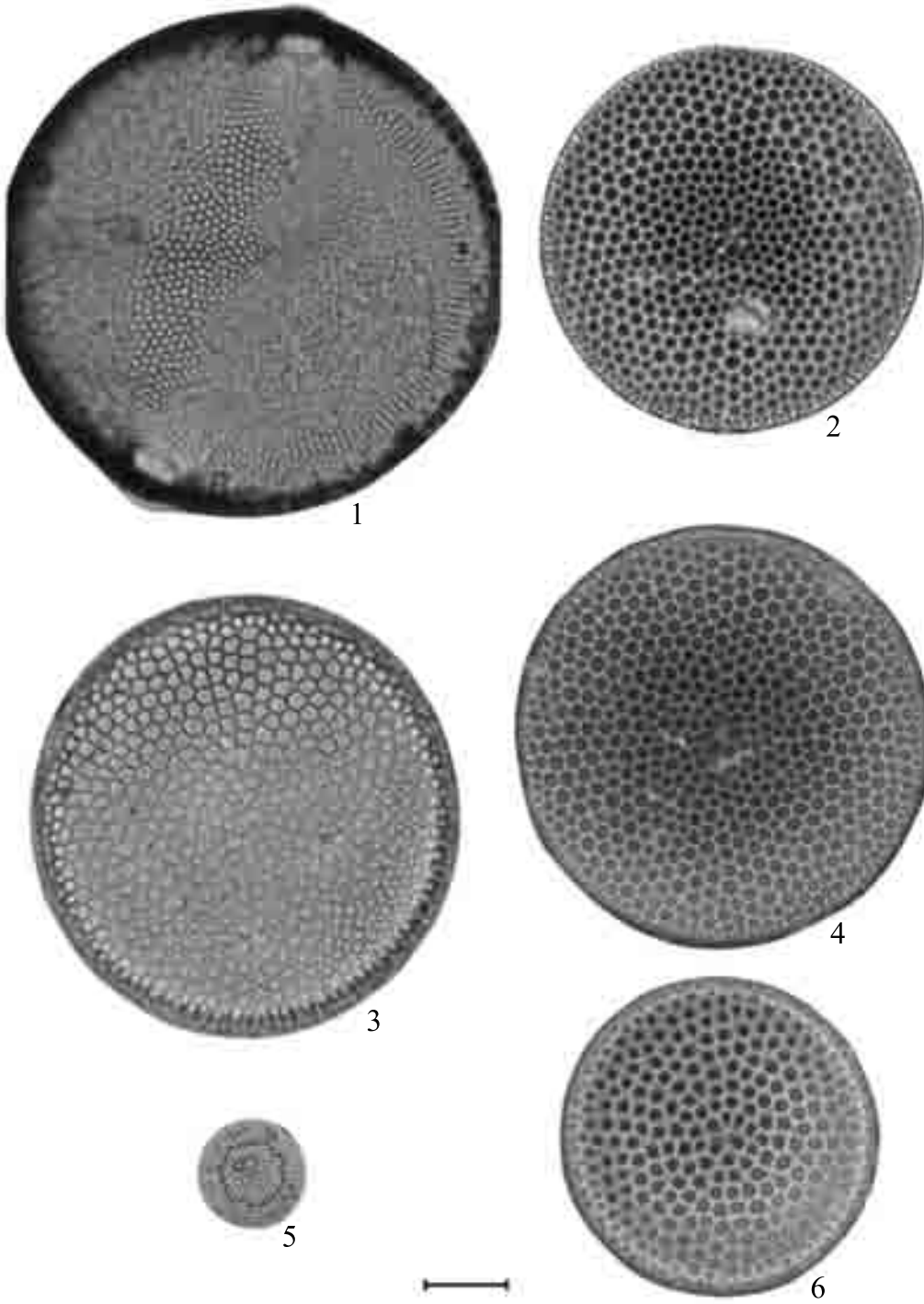

1
2
3
4
5
6

Plate 5

Figs. 1-2. *Aulacodiscus sturzii* Kitton

Figs. 3, 5. *Aulacodiscus margaritaceus* Ralfs

Fig. 4 (630X). *Aulacodiscus macraeanus* Greville

Fig. 6. *Cerataulus* sp. 1

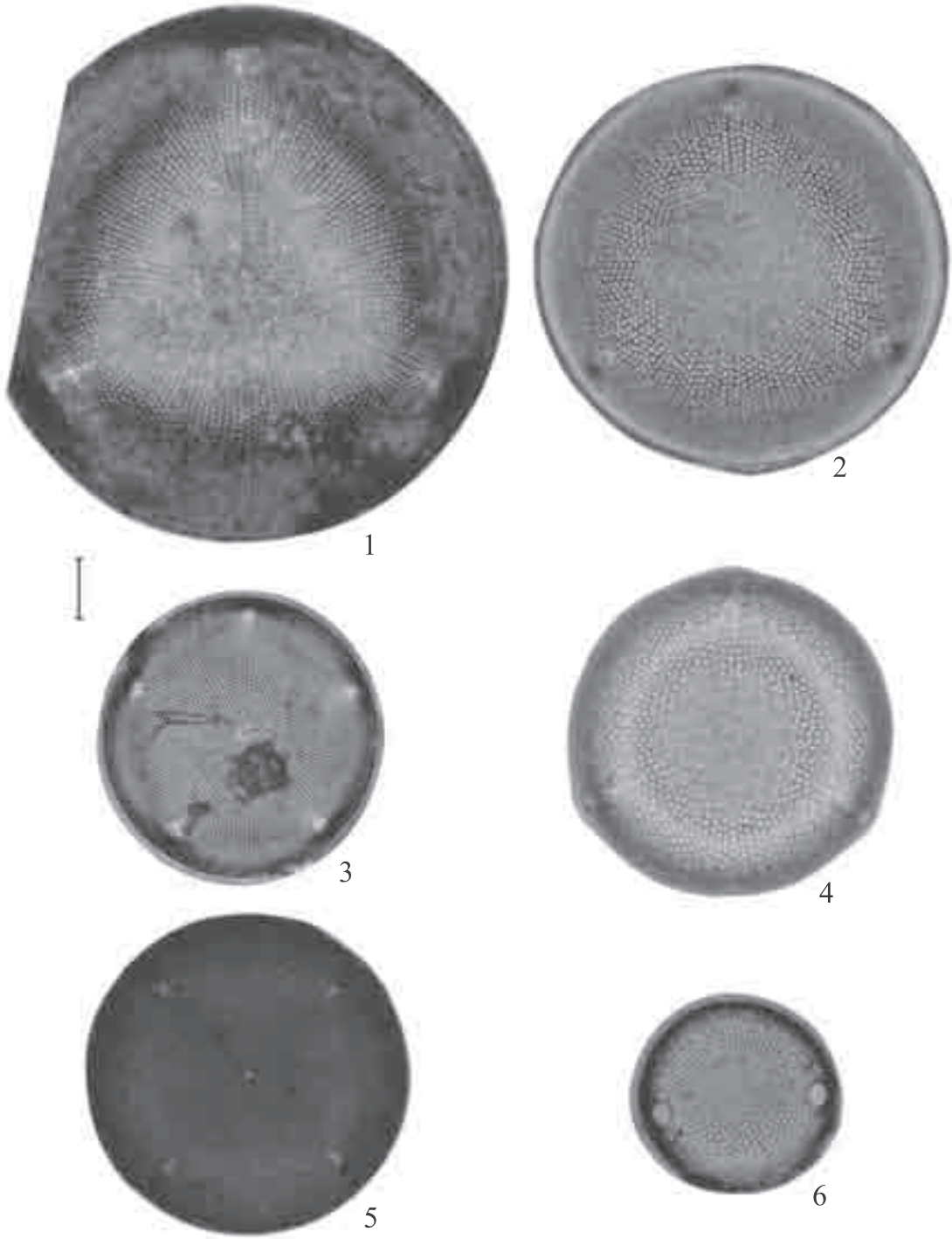

1
2
3
4
5
6

Plate 6

Figs. 1-2. *Actinocyclus subtilis* (Gregory) Ralfs

Fig. 3. *Eupodiscus radiatus* J. W. Bailey

Fig. 4. *Actinocyclus octonarius* Ehrenberg

Fig. 5. *Cerataulus* sp. 1

Fig. 6. *Cerataulus californicus* A. Schmidt

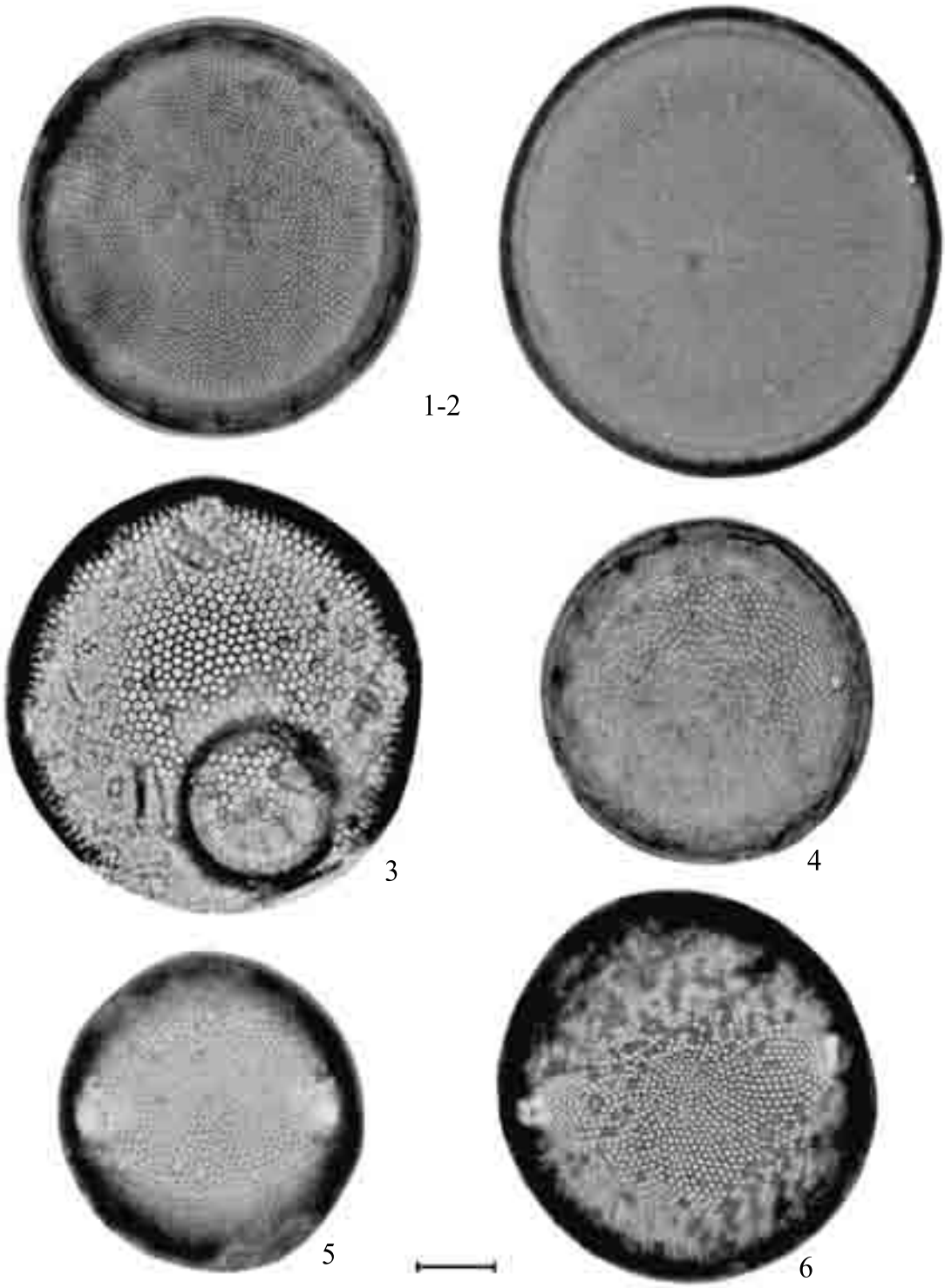

1-2
3
4
5
6

Plate 7

Figs. 1-2, 8-10. *Paralia sulcata* (Ehrenberg) Cleve

Figs. 3-4. *Cyclotella striata* (Kützing) Grunow

Figs. 5-7. *Cyclotella litoralis* Lange & Syvertsen

Fig. 11. *Podosira montagnei* Kützing

Fig. 12. *Melosira moniliformis* var. *octogona* (Grunow) Hustedt

Fig. 13. *Podosira stelliger* (J. W. Bailey) A. Mann

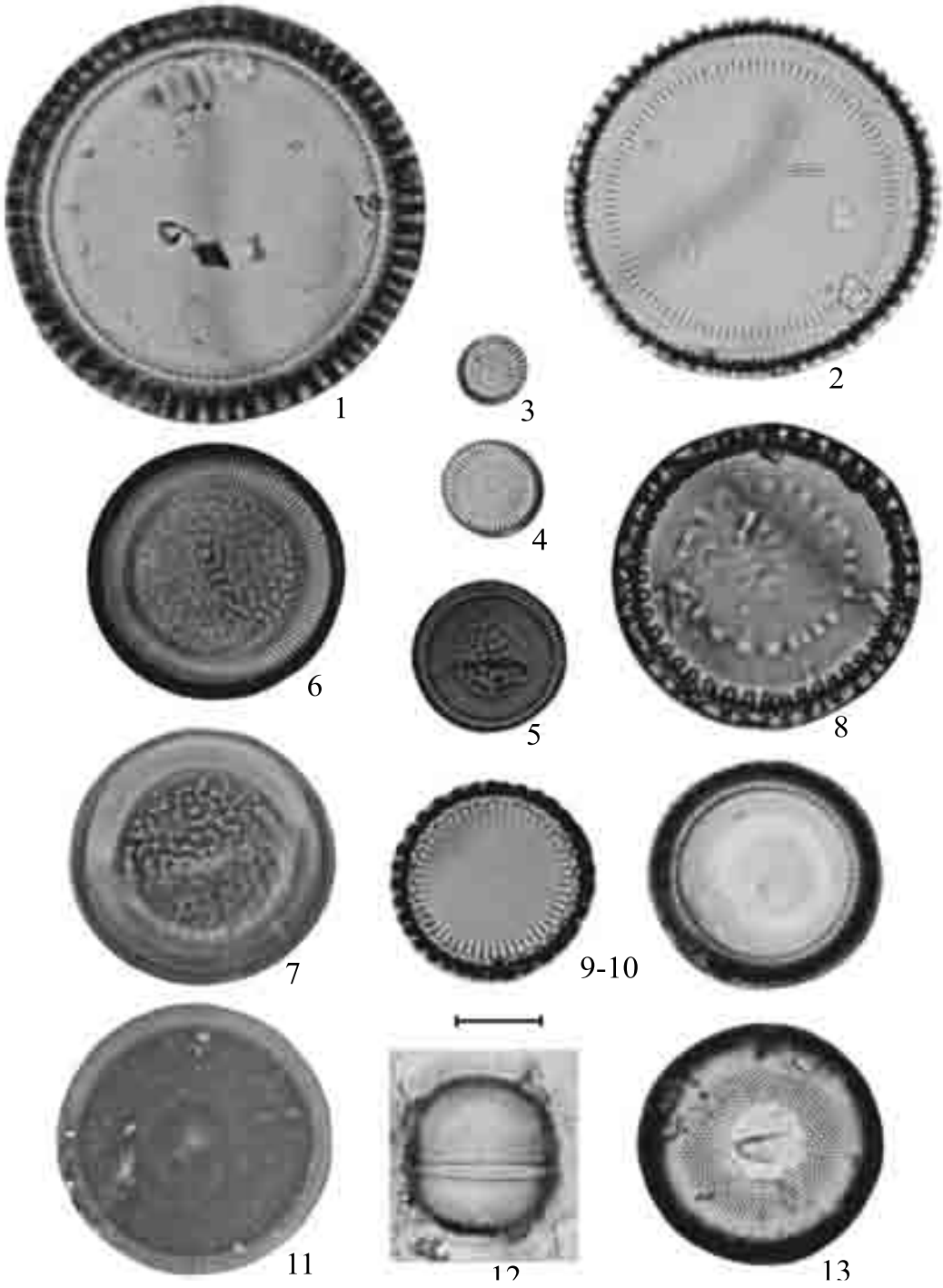

1
2
3
4
5
6
7
8
9-10
11
12
13

Plate 8

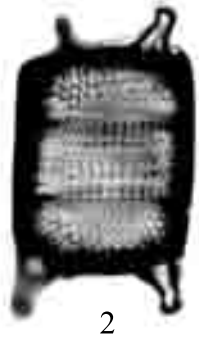
Figs. 1-3, 6. *Odontella aurita* (Lyngbye) Agardh

