

Taxon-list of fossil organic-walled microplankton

Division DINOFLAGELLATA (Bütschli 1885) Fensome & al. 1993
Subdivision DINOKARYOTA Fensome & al. 1993
Class DINOPHYCEAE Pascher, 1914

Achilleodinium Eaton 1976

Type: *Hystrichosphaeridium biformoides* Eisenack 1954b, p. 68, pl. 11, fig. 18.

Achilleodinium biformoides (Eisenack 1954b) Eaton 1976

Holotype: Eisenack 1954b, p. 68, pl. 11, fig. 18; Eaton 1976 p. 234.

Hystrichosphaeridium biformoides Eisenack 1954b,

Baltisphaeridium biformoides (Eisenack 1954b) Downie & Sarjeant 1965,

Hystrichokolpoma biformoides (Eisenack 1954b) Rozen 1965,

Florentinia biformoides (Eisenack 1954b) Duxbury 1980,

Achilleodinium biformoides (Eisenack 1954b) Lentin & Williams 1981.

Hungarian Age: Eocene: Kedves 1992; Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Late Eocene–Early Oligocene; Williams & al. 1993: Ypresian–Rupelian (53–32 Ma). A Williams & al. 1998, *Achomosphaera* Evitt 1963
Type: *Hystrichosphaeridium ramuliferum* Deflandre 1937b, pl. 14 (al. Pl. 11), fig. 5.

Achomosphaera Evitt 1963

Type: *Hystrichosphaeridium ramuliferum* Deflandre 1937b, p. 74, pl. 14, (al. Pl. 11) fig. 5; Fensome & al. 1991, p. 721, fig. 1, p. 725, fig. 1.

Achomosphaera alcicornu (Eisenack 1954b) Davey & Williams 1966a

Holotype: Eisenack 1954b, p. 65, pl. 10, fig. 2; Davey & Williams 1966a, p. 50.

Hystrichosphaeridium alcicornu Eisenack 1954b.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Oligocene; Williams & al. 1993: Thanetian–Serravallian (56–13 Ma).

Achomosphaera andalouensis (Jan du Chêne 1977) Jan du Chêne & Londeix 1988

Holotype: Jan du Chêne 1977, p. 112, pl. 1, fig. 1.

Lectotype: Jan du Chêne & Londeix 1988, p. 237, pl. 1, figs. 1–3.

Spiniferites andalouensis (Jan du Chêne 1977) Strauss in Strauss & Lund 1992,

Achomosphaera andalouensis (Jan du Chêne 1977) Jan du Chêne & Londeix 1988.

Hungarian Age: Late Miocene, Pannonian, *Galeacysta etrusca* zone: Sütőné Szentai 1998; Sütő 1994a (Töttös 1, Majs 1, 2, Villány 7), Sütő–Szentai 1994c; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7); *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1).

Williams & al. 1998 Age: Miocene (Andalusian); Williams & al. 1993: Serravallian–Pleistocene (13–1,7 Ma).

Achomosphaera cf. andalouensis sensu Strauss 1992

Hungarian Age: Miocene Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte): Jiménez-Moreno & al. 2006.

Williams & al. 1993 Age: Miocene (Andalusian).

Achomosphaera bulla Cookson & Eisenack 1974

Holotype: Cookson & Eisenack 1974, p. 55, pl. 23, fig. 13.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Paleocene.

Achomosphaera danica (W. Wetzel 1952) Sarjeant 1984c

Holotype: W. Wetzel 1952, p. 396–397, pl. A, fig. 6; Sarjeant 1984 p. 129–130.

Areoligera danica W. Wetzel 1952,

Baltisphaeridium danicum (W. Wetzel 1952) Downie & Sarjeant 1965,

Hystriosphæridium danicum (W. Wetzel 1952) W. Wetzel 1955,

Cleistosphæridium danicum (W. Wetzel 1952) Davey & al. 1969.

Hungarian Age: Eocene, redeposited: Kedves 1992.

Williams & al. 1998 Age: Paleocene.

Achomosphaera grallaeformis (Brosius 1963) Davey & Williams 1969

Holotype: Brosius 1963, p. 42, pl. 5, fig. 3, text-fig. 2; Davey & Williams 1969, p. 4.

Hystriosphæridium grallaeforme Brosius 1963.

Hungarian Age: Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993; Oligocene, Egerian: Nagy 1992 p. 13. Eger, Téglagyár borehole.

Williams & al. 1998 Age: Oligocene.

Achomosphaera neptuni (Eisenack 1958a) Davey & Williams 1966a

Holotype: Eisenack 1958a, p. 399, pl. 26, fig. 7; Davey & Williams 1966a, p. 51–52, pl. 3, fig. 7; pl. 9, fig. 11.