Figs. 4-5. *Odontella rhombus* (Ehrenberg) Kützing

1

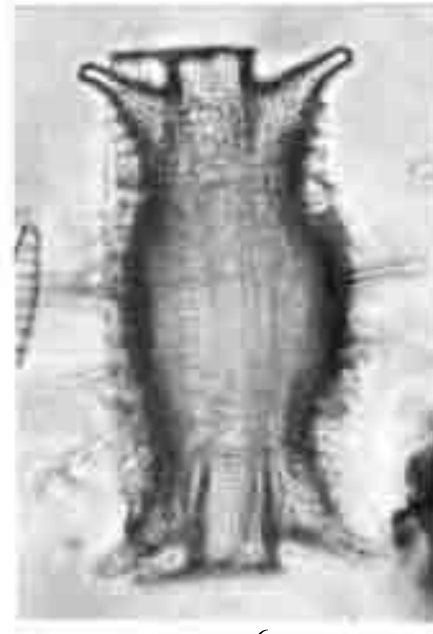
4

5



2

3



6

Plate 9

Figs. 1-2, 5-7. *Actinoptychus senarius* (Ehrenberg) Ehrenberg

Figs. 3-4 (630X). *Actinoptychus hexagonus* Grunow

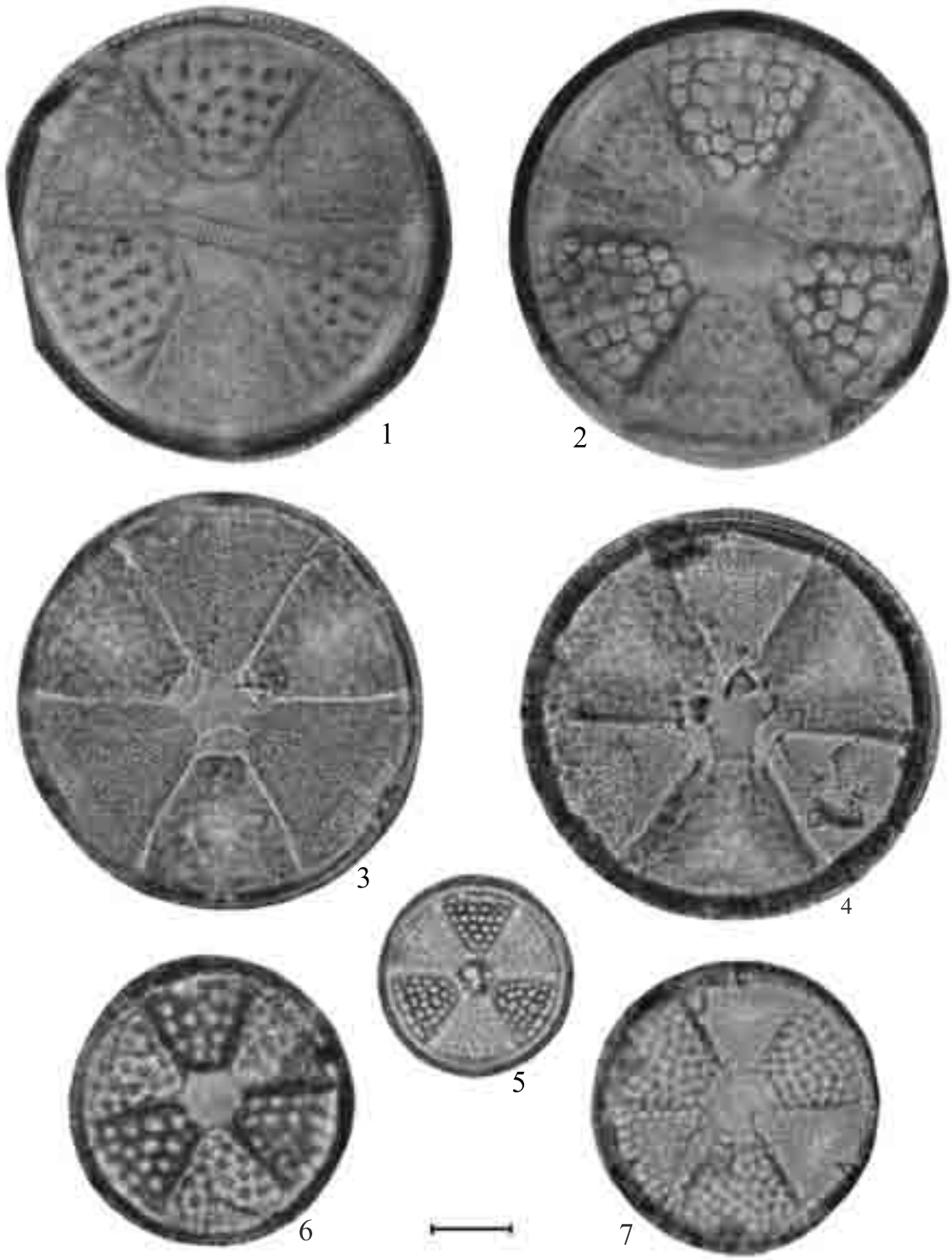

1
2
3
4
5
6
7

Plate 10

Figs. 1-2. *Actinoptychus vulgaris* Schumann

Figs. 3-4 (630X). *Actinoptychus splendens* (Shadbolt) Ralfs ex Pritchard

Figs. 5-6 (630X). *Actinoptychus cathedralis* Brun

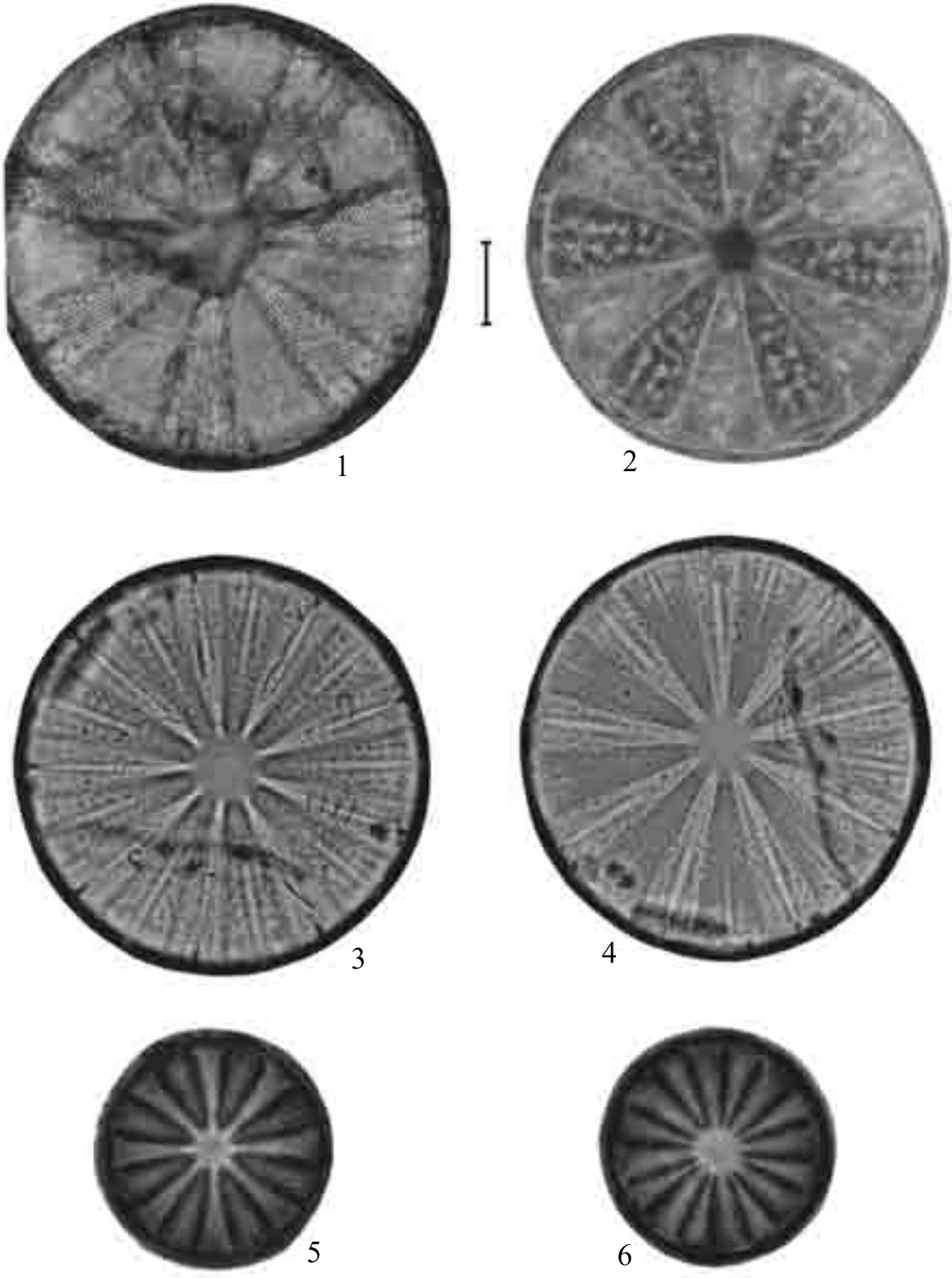
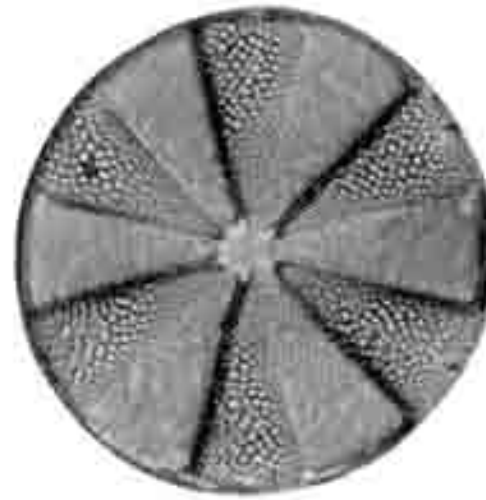

1
2
3
4
5
6

Plate 11

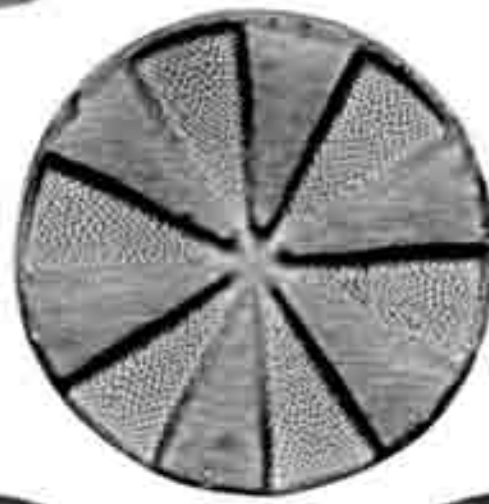
Fig. 1. *Actinoptychus parvus* A. Mann

Figs. 2-5. *Actinoptychus adriaticus* Grunow

1



2



3

4-5

Plate 12

Fig. 1. *Auliscus punctatus* J. W. Bailey

Figs. 2-3. *Auliscus elegans* var. *californica* Grunow

Fig. 4. *Auliscus sculptus* (W. Smith) Ralfs

Fig. 5. *Auliscus caelatus* var. *strigillata* A. Schmidt

Figs. 6-7. *Biddulphia tridens* (Ehrenberg) Ehrenberg

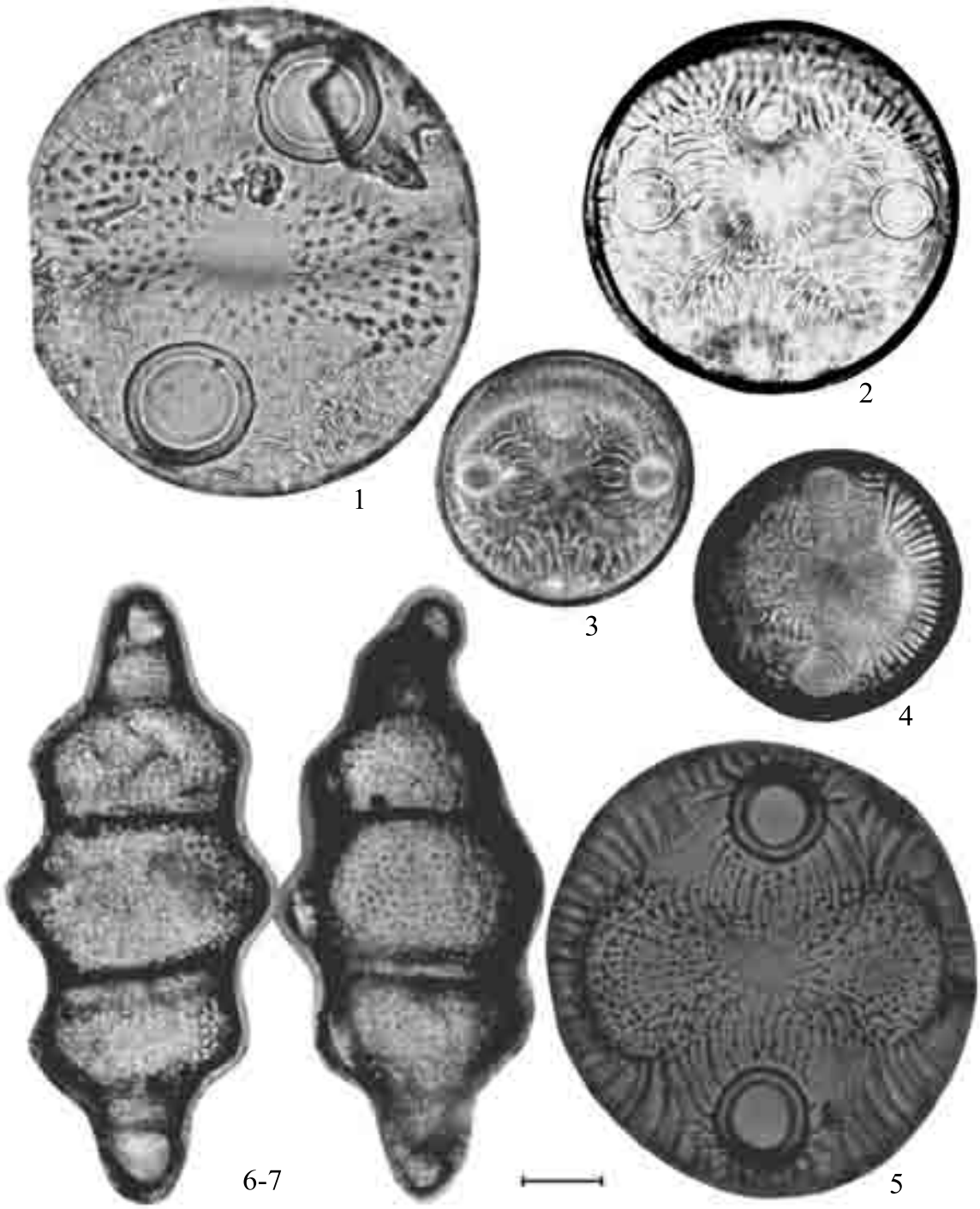

1
2
3
4
5
6-7

Plate 13

Figs. 1-3. *Plagiogramma tesselatum* Greville

Figs. 4-7. *Plagiogramma interruptum* (Gregory) Ralfs

Figs. 8-9. *Plagiogramma wallichianum* Greville

Fig. 10. *Plagiogramma* sp. 1

Figs. 11-12. *Plagiogramma rhombicum* Hustedt

Fig. 13. *Plagiogramma pulchellum* Greville

Figs. 14-15. *Rhaphoneis castracanii* Grunow

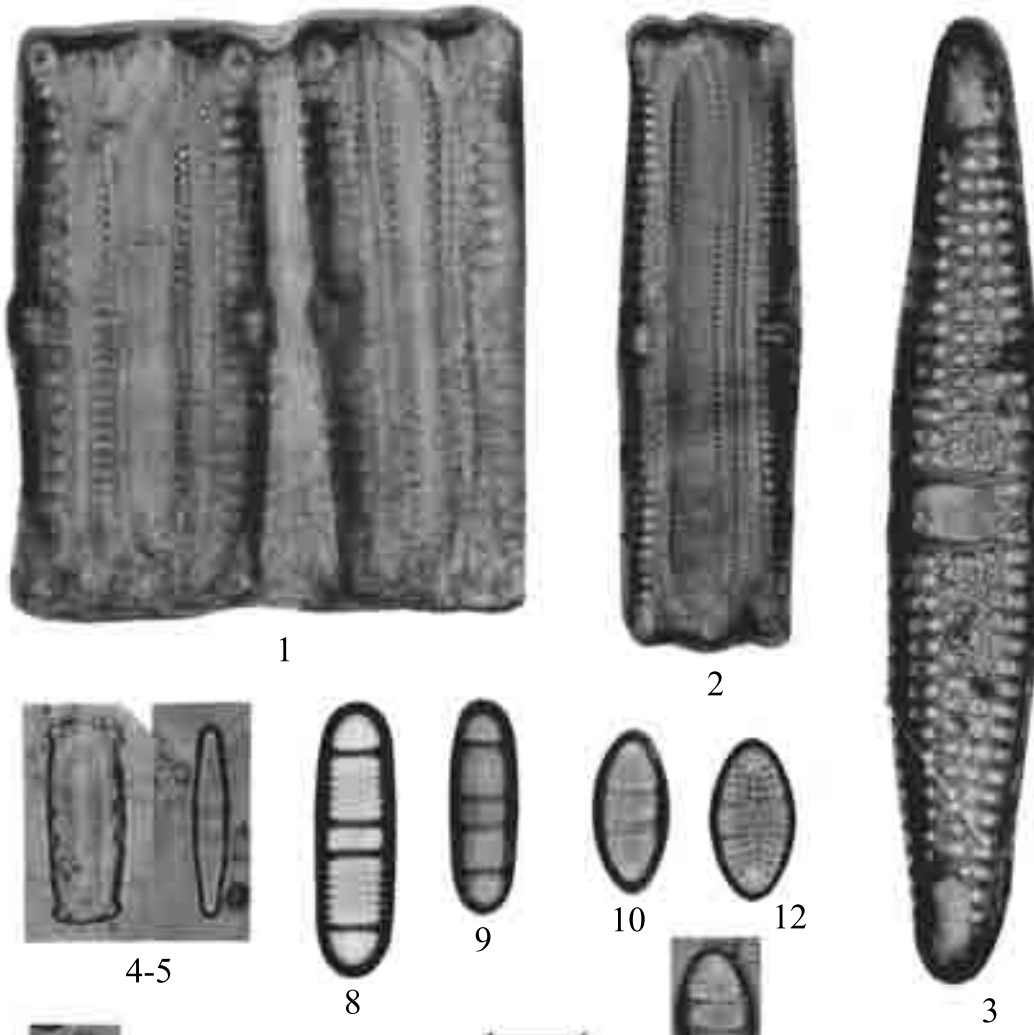

1
2
3
4-5
8
9
10
12
11
6-7
13
14-15

Plate 14

Figs. 1-2. *Eunotogramma frauenfeldii* Grunow

Figs. 3-8. *Eunotogramma laevis* Grunow

Fig. 9. *Fragilaria capensis* Grunow

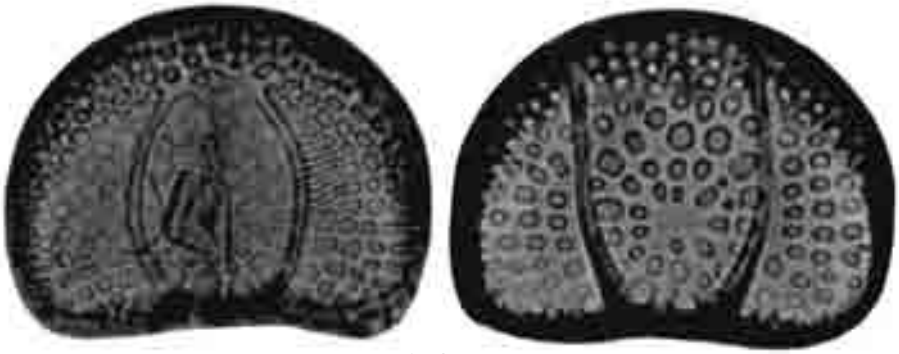
Fig. 10. *Campylosira cymbelliformis* (A. Schmidt) Grunow

Figs. 11-16, 18. *Dimeregramma minor* var. *minor* (Gregory) Ralfs

Figs. 17, 25-26. *Dimeregramma maculatum* (Cleve) Frenguelli

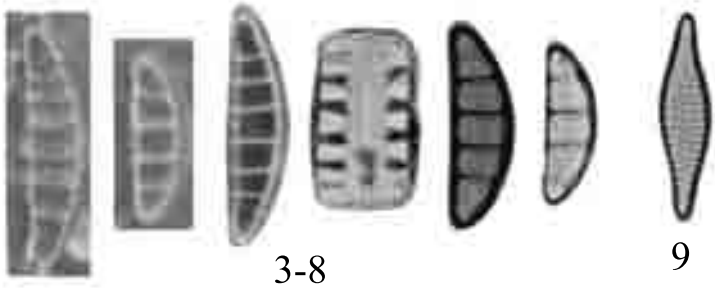
Figs. 19-20, 23-24. *Dimeregramma* sp. 1

Figs. 21-22. *Dimeregramma* sp. 2



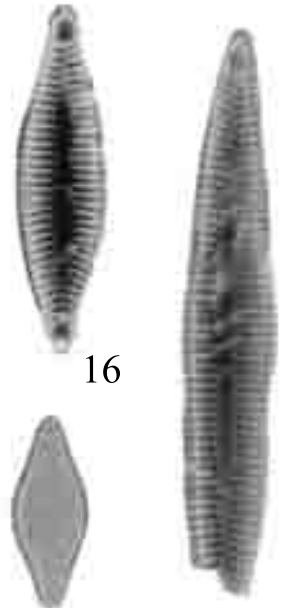
1-2

10



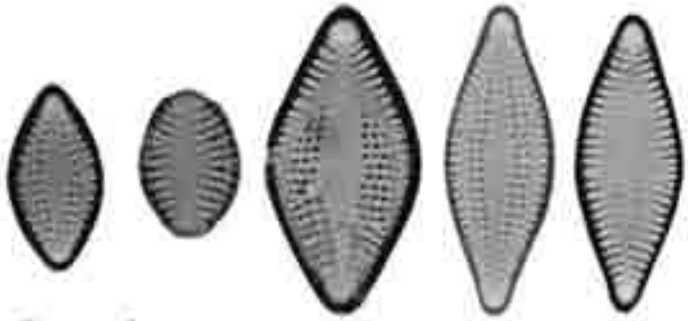
3-8

9



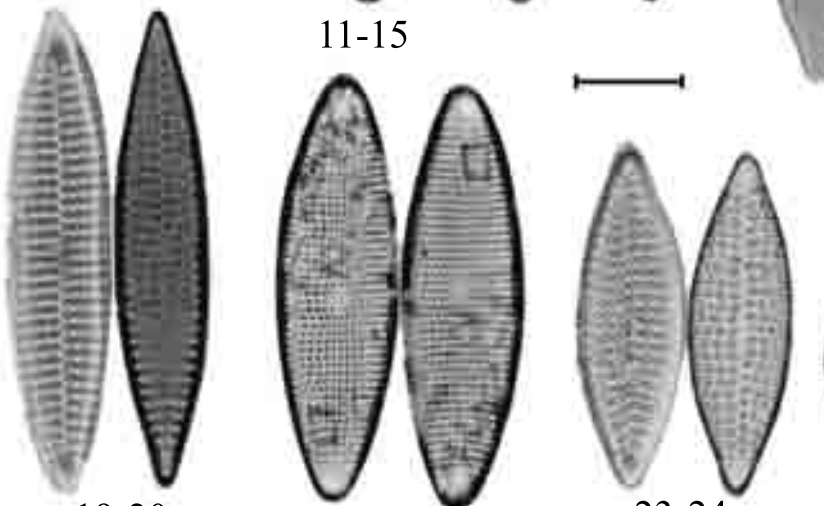
16

18



11-15

17



19-20

21-22

23-24

25-26

Plate 15

Figs. 1-5. *Biddulphia alternans* (J. W. Bailey) van Heurck

Fig. 6. *Gephyria media* Arnott

Figs. 7, 9. *Rhaphoneis castracanii* Grunow

Fig. 8. *Terpsinoë americana* (J. W. Bailey) Ralfs

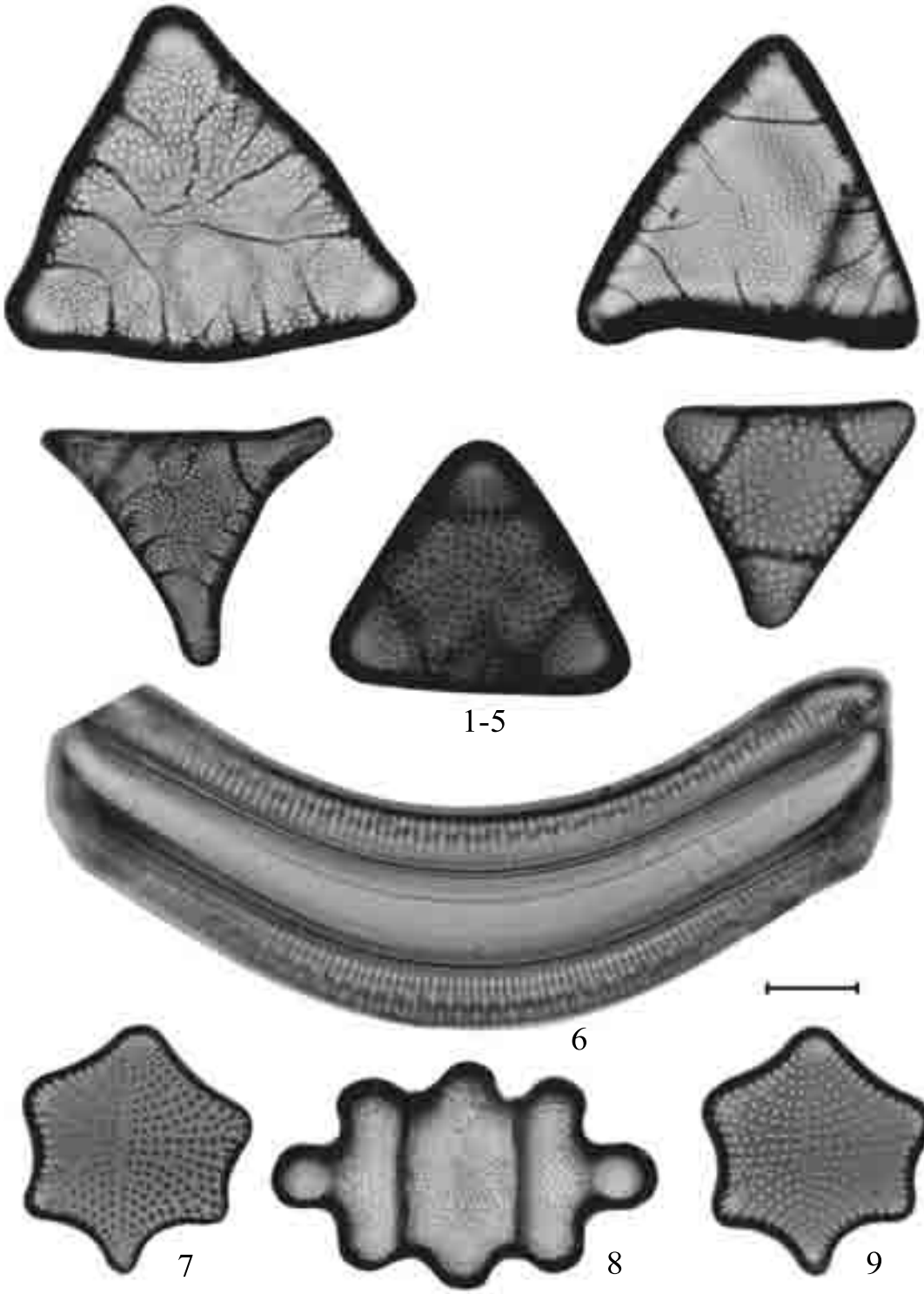

1-5
6
7
8
9

Plate 16

Fig. 1. *Grammatophora undulata* Ehrenberg

Figs. 2-3, 5-6. *Grammatophora marina* (Lyngbye) Kützing

Fig. 4. *Grammatophora hamulifera* Kützing

Figs. 7-8. *Grammatophora oceanica* var. *subtilissima* (J. W. Bailey) De toni

Figs. 9, 14. *Delphineis surirella* (Ehrenberg) Andrews

Figs. 10-12, 13, 15. *Delphineis surirella* var. *australis* (Petit) Navarro

Fig. 16. *Glyphodesmis distans* (Gregory) Grunow ex van Heurck

Fig. 17. *Opephora guenter-grassii* (Witkowski & Lange-Bertalot) Sabbe & Vyverman

Figs. 18-20. *Opephora pacifica* (Grunow) Petit

Fig. 21. *Opephora burchardtiae* Witkowski, Metzeltin & Lange-Bertalot

Figs. 22-25. *Opephora schwartzii* (Grunow) Petit

Fig. 26. *Licmophora remulus* Grunow

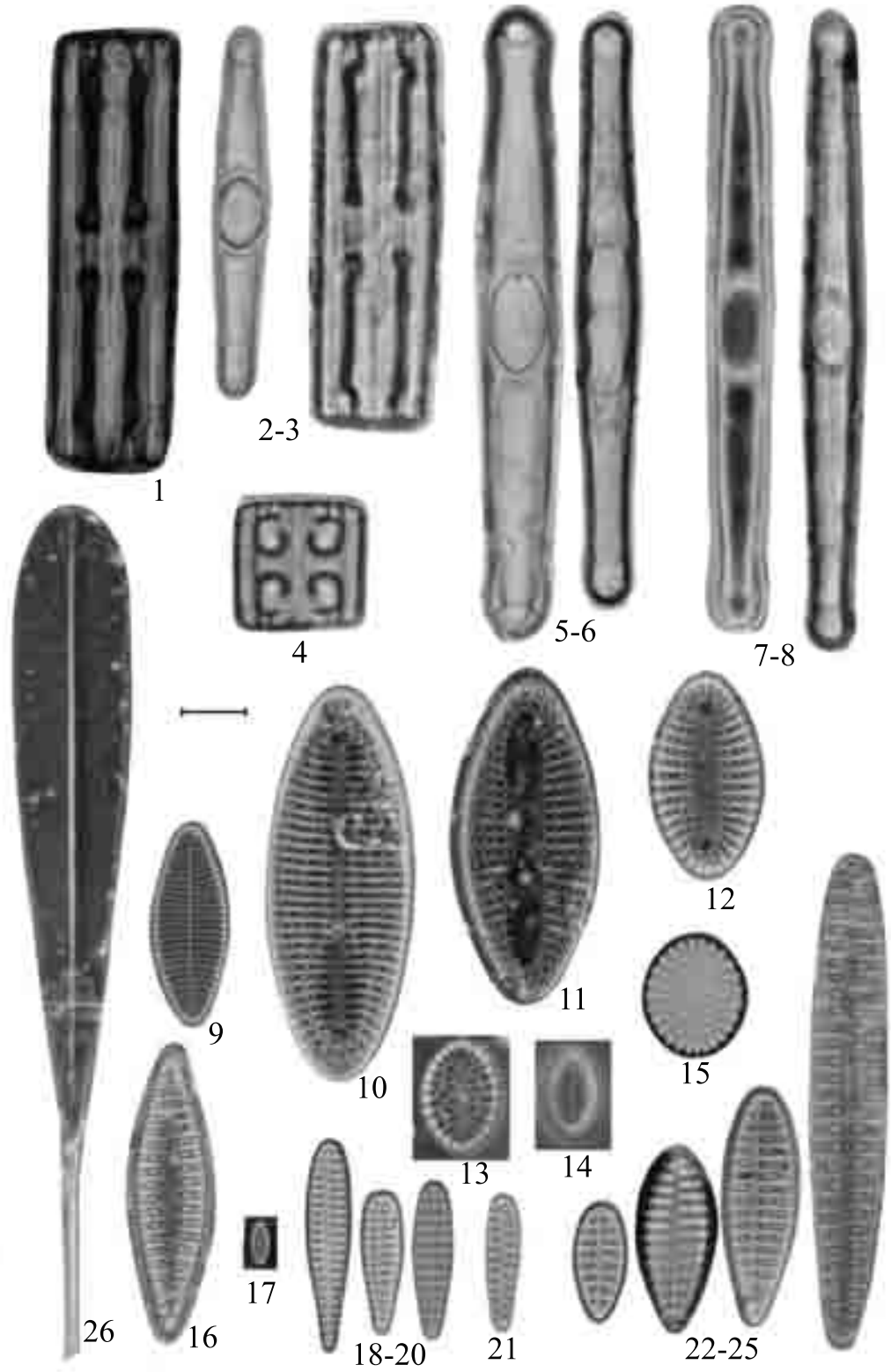

1
2-3
4
5-6
7-8
9
10
11
12
13
14
15
16
17
18-20
21
22-25
26

Plate 17

Figs. 1-6. *Cocconeis dirupta* Gregory

Figs. 7-8. *Cocconeis dirupta* var. *flexella* (Janisch & Rabenhorst) Grunow

Figs. 9-10. *Cocconeis costata* var. *pacifica* Grunow

Fig. 11. *Cocconeiopsis fraudulenta* (A. Schmidt) Witkowski, Lange-Bertalot et Metzeltin

Fig. 12. *Cocconeiopsis orthoneoides* (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Fig. 13. *Cocconeiopsis patrickae* (Hustedt) Witkowski , Lange-Bertalot et Metzeltin

Figs. 14-15. *Cocconeis* sp. 1

Figs. 16-17. *Cocconeis scutellum* Ehrenberg

Fig. 18. *Cocconeis disculoides* Hustedt

Fig. 19. *Cocconeis* sp. 2

Fig. 20. *Anorthoneis eurystoma* Cleve

Fig. 21. *Anorthoneis excentrica* (Donkin) Grunow

Figs. 22-23. *Tabularia parva* (Kützing) Williams & Round

Fig. 24. *Catacombas gaillonii* (Bory) D. M. Williams & Round

Fig. 25. *Hyalosynedra laevigata* (Grunow) D. M. Williams & Round

Figs. 26-27. *Thalassionema nitzschioides* (Grunow) Mereschkowsky

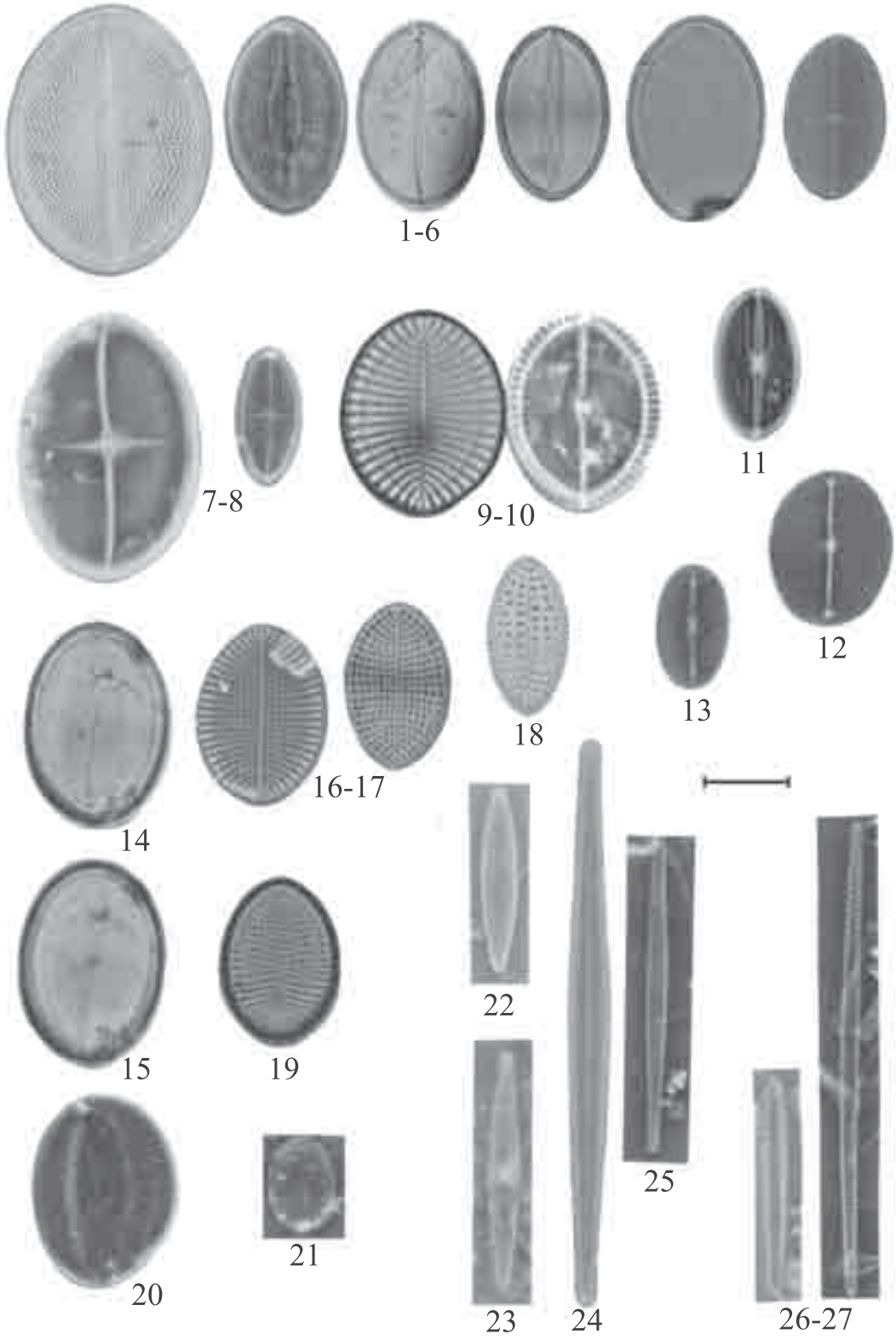

1-6
7-8
9-10
11
12
13
14
16-17
18
15
19
22
25
20
21
23
24
26-27

Plate 18

Fig. 1. *Achnanthes angustata* Greville

Fig. 2. *Achnanthes pseudogroenlandica* Hendey

Fig. 3. *Achnanthes brevipes* Agardh

Fig. 4. *Achnanthes brevipes* var. *intermedia* (Kützing) Cleve

Figs. 5-6. *Achnanthes parvula* Kützing

Fig. 7. *Achnanthes javanica* Grunow

Figs. 8-13. *Achnanthes yaquinensis* McIntire & Reimer

Fig. 14. *Planothidium heidenii* (Schülz) Witkowski

Fig. 15, 17. *Planothidium hauckianum* (Grunow) Round & Buktiyarova

Fig. 16. *Planothidium lanceolata* (Brébisson) Grunow

Fig. 18. *Achnanthes fimbriata* (Grunow) Ross

Figs. 19-20. *Achnanthes curvirostrum* Brun

Figs. 21-22. *Oestrupia musca* (Gregory) Hustedt

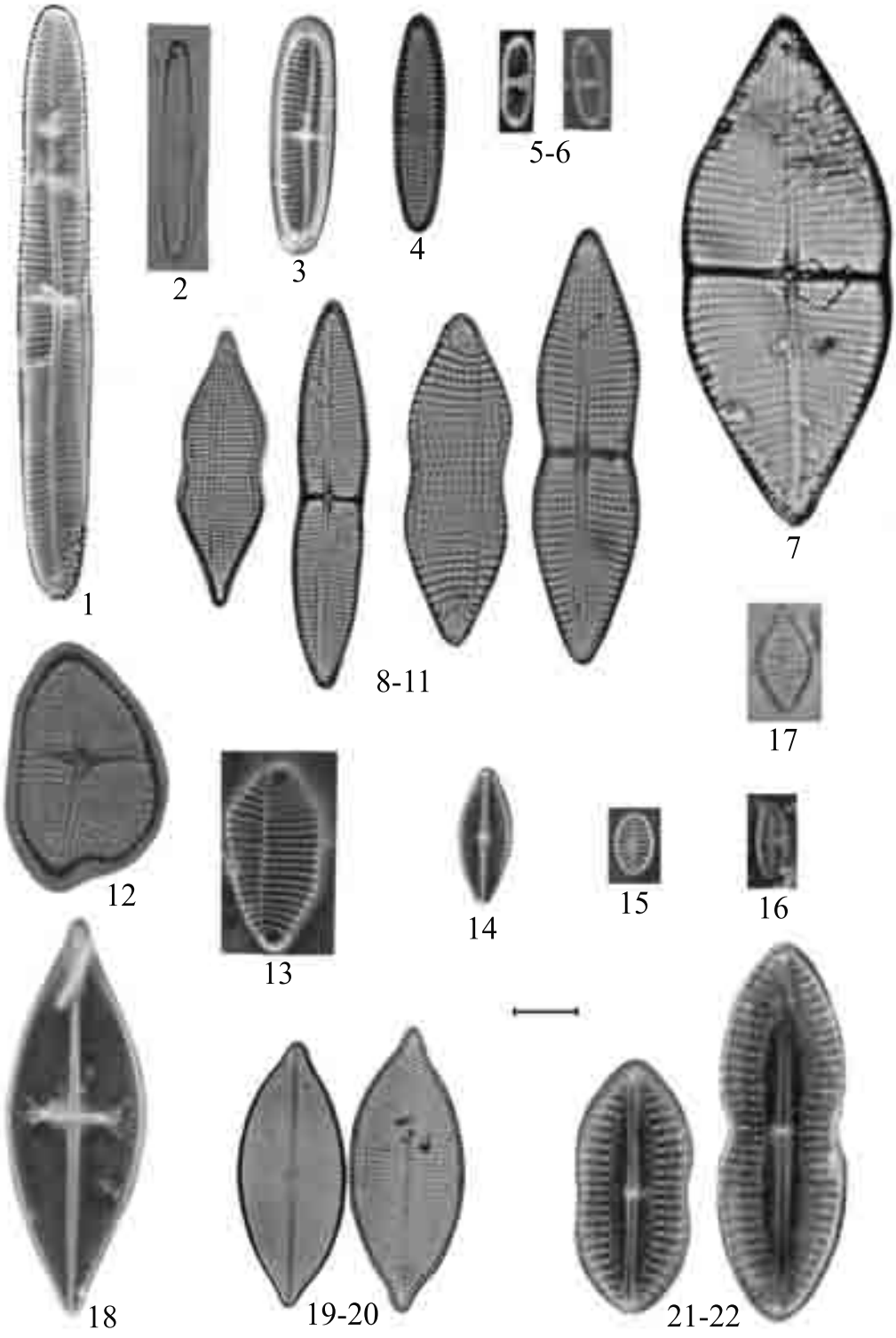

1
2
3
4
5-6
7
8-11
12
13
14
15
16
17
18
19-20
21-22

Plate 19

Figs. 1-2, 3 (630X), 4. *Diploneis crabro* Ehrenberg

Fig. 5. *Diploneis chersonensis* (Grunow) Cleve

Fig. 6**.** *Diploneis smithii* (Brébisson) Cleve var. *smithii*

Figs. 7-10. *Diploneis obliqua* (Brun) Hustedt

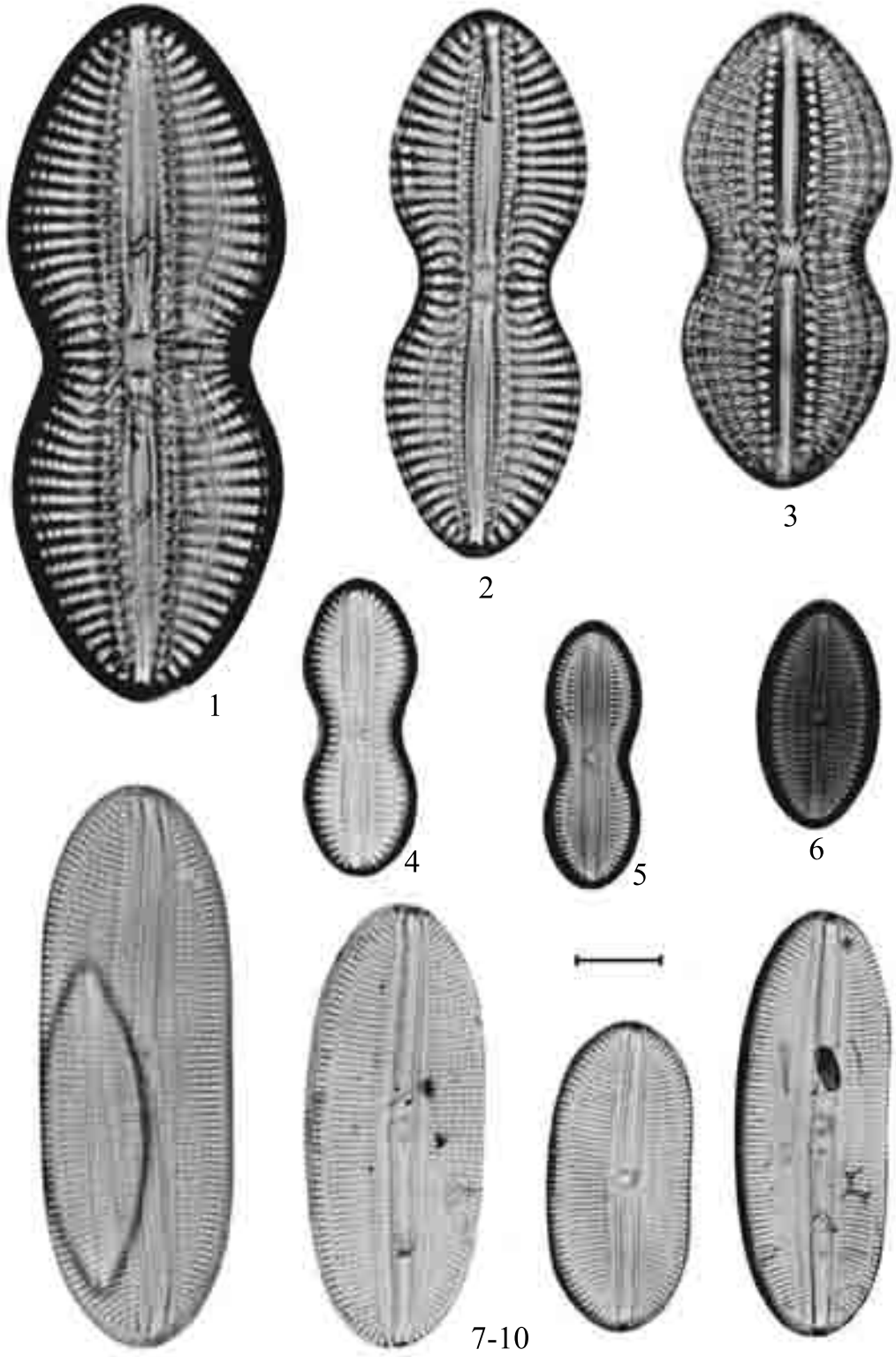

1
2
3
4
5
6
7-10

Plate 20

Fig. 1. *Diploneis crabro* Ehrenberg

Figs. 2-4. *Diploneis gruendleri* (A. Schmidt) Cleve

Fig. 5. *Diploneis subcincta* (A. Schmidt) Cleve

Figs. 6-7. *Diploneis notabilis* (Greville) Cleve

Figs. 8-9. *Diploneis didyma* (Ehrenberg) Cleve

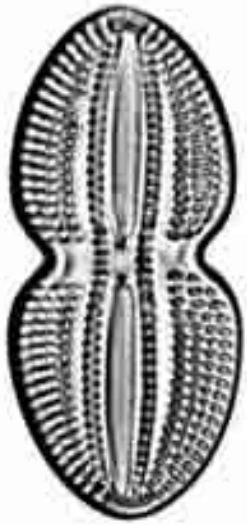
Figs. 10-11. *Diploneis caffra* (Giffen) Witkowski, Lange-Bertalot et Metzeltin

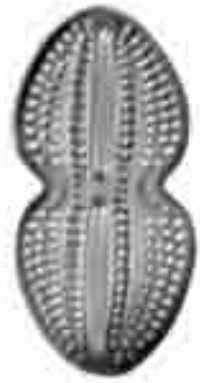
Fig. 12. *Diploneis smithii* (Brébisson) Cleve var. *smithii*

Fig. 13. *Diploneis smithii* var. *recta* Peragallo

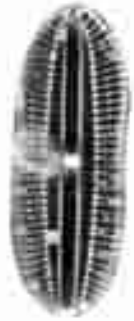
Figs.14-15. *Diploneis suborbicularis* (Gregory) Cleve

1

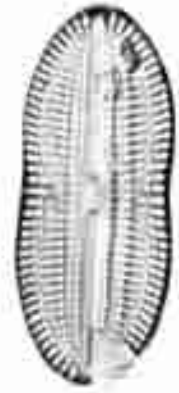


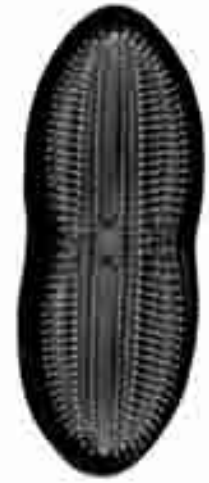


2-4



5-6

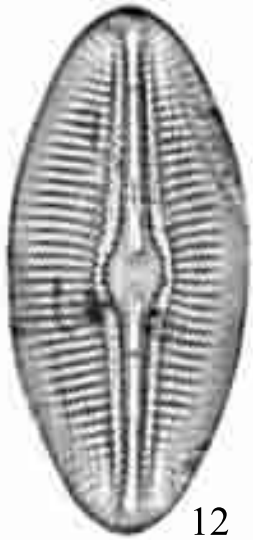




8-9

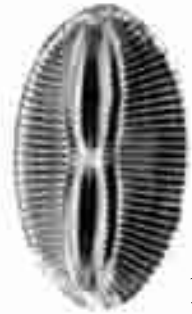
7

10-11



12

13



14-15

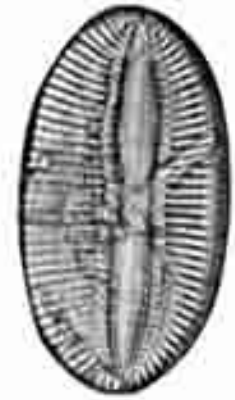


Plate 21

Figs. 1-2. *Fallacia nummularia* (Greville) D. G. Mann

Fig. 3. *Fallacia hummii* (Hustedt) D. G. Mann

Figs. 4-5. *Fallacia forcipata* (Greville) Stickle & D. G. Mann

Fig. 6. *Fallacia nyella* (Hustedt) D. G. Mann

Figs. 7-10. *Fallacia vittata* (Cleve) D. G. Mann

Figs. 11-14. *Fallacia litoricola* (Hustedt) D. G. Mann

Fig. 15. *Lyrella abrupta* (Gregory) D. G. Mann

Figs. 16-18. *Lyrella exsul* (A. Schmidt) D. G. Mann

Figs. 19-22. *Lyrella approximatoides* (Hustedt) D. G. Mann

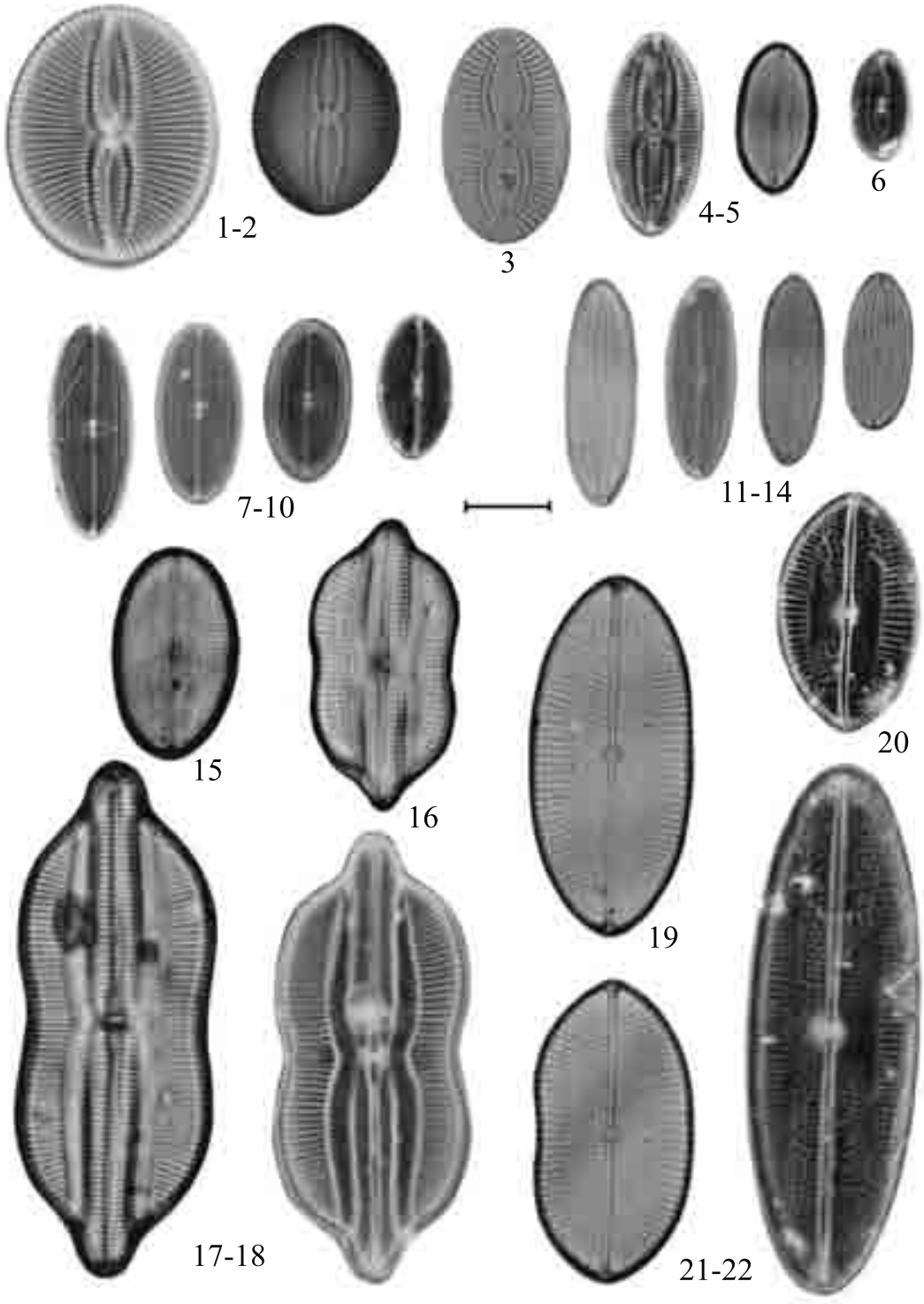

1-2
3
4-5
6
7-10
11-14
15
16
17-18
19
20
21-22

Plate 22

Fig. 1. *Lyrella lyra* var. *recta* (Greville) Moreno

Figs. 2-5. *Lyrella lyra* (Ehrenberg) Karayeva var. *lyra*

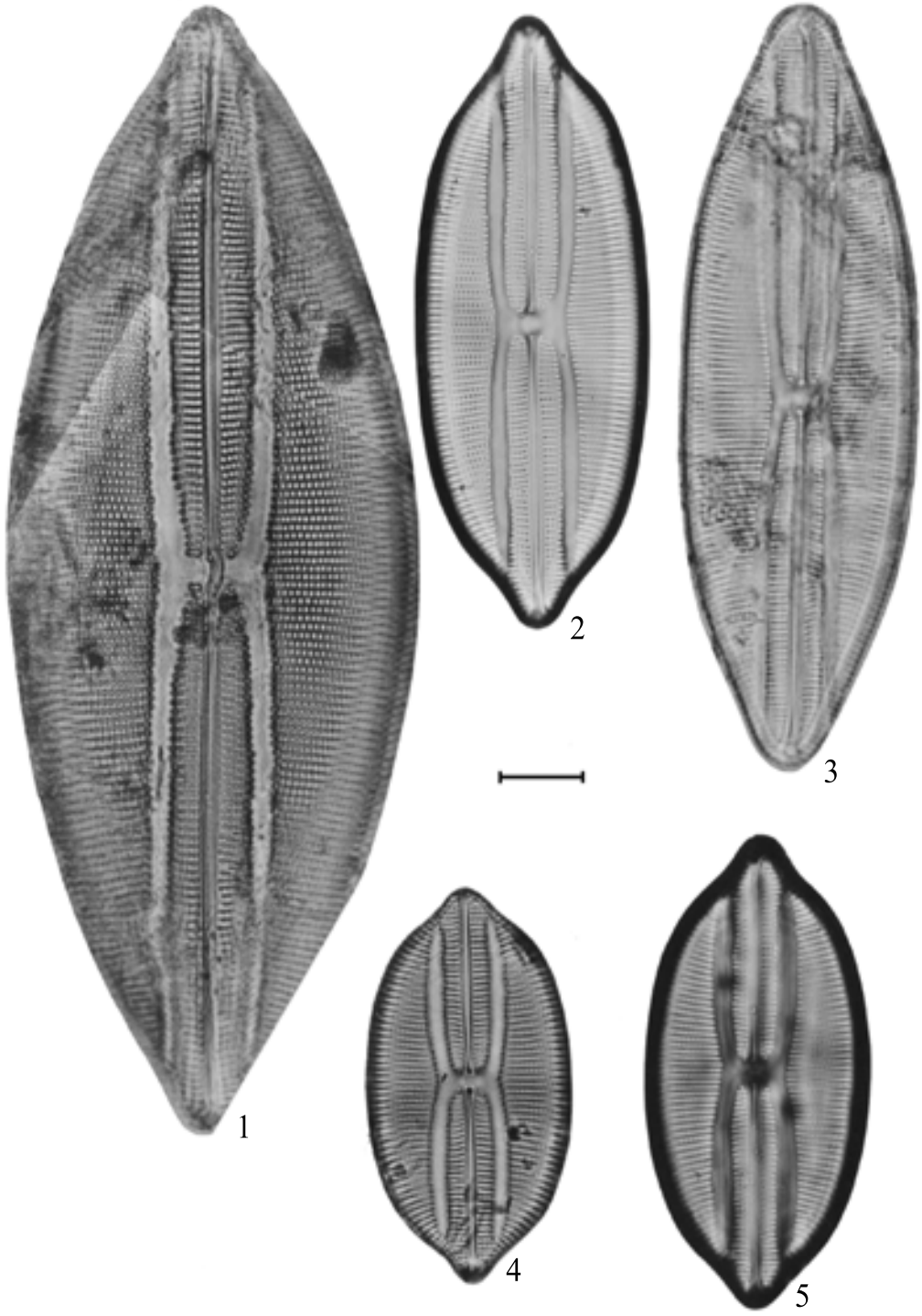

1
2
3
4
5

Plate 23

Figs. 1-7. *Navicula caribaea* Cleve

Figs. 8, 10. *Lyrella abruptoides* (Hustedt) D. G. Mann

Fig. 9. *Navicula spectabilis* f. *emarginata* (Cleve) Hustedt

Figs. 11-12. *Lyrella hennedyi* (W. Smith) Stickle & D. G. Mann

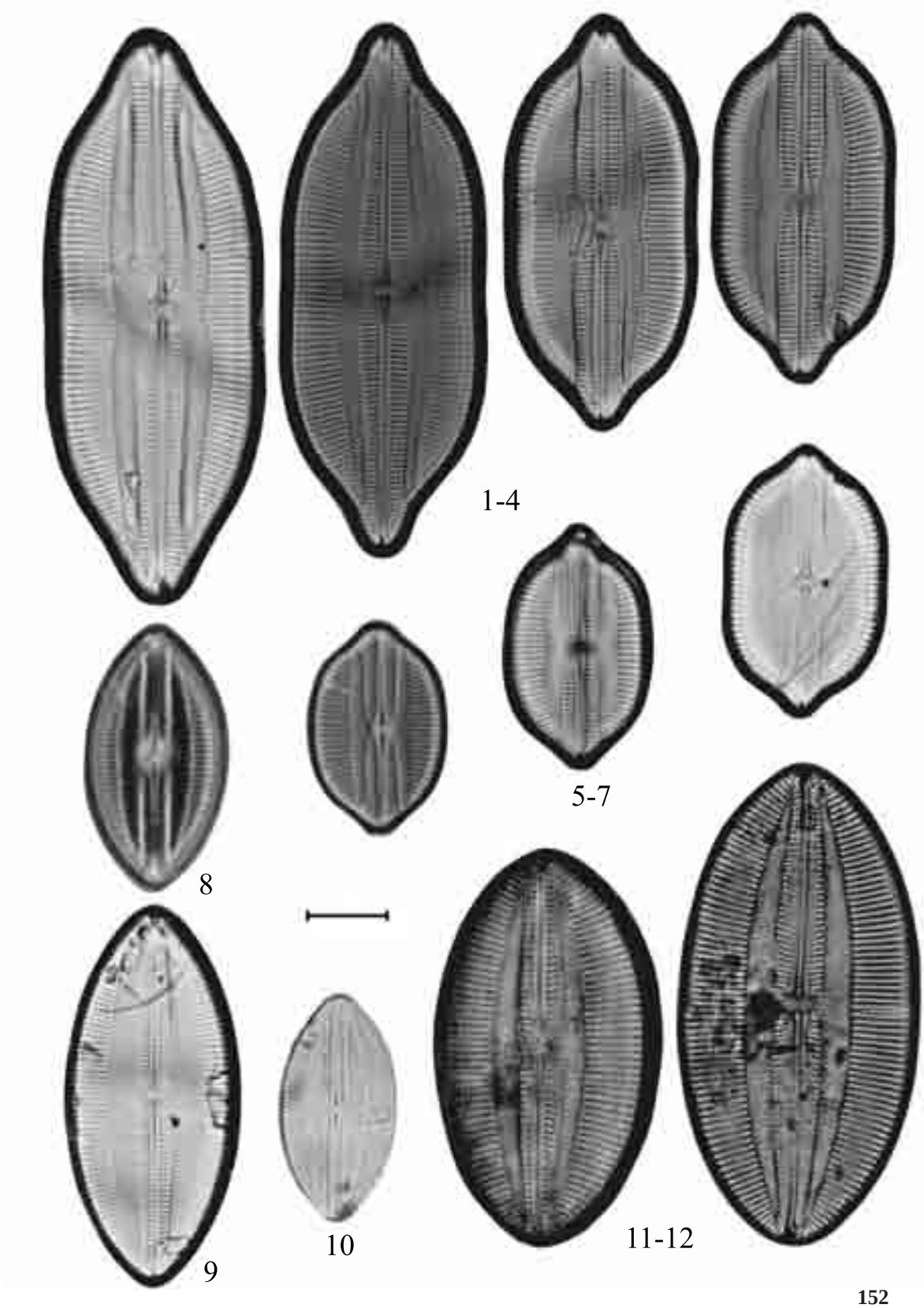
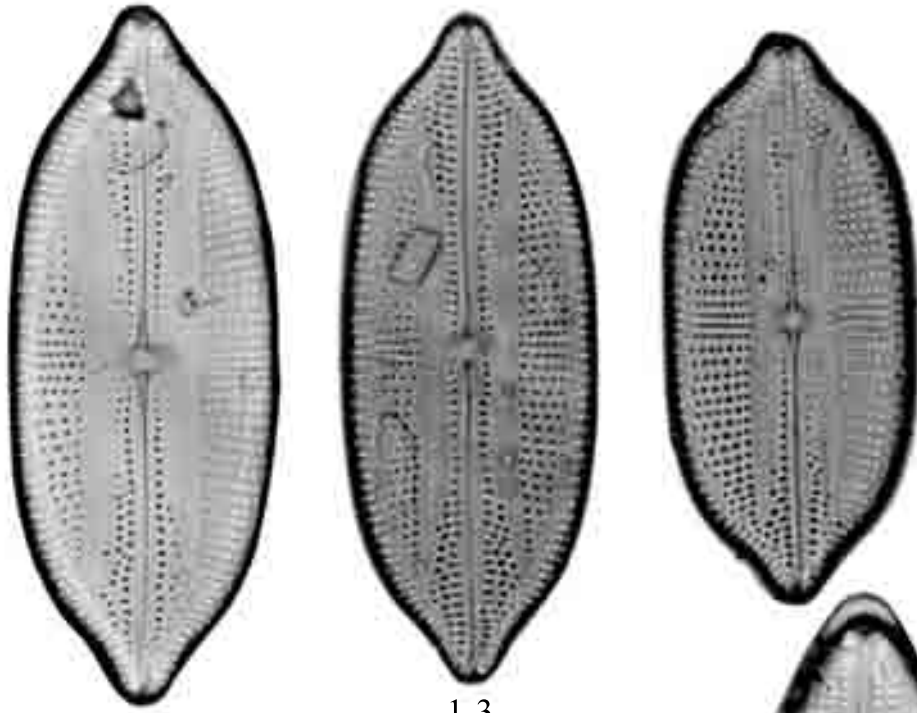
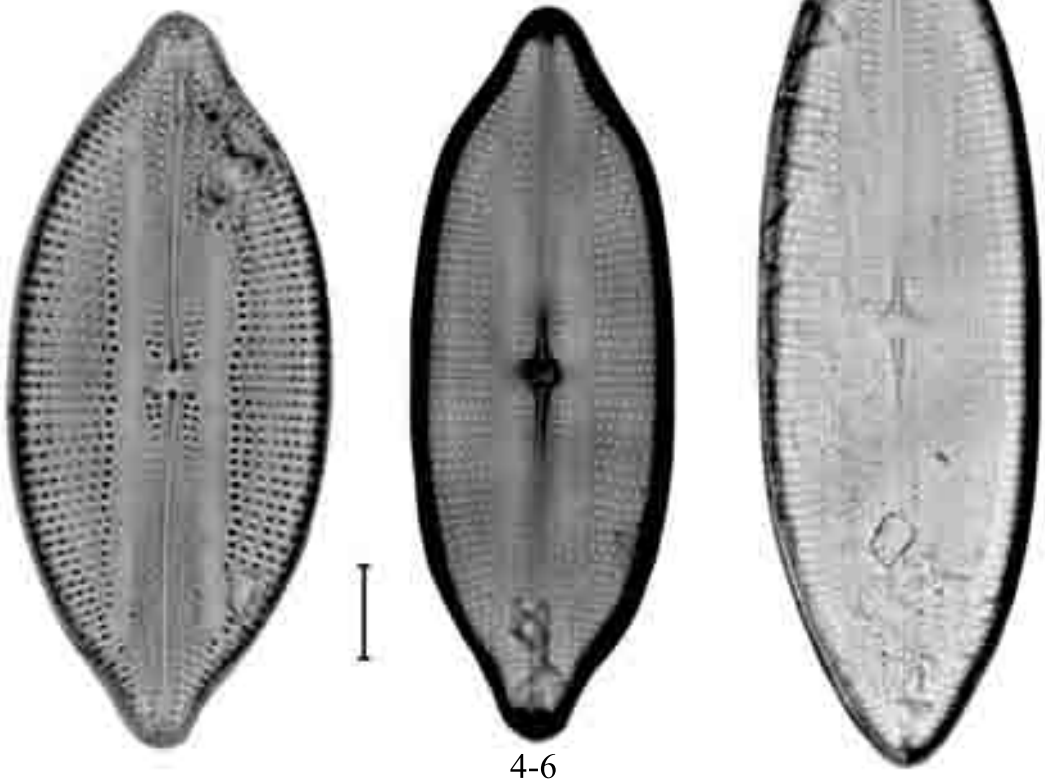

1-4
5-7
8
9
10
11-12

Plate 24

Figs. 1-6. *Lyrella irrorata* (Greville) D. G. Mann



1-3



4-6

Plate 25

Figs. 1-5, 7-11. *Petroneis granulata* (J. W. Bailey) D. G. Mann

Fig. 6. *Petroneis marina* (Ralfs ex Pritchard) D. G. Mann

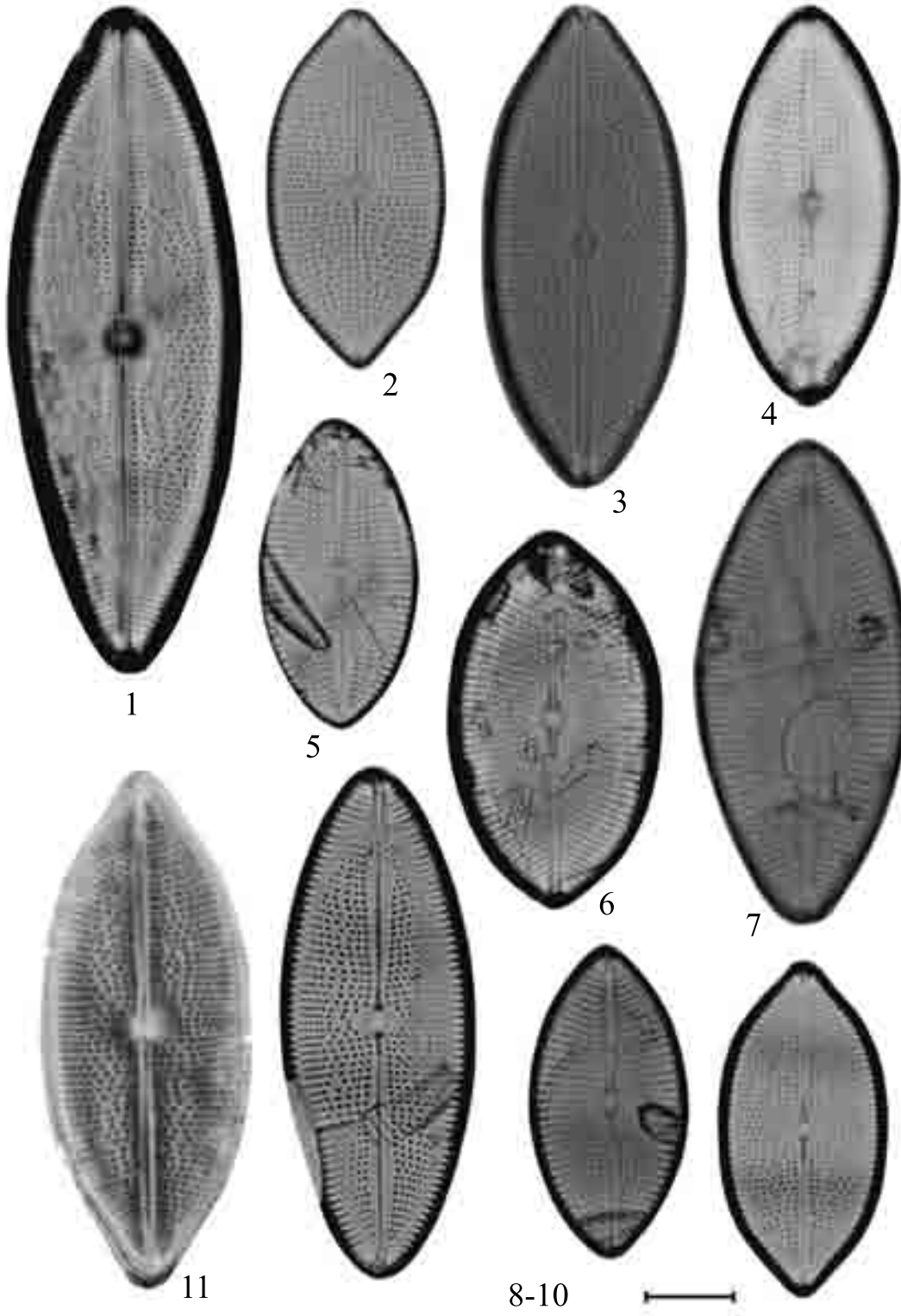

1
2
3
4
5
6
7
8-10
11

Plate 26

Figs. 1-6. *Mastogloia angulata* Lewis

Figs. 7-9. *Mastogloia pisciculus* Cleve

Figs. 10-11. *Mastogloia* sp. 1

Figs. 12-13. *Mastogloia fallax* Cleve

Figs. 14-15. *Mastogloia binotata* (Grunow) Cleve

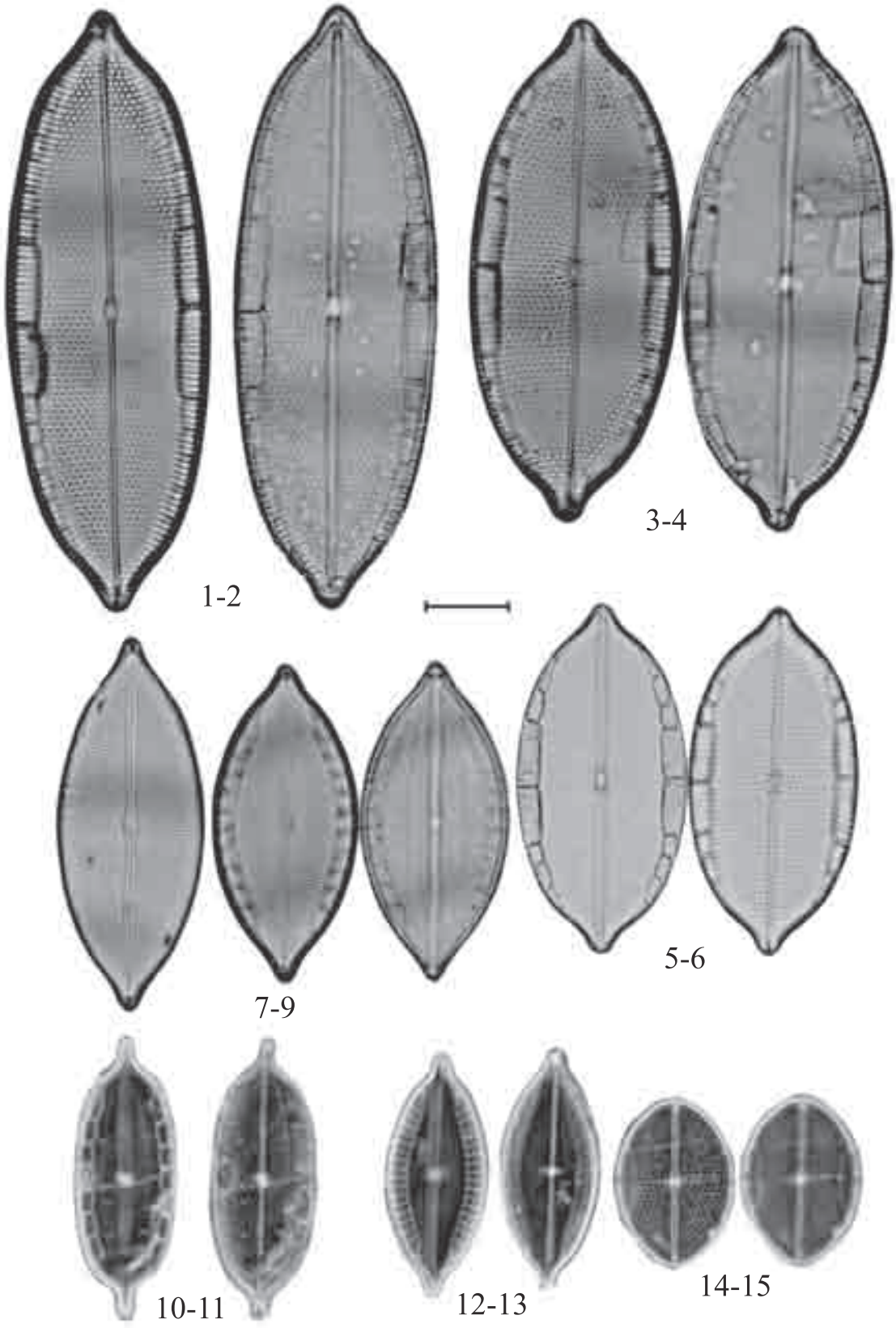

1-2
3-4
5-6
7-9
10-11
12-13
14-15

Plate 27

Figs. 1-2. *Mastogloia fallax* Cleve

Figs. 3-6. *Mastogloia elliptica* (C. A. Agardh) Cleve

Figs. 7-10. *Mastogloia braunii* Grunow

Figs. 11-14. *Mastogloia pseudoexigua* Cholnoky

Figs. 15-16. *Mastogloia citrus* Cleve

Figs.17-18. *Mastogloia exilis* Hustedt

Figs. 19-20 *Mastogloia* sp. 2

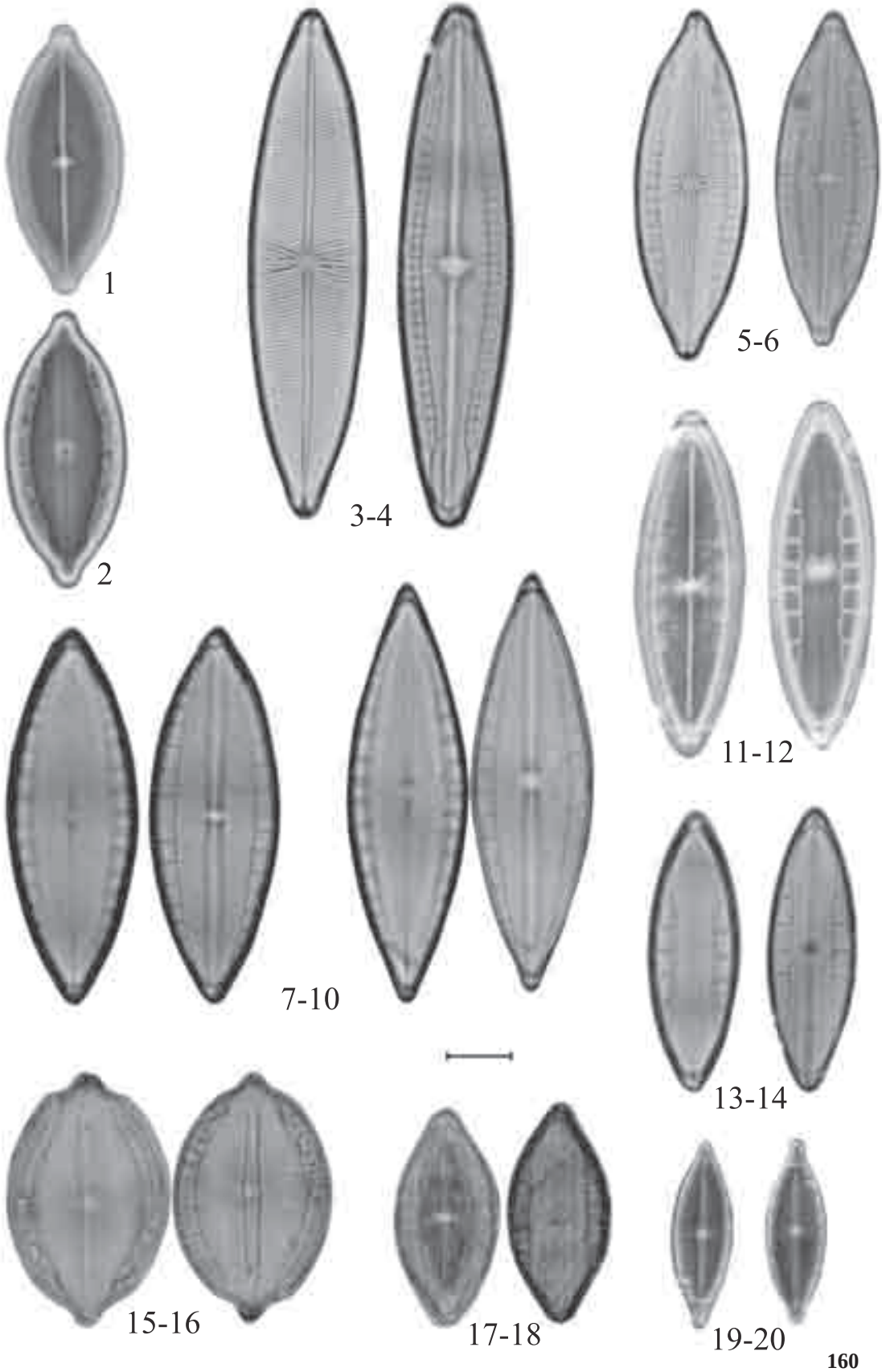

1
2
3-4
5-6
7-10
11-12
13-14
15-16
17-18
19-20

Plate 28

Fig. 1. *Parlibellus hagelsteinii* Cox

Fig. 2. *Parlibellus rhombicula* (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Figs. 3-4. *Frustulia asymmetrica* (Cleve) Hustedt

Figs. 5-6. *Frustulia interposita* (Lewis) De Toni

Figs. 7-9. *Chamaepinnularia clamans* (Hustedt) Witkowski, Lange-Bertalot et Metzeltin

Figs. 10-11. *Navicula platyventris* Meister

Fig. 12. *Navicula lineola* var. *perlepida* (Grunow) Cleve

Figs. 13-14. *Diadesmis contenta* (Grunow) D.G. Mann

Fig. 15. *Navicula ammophila* Grunow

Figs. 16-17. *Navicula meniscoides* Hustedt

Fig. 18. *Proschkinia complanata* (Grunow) D. G. Mann

Fig. 19. *Berkeleya scopulorum* (Brébisson ex Kützing) Cox

Fig. 20. *Gomphonemopsis littoralis* (Hendey) Medlin

Fig. 21. *Navicula margalithii* Lange-Bertalot

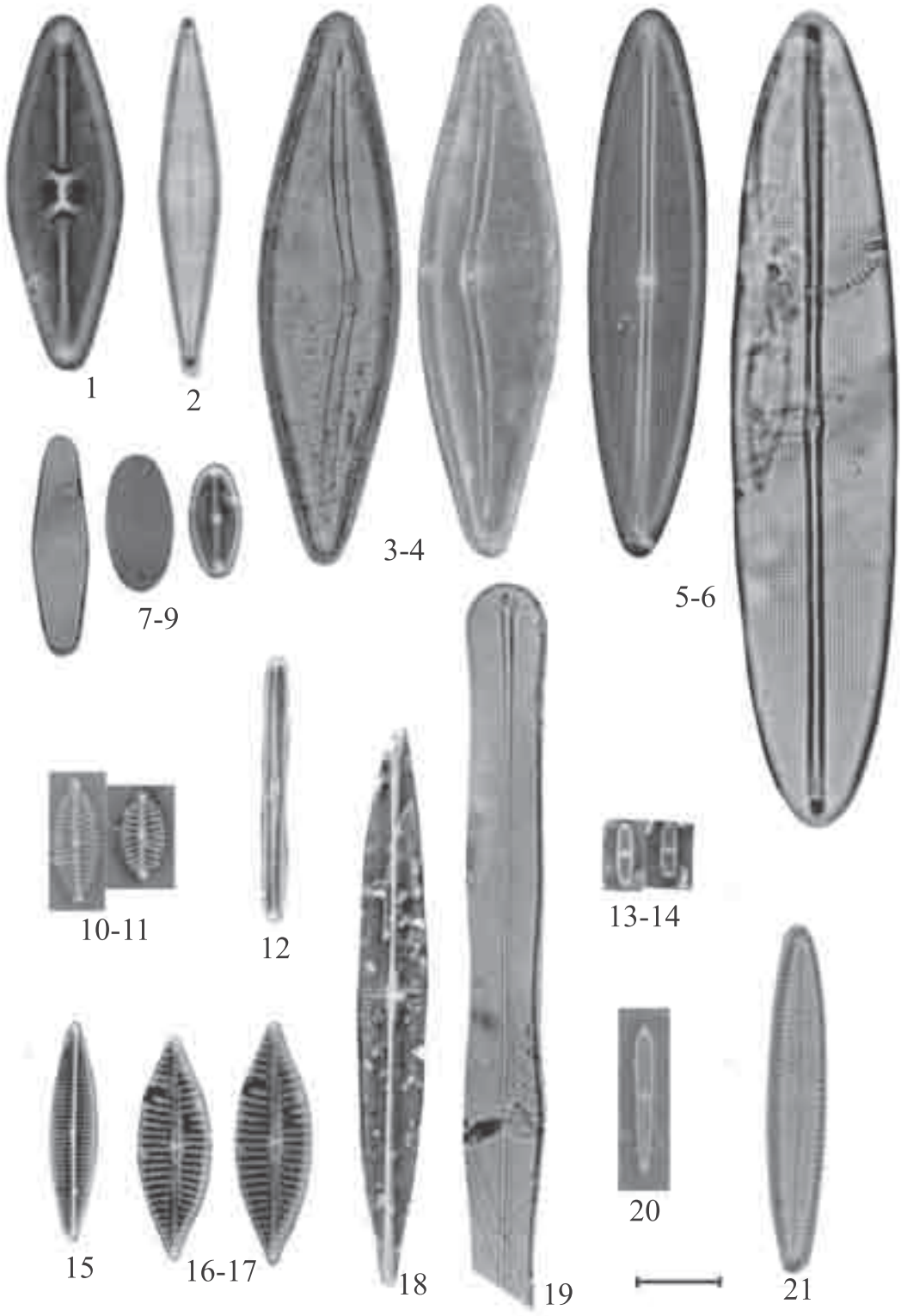

1
2
3-4
5-6
7-9
10-11
12
13-14
15
16-17
18
19
20
21

Plate 29

Figs. 1-2. *Pinnularia yarrensis* (Grunow) Jurilj

Fig. 3. *Parlibellus cruciculoides* (Brockman) Witkowski, Lange-Bertalot et Metzeltin

Figs. 4, 12. *Navicula longa* var. *irregularis* Hustedt

Fig. 5. *Navicula* sp. 1

Fig. 6. *Navicula rostellata* f. *minor* Grunow

Fig. 7. *Navicula diversistriata* Hustedt

Fig. 8. *Navicula agnita* Hustedt

Figs. 9-10. *Navicula cancellata* Donkin

Fig. 11. *Navicula pennata* A. Schmidt

Figs. 13-14. *Navicula longa* (Gregory) Ralfs

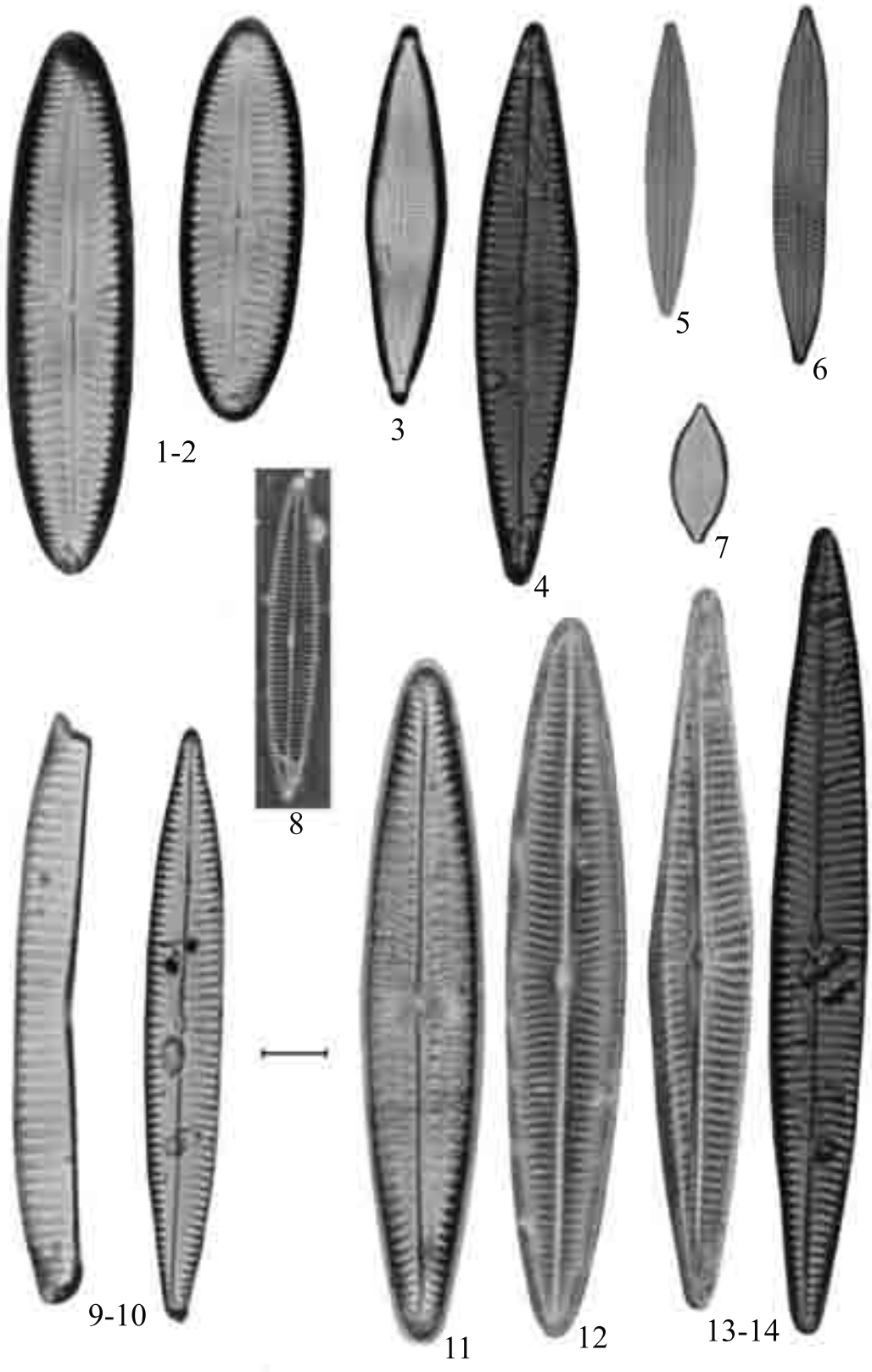

1-2
3
4
5
6
7
8
9-10
11
12
13-14

Plate 30

Figs. 1-6. *Oestrupia powellii* (Lewis) Heiden

Fig. 7. *Navicula* sp. 2

Fig. 8. *Navicula peregrina* (Ehrenberg) Kützing

Fig. 9. *Navicula formenterae* Cleve

Figs. 10-13. *Caloneis zanardiniana* (Grunow) Cleve

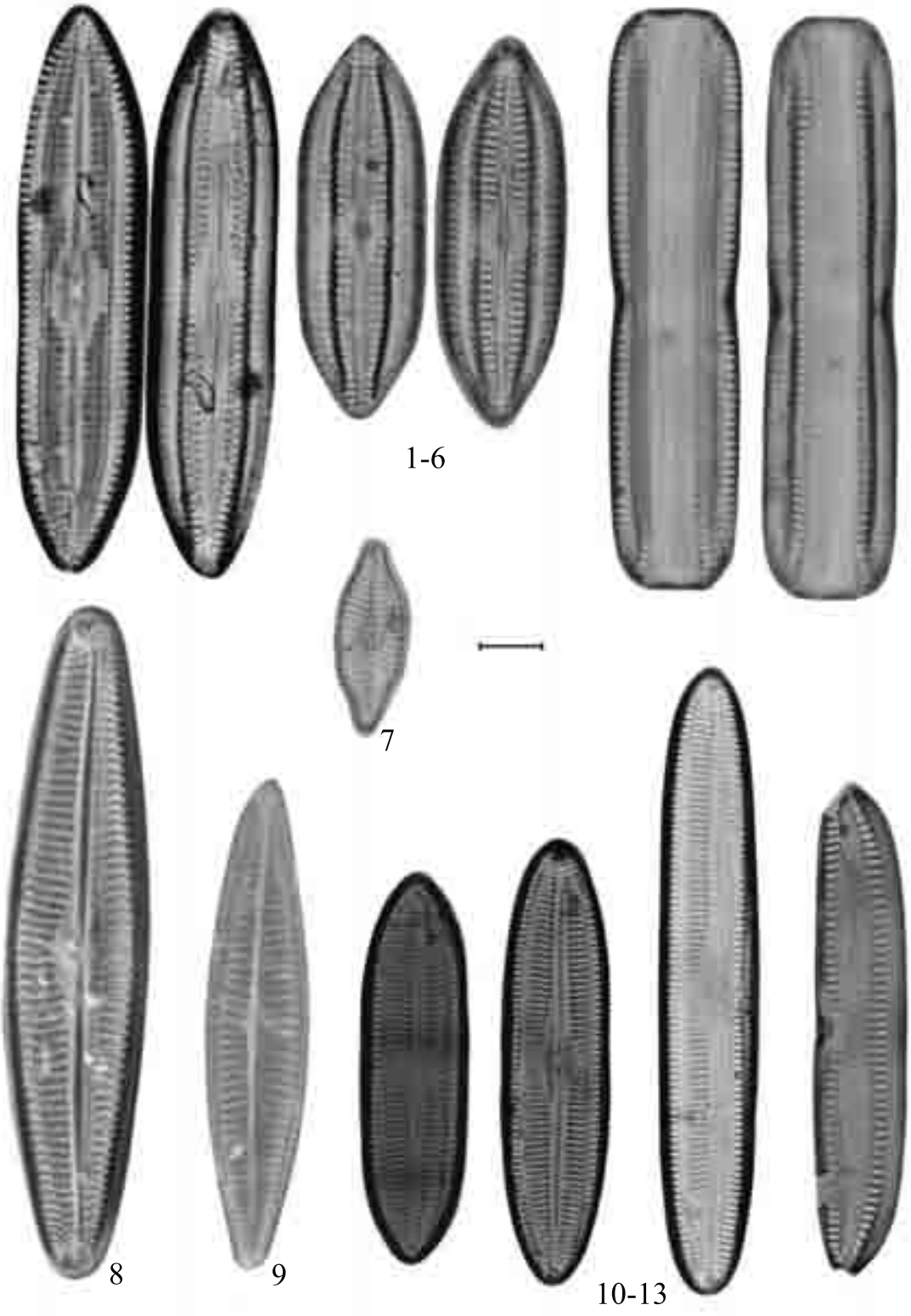

1-6
7
8
9
10-13

Plate 31

Figs. 1-3. *Caloneis westii* (W. Smith) Hendey

Figs. 4-5. *Caloneis linearis* (Grunow) Boyer

Fig. 6. *Caloneis liber* (W. Smith) Cleve

Fig. 7. *Staurophora salina* (W. Smith) Mereschkowsky

Fig. 8. *Pinnularia rectangulata* (Gregory) Rabenhorst

Figs. 9-11. *Biremis ambigua* (Cleve) D. G. Mann

Fig. 12. *Cymatoneis* sp. 1

Fig. 13. *Caloneis elongata* (Grunow) Boyer

Fig. 14. *Pinnularia trevelyana* (A. S. Donkin) G. L. Rabenhorst

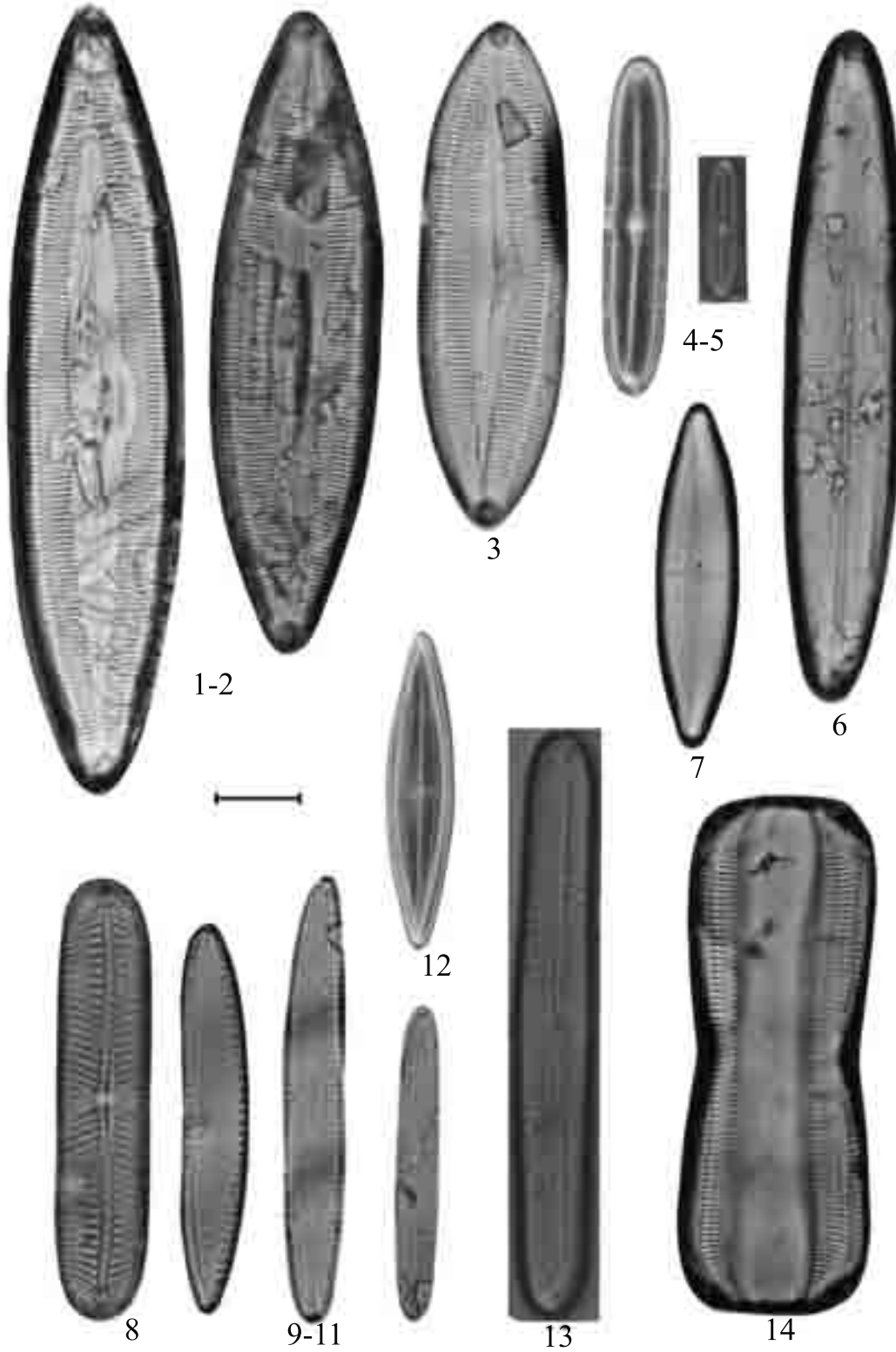

1-2
3
4-5
6
7
8
9-11
12
13
14

Plate 32

Figs. 1-2. *Trachyneis aspera* var. *elliptica* Hendey

Figs. 3-5. *Trachyneis aspera* (Ehrenberg) Cleve

Figs. 6-7. *Trachyneis velata* A. Schmidt

Fig. 8. *Plagiotropis pusilla* (Gregory) Kuntze

Fig. 9. *Entomoneis alata* f. *minor* Ehrenberg

Fig. 10. *Plagiotropis longa* (Cleve) Kuntze

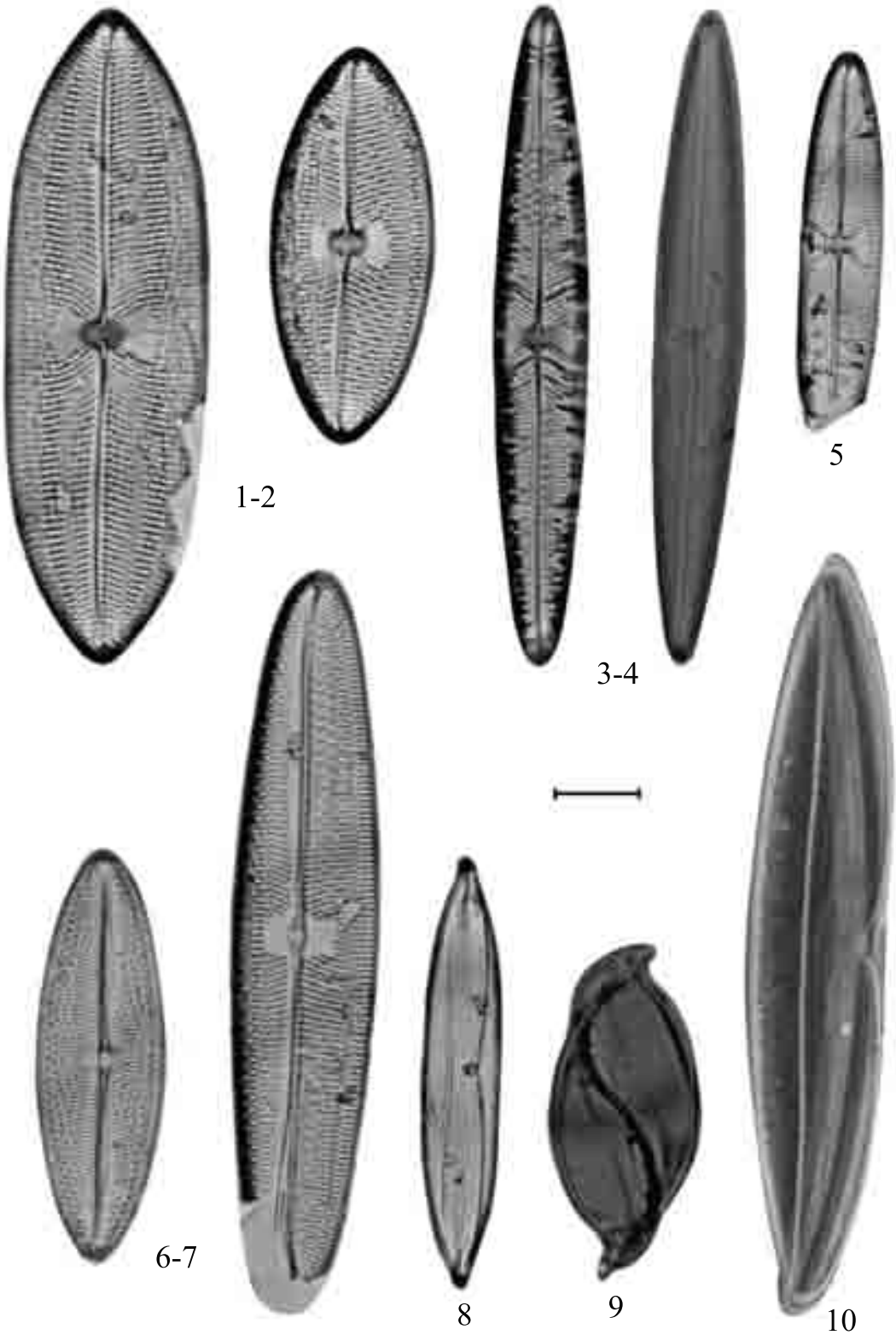

1-2
3-4
5
6-7
8
9
10

Plate 33

Fig. 1. *Pleurosigma rigidum* W. Smith

Figs. 2-3. *Pleurosigma angulatum* var. *genuinum* (Queckett) W. Smith

Fig. 4. *Gyrosigma fasciola* (Ehrenberg) Cleve

Fig. 5. *Gyrosigma eximium* (Thwaites) Boyer

Fig. 6. *Pleurosigma normanii* Ralfs

Fig. 7. *Gyrosigma peisonis* (Grunow) Hustedt

Fig. 8. *Pleurosigma salinarum* Grunow (630X)

Fig. 9. *Gyrosigma balticum* (Ehrenberg) Rabenhorst


1
2-3
4
5
6
7
8
9

Plate 34

Figs. 1-2. *Amphora proteus* Gregory

Figs. 3-5. *Amphora proteus* var. *contigua* Cleve

Figs. 6, 14. *Amphora terroris* Ehrenberg

Fig. 7. *Amphora caroliniana* Giffen

Fig. 8. *Amphora acutiuscula* Kützing

Fig. 9. *Amphora tenerrima* Aleem & Hustedt

Fig. 10. *Amphora amoena* Hustedt

Figs. 11-12. *Amphora bigibba* var. *interrupta* (Grunow) Gru

Fig. 13. *Amphora bigibba* Grunow

Figs. 15, 17-18. *Amphora ostrearia* var. *vitrea* Cleve

Fig. 16. *Amphora laevis* Gregory

Fig. 19. *Amphora ostrearia* var. *lineata* Cleve

Fig. 20. *Amphora ostrearia* Hendey var. *ostrearia*

Fig. 21. *Amphora decussata* Grunow

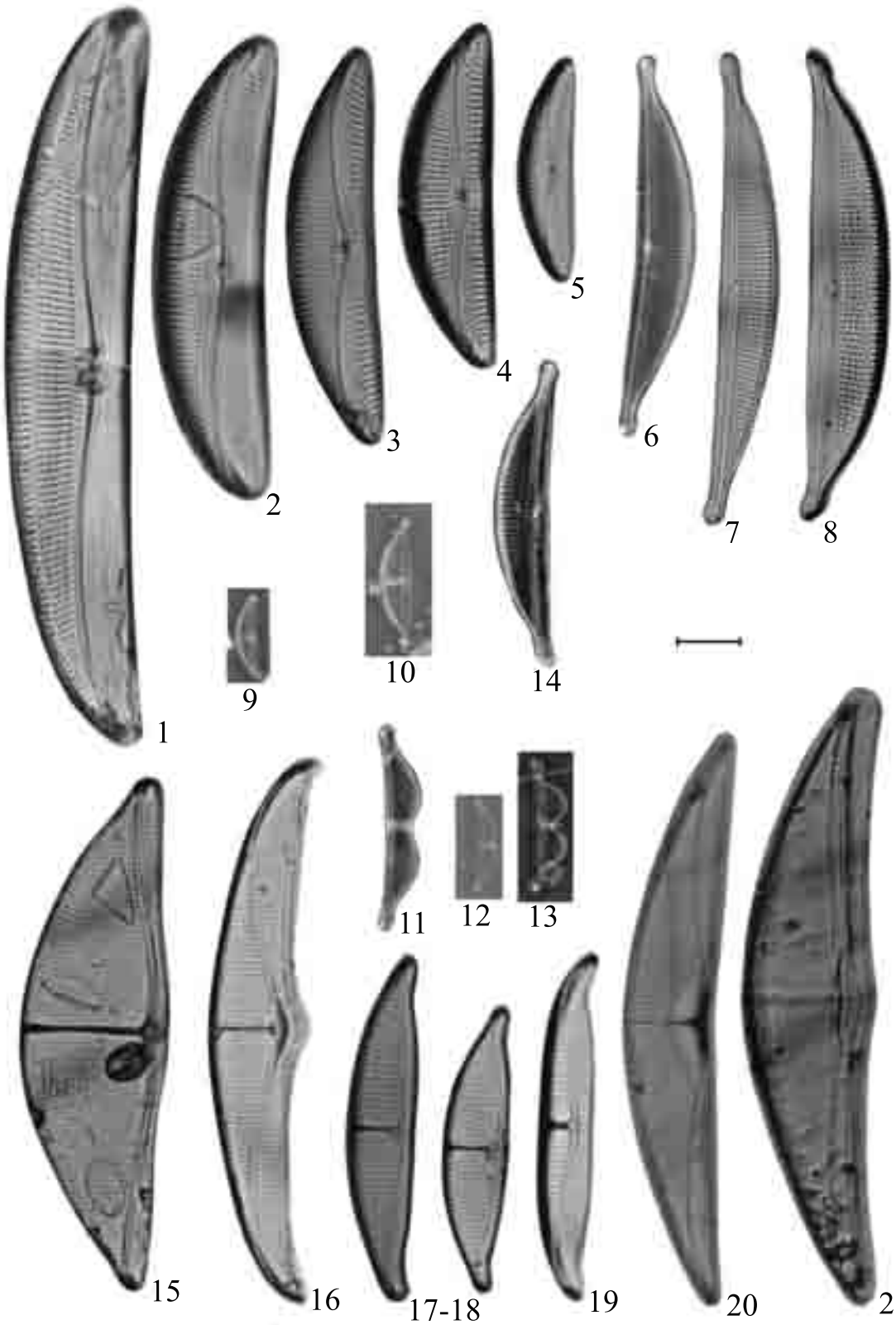

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17-18
19
20
21

Plate 35

Figs.1-2. *Amphora arenaria* Donkin

Fig. 3. *Amphora ocellata* Donkin

Figs. 4-6. *Amphora cingulata* Cleve

Figs. 7-8. *Amphora angusta* Gregory

Figs. 9-12. *Amphora ventricosa* Gregory

Fig. 13. *Amphora clevei* Grunow

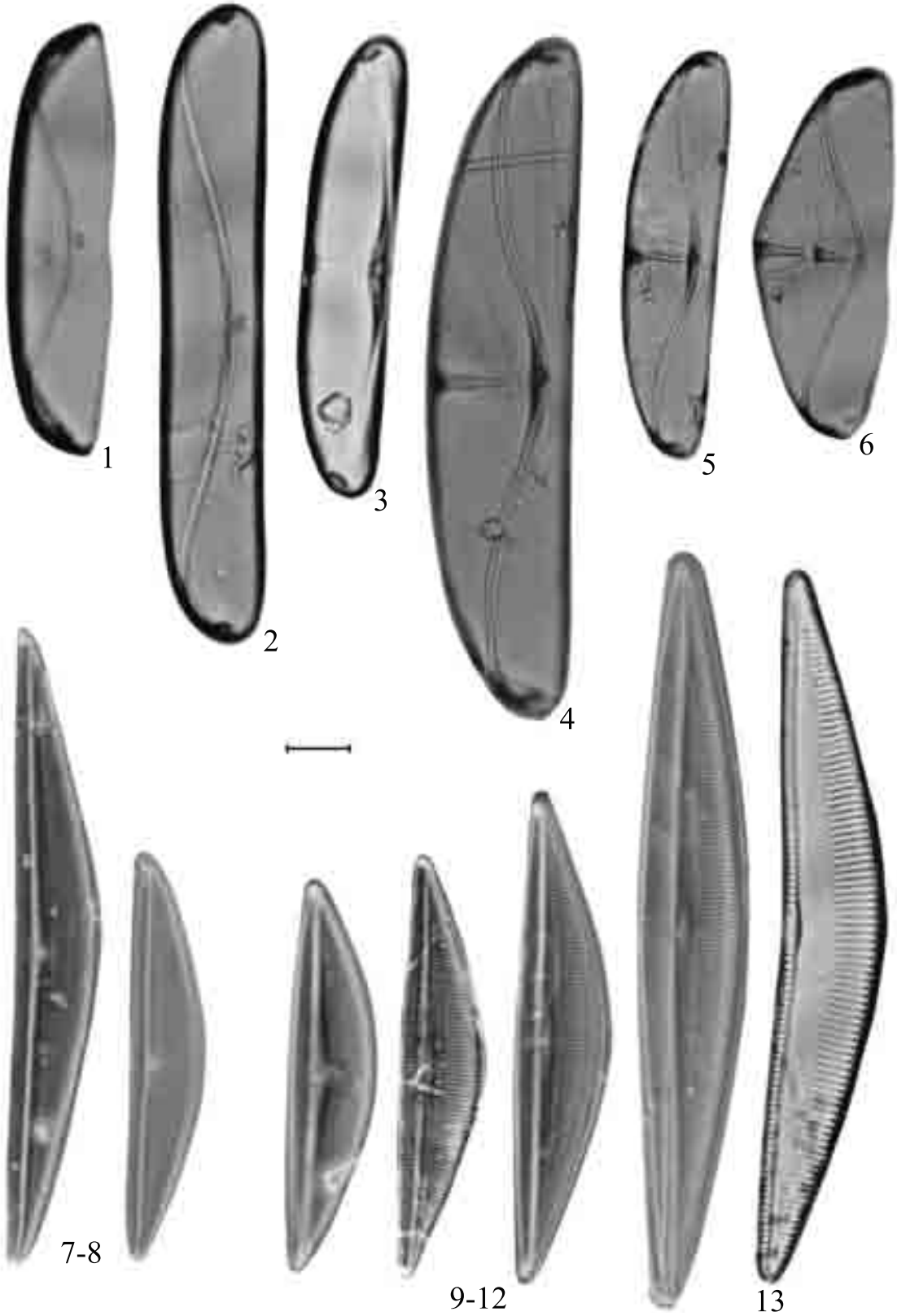

1
2
3
4
5
6
7-8
9-12
13

Plate 36

Figs. 1-2. *Amphora spectabilis* Gregory

Figs. 3-4. *Amphora costata* W. Smith

Figs. 5-6. *Amphora proteus* var. *kariana* Grunow

Fig. 7. *Amphora* sp. 1

Figs. 8, 10. *Amphora immarginata* Naguno

Fig. 9. *Amphora proteus* var. *contigua* Cleve

Fig. 11. *Auricula intermedia* Cleve

Fig. 12. *Cosmioneis grosepuncta* (Hustedt) D. G. Mann

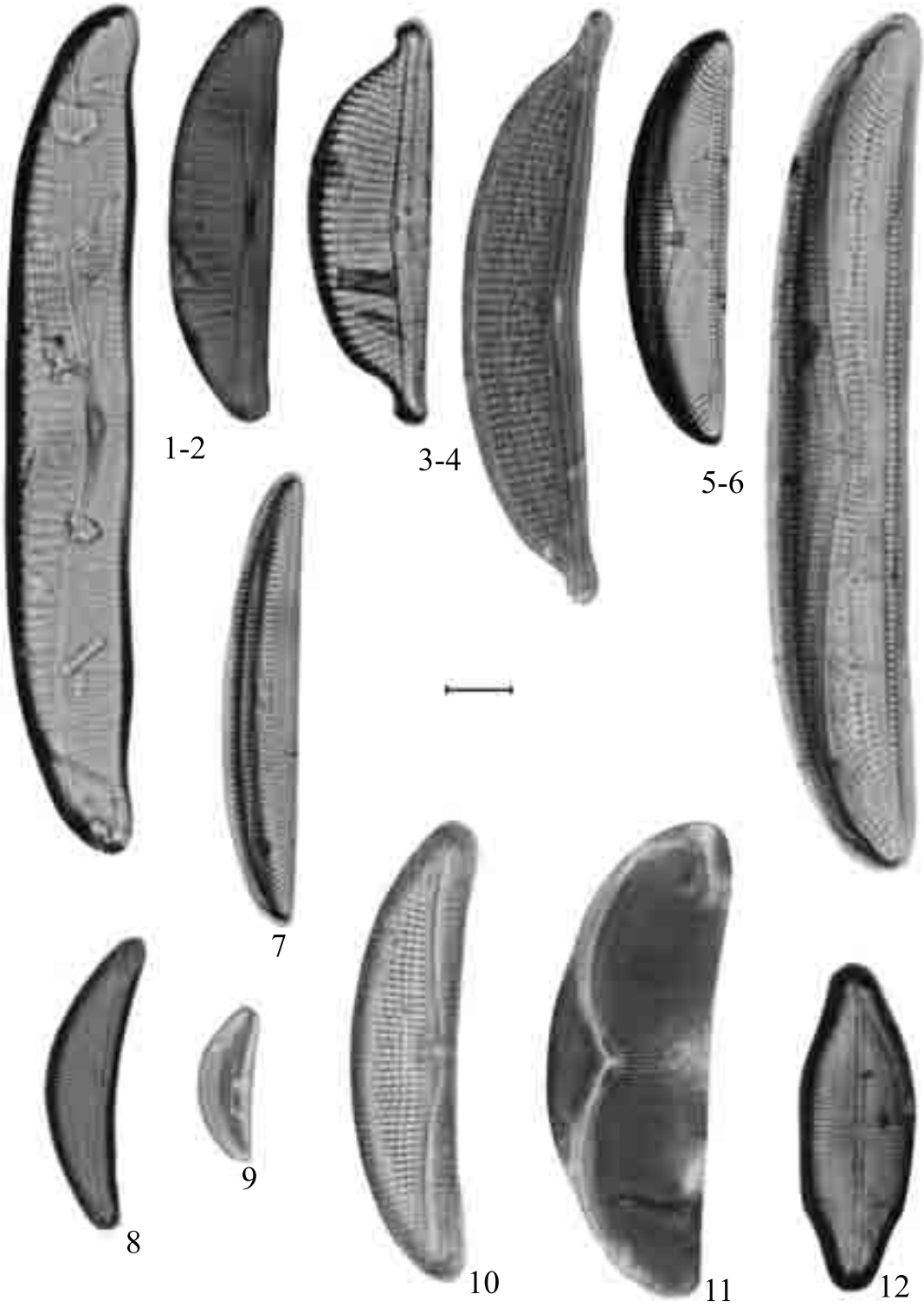

1-2
3-4
5-6
7
8
9
10
11
12

Plate 37

Figs. 1, 5-6. *Bacillaria socialis* (Gregory) Ralfs

Figs. 2-4. *Nitzschia sigma* (Kützing) W. Smith

Fig. 7. *Nitzschia dissipata* (Kützing) Grunow

Fig. 8. *Nitzschia fluminensis* Grunow

Fig. 9. *Nitzschia sigma* var. *sigmatella* (Gregory) Grunow (200X)

Fig. 10. *Nitzschia longissima* f. *costata* Hustedt

Fig. 11. *Nitzschia grossestriata* Hustedt

Fig. 12. *Nitzschia amphibia* Grunow

Fig. 13. *Nitzschia obtusa* var. *scalpelliformis* Grunow

Fig. 14. *Nitzschia distans* Gregory

Fig. 15. *Nitzschia lanceolata* var. *minima* Grunow

Figs. 16-18. *Nitzschia granulata* Grunow

Figs. 19-20. *Nitzschia granulata* var. *hyalina* Amossé

Fig. 21. *Nitzschia lorenziana* var. *subtilis* Grunow

Fig. 22. *Nitzschia pellucida* Grunow

Figs. 23-24. *Hantzschia virgata* (Roper) Grunow

Fig. 25. *Hantzschia pseudomarina* Hustedt

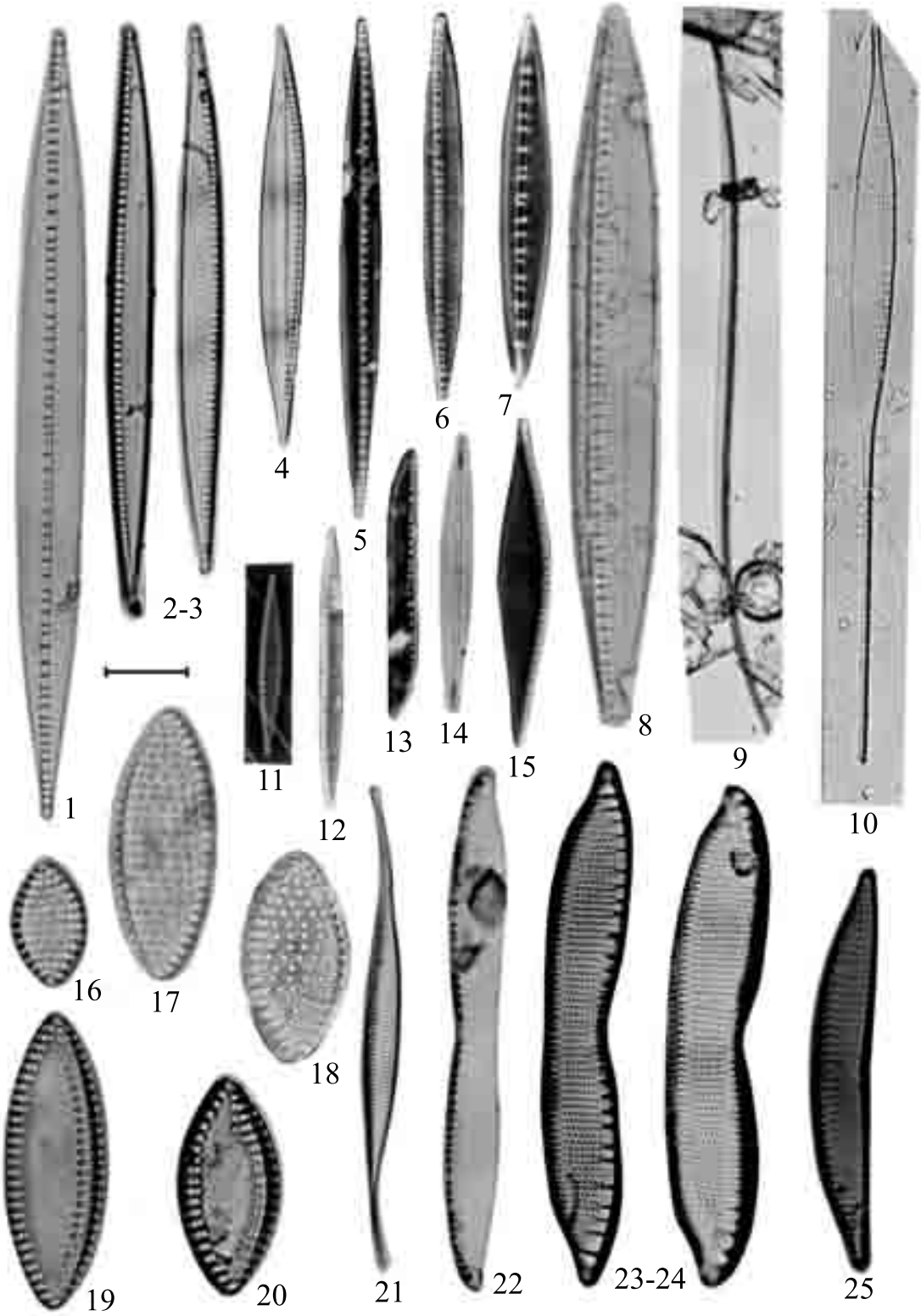

1
2-3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23-24
25

Plate 38

Fig. 1. *Nitzschia plana* W. Smith

Figs. 2-5. *Psammodictyon panduriforme* (Gregory) D. G. Mann

Fig. 6. *Psammodictyon bombiforme* (Grunow) D. G. Mann

Fig. 7. *Nitzschia* sp. 1

Fig. 8. *Nitzschia compressa* (J. W. Bailey) C. S. Boyer

Fig. 9. *Tryblionella acuminata* W. Smith

Fig. 10. *Tryblionella littoralis* (Grunow) D. G. Mann

Fig. 11. *Tryblionella marginulata* var. *didyma* (Grunow) D. G. Mann

Fig. 12. *Psammodictyon panduriforme* var. *abruptum* (Peragallo) D. G. Mann

Figs. 13-14. *Psammodictyon constrictum* (Kützing) D. G. Mann

Fig. 15. *Psammodictyon puncta* var. *coarctata* D. G. Mann

Figs. 16-17. *Tryblionella coarctata* (Grunow) D. G. Mann

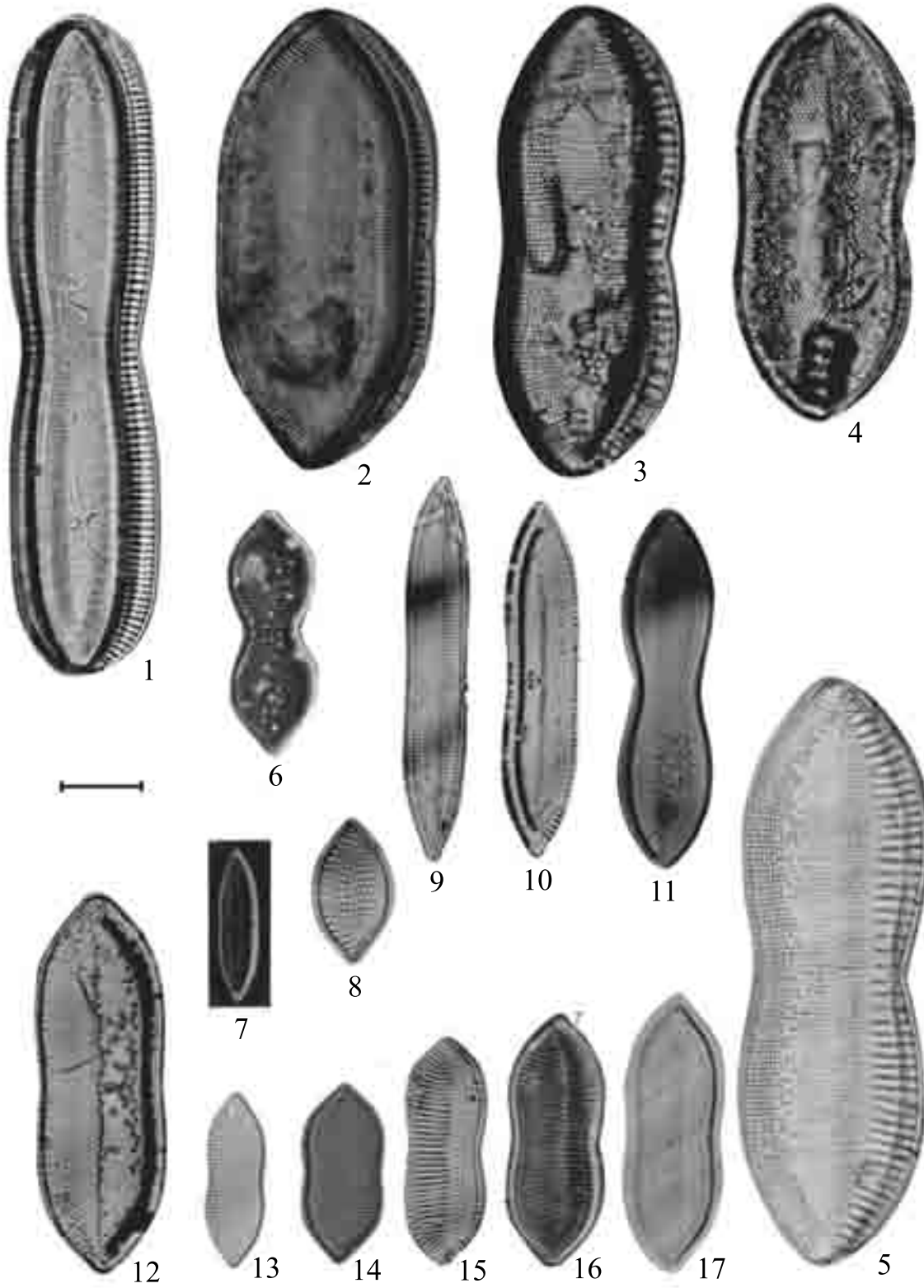

1
2
3
4
6
9
10
11
5
7
8
12
13
14
15
16
17

Plate 39

Figs. 1, 5. *Rhopalodia acuminata* Krammer

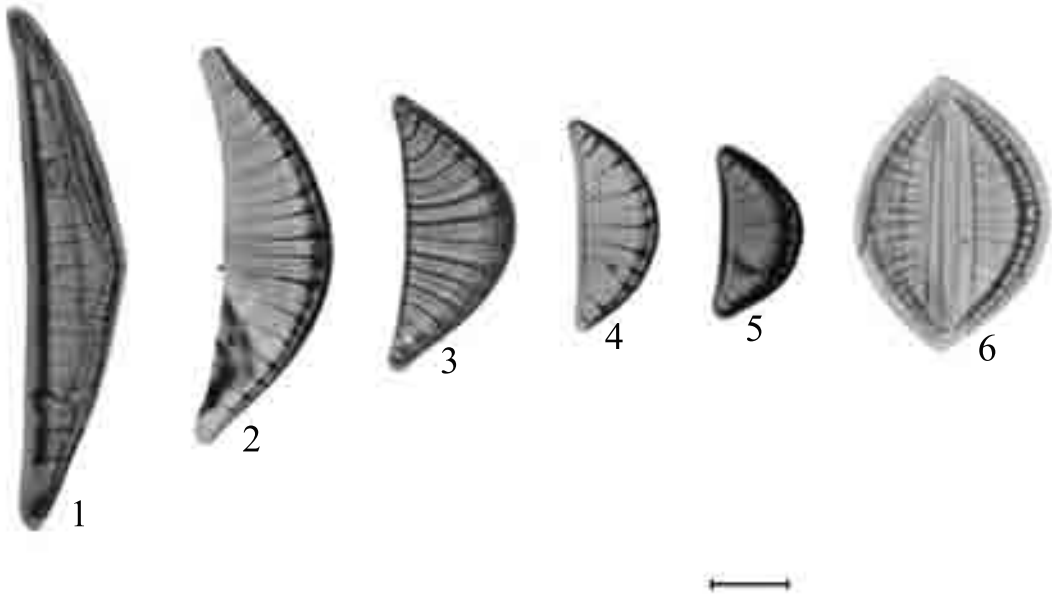
Figs. 2-4. *Rhopalodia musculus* (Kützing) O. Müller

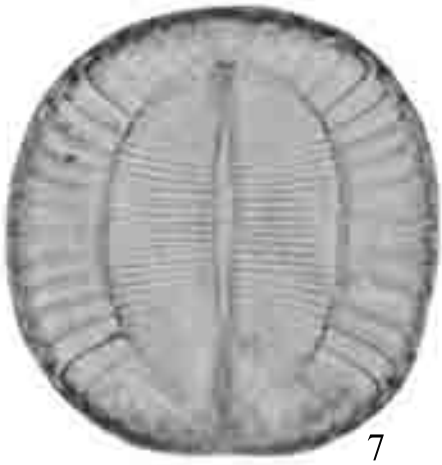
Fig. 6. *Rhopalodia gibberula* (Ehrenberg) O. Müller

Figs. 7-9. *Campylodiscus crebrecostatus* var. *speciosa* Eulenstein

Figs. 10-11. *Campylodiscus simulans* Gregory

Fig. 12. *Campylodiscus ralfsii* W. Smith


1
2
3
4
5
6


7


10-11


8

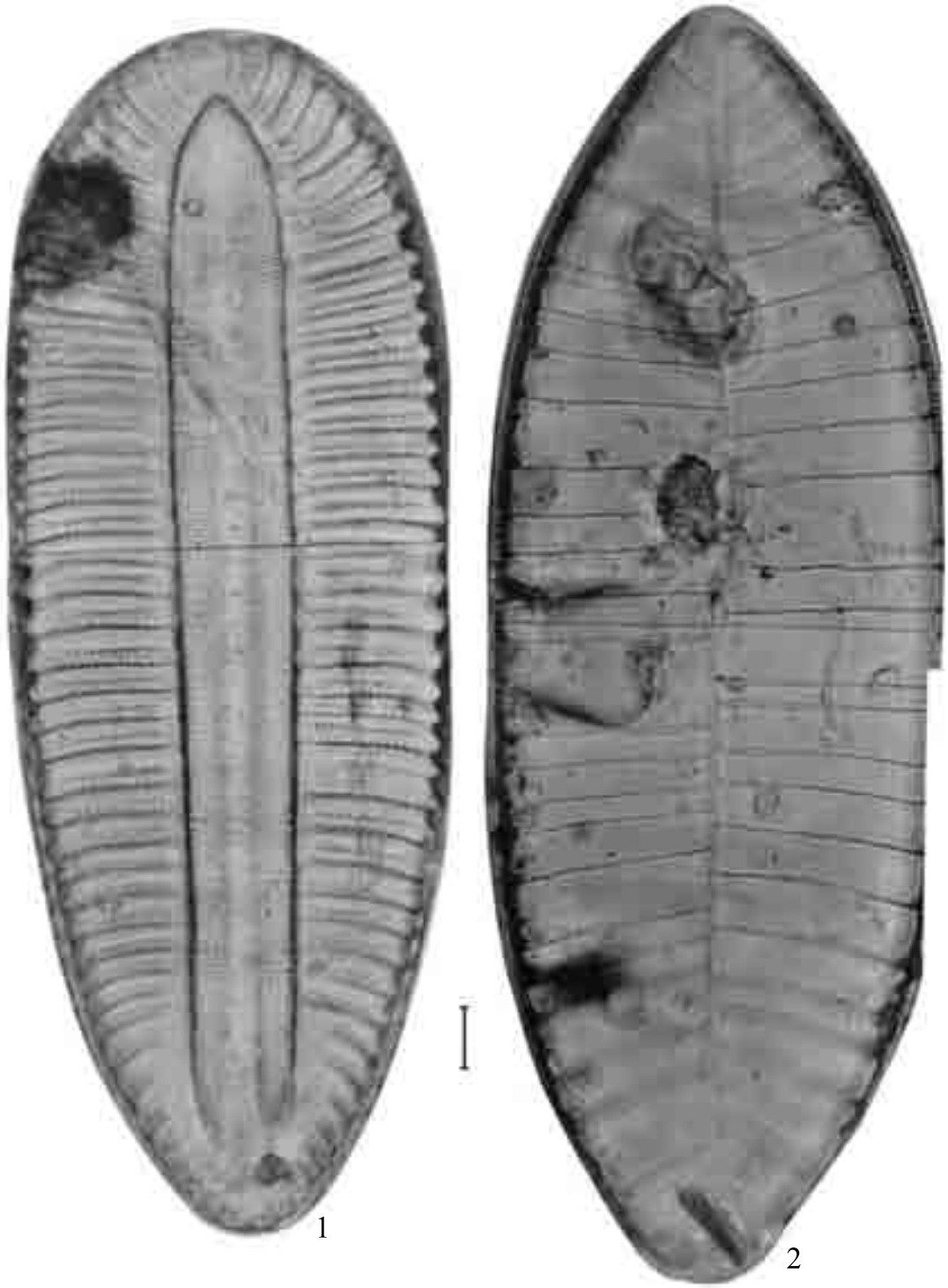

9


12

Plate 40

Fig. 1. *Surirella febigeri* Lewis

Fig. 2. *Petrodictyon gemma* (Ehrenberg) D. G. Mann



1

2

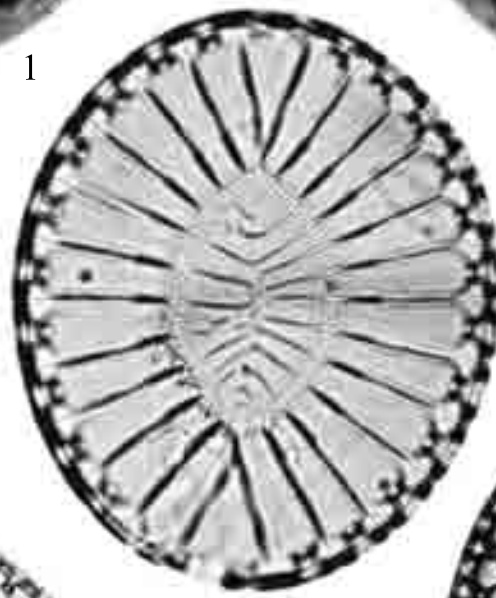
Plate 41

Figs. 1-2, 3 (630X). *Surirella fastuosa* var. *suborbicularis* Grunow

Figs. 4 (630X)-5 (630X). *Surirella fastuosa* (Ehrenberg) Kützing

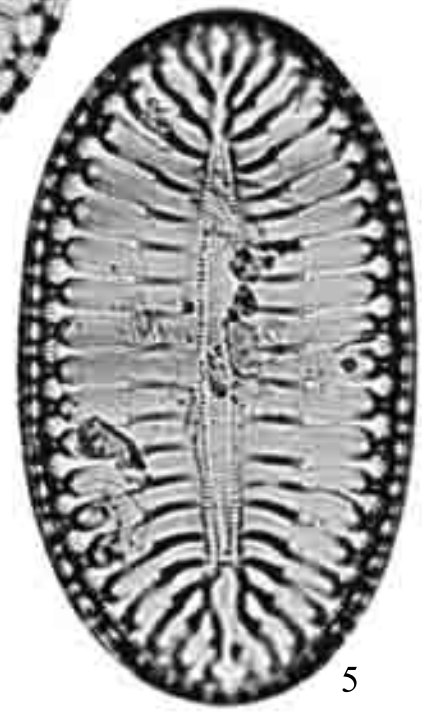
1

2



3

4

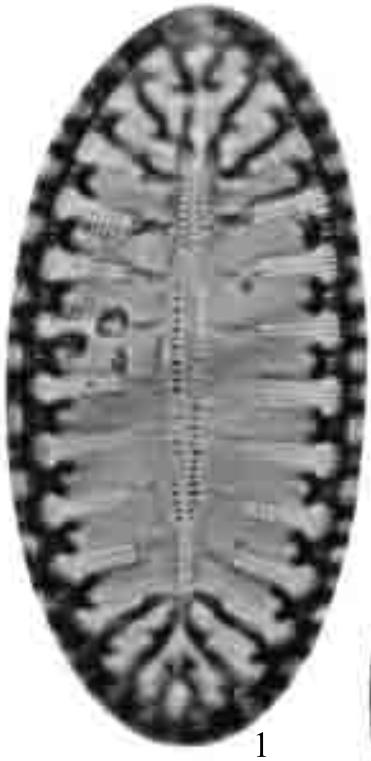


5

Plate 42

Figs. 1, 2 (630X), *Surirella fastuosa* (Ehrenberg) Kützing

Figs. 3-5. *Surirella fastuosa* (Ehrenberg) Kützing



1

2

3

4

5

Plate 43

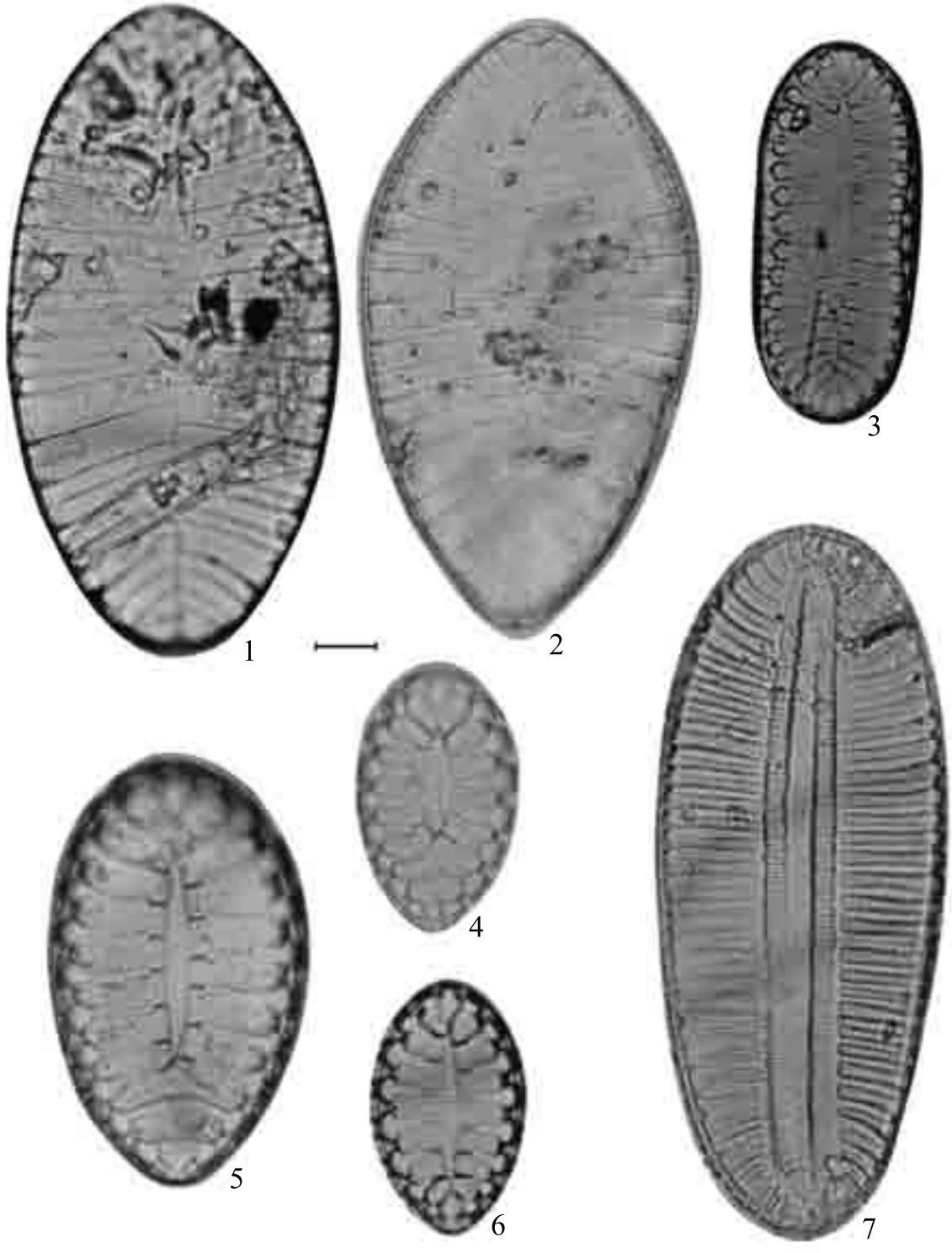
Figs. 1-2. *Petrodictyon gemma* (Ehrenberg) D. G. Mann

Fig. 3. *Surirella lata* W. Smith (630X)

Figs. 4-5. *Surirella fastuosa* var. *recedens* (A. Schmidt) Cleve

Fig. 6. *Surirella armoricana* H. Peragallo & M. Peragallo

Fig. 7. *Surirella febigeri* Lewis (630X)


1
2
3
4
5
6
7

Species index

Tiraje: 500 ejemplares

ISBN: **978-607-7607-30-4**

Comité editorial *CICIMAR Oceánides*
Av. IPN s/n Col. Playa Palo de Santa Rita, C.P. 23090
La Paz, Baja California Sur, México.

Impreso por Vox Promocionales e Imprenta
Av. Revolucion s/n local 3 e/ Constitución y 5 de Mayo, C.P. 23000,
Tel. (612)12 5 7111. La Paz, Baja California Sur, México.
www.voxpi.com