Baltisphaeridium neptuni Eisenack 1958a,

Spiniferites neptuni (Eisenack 1958a) Duxbury 1983,

Florentinia? neptuni (Eisenack 1958a) Sarjeant 1985,

Achomosphaera neptuni (Eisenack 1958a) Lentin & Williams 1985.

Hungarian Age: Miocene, Badenian: Nagy & Bodor 1982, table 1, p. 120; Nagy 1992.

Williams & al. 1998 Age: Early Cretaceous; Williams & al. 1993: Early Cretaceous, Ryazanian–Late Aptian (129–109 Ma).

Achomosphaera ramulifera (Deflandre 1937b) Evitt 1963

Holotype: Deflandre 1937b, p. 74, pl. 14 (al. Pl. 11), fig. 5; Evitt 1963, p. 163; Fensome & al. 1991, fig. 1 - p. 721; fig. 1 - p. 725.

Hystriosphæridium ramuliferum Deflandre 1937b,

Baltisphaeridium ramuliferum (Deflandre 1937b) Downie & Sarjeant 1963,

Achomosphaera ramulifera (Deflandre 1937b) Evitt 1963,

Spiniferites ramuliferus (Deflandre 1937b) Reid 1974.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993; Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 122.

Williams & al. 1998 Age: Late Cretaceous.

Achomosphaera ramulifera subsp. ***perforata*** (Davey & Williams 1966a) Lentin & Williams 1973

Holotype: Davey & Williams 1966a, p. 50, pl. 5. fig. 4; Lentin & Williams 1973, p. 10; Bujak & al. 1980, pl. 5, fig. 1; Fensome & al. 1991, fig. 2 - p. 705; fig. 3 - p. 721.

Hystriospheraidium ramuliferum Deflandre 1937b,

Baltisphaeridium ramuliferum (Deflandre 1937b) Downie & Sarjeant 1963,

Achomosphaera ramulifera (Deflandre 1937b) Evitt 1963 var. *perforata* Davey & Williams 1966a,

Spiniferites ramuliferus (Deflandre 1937b) Reid 1974.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Miocene, Badenian: Nagy & Bodor 1982, pl. 1, figs. 5-6; Nagy 1992.

Williams & al. 1998 Age: Early Eocene.

Achomosphaera sagera Davey & Williams 1966a

Holotype: Davey & Williams 1966a, p. 51, pl. 2, figs. 1-2.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone Siegl-Farkas 1995; Eocene, NP 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993; Miocene, Badenian: Nagy & Bodor 1982, table 1, p. 121.

Williams & al. 1998 Age: Cenomanian.

Achomosphaera triangulata (Gerlach 1961) Davey & Williams 1969

Holotype: Gerlach 1961, p. 194–195, pl. 29, fig. 1; Davey & Williams 1969, p. 4; Sarjeant 1984b, p. 82–83, pl. 1, figs. 4-5.

Baltisphaeridium triangulatum Gerlach 1961.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, table 1, p. 122.

Williams & al. 1998 Age: Middle Oligocene–Middle Miocene.

Adnatosphaeridium Williams & Downie 1966

Type: *Adnatosphaeridium vittatum* Williams & Downie 1966, p. 215, pl. 24, fig. 7; text-fig. 56.

Adnatosphaeridium sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Alisogymnium Lentin & Vozzhennikova 1990

Type: *Gymnodinium sphaerocephalum* Vozzhennikova 1967, pl. 3, fig. 1.

Alisogymnium assamicum (Jain & al. 1975) Lentin & Vozzhennikova 1990

Holotype: Jain & al. 1975, p. 4, pl. 2, fig. 28; Lentin & Vozzhennikova 1990, p. 28. Appendix A, fig. 37.

Dinogymnium assamicum Jain & al. 1975.

Hungarian Age: Cretaceous, Campanian: as *A. cf. assamicum* Siegl-Farkas 1999a.

Williams & al. 1998: Age: Maastrichtian.

Alisogymnium euclaense (Cookson & Eisenack 1970a) Lentin & Vozzhennikova 1990

Holotype: Cookson & Eisenack 1970a, p. 139, pl. 10, fig. 12; Lentin & Vozzhennikova, 1990, Appendix A, fig. 35.

Dinogymnium euclaense Cookson & Eisenack 1970a.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1996; Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinospis bakonyensis* Assemblage Zone: Siegl-Farkas 1995; Cretaceous, Late Santonian-Campanian, *Odontochitina operculata*, *Pyxidinospis bakonyensis* Assemblage Zones: Siegl-Farkas 1997; Campanian, *Odontochitina operculata* Assemblage Zone, *Dinogymnium euclaense*–*Dinogymnium digitus* Subzone: Siegl-Farkas 1999a; Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 2002.

Williams & al. 1998 Age: Senonian.

Alisogymnium cf. *euclaense* (Cookson & Eisenack 1970) Lentin & Vozzhennikova 1990

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Dinogymnium digitus* Subzone: Siegl-Farkas 1997; Campanian, *Odontochitina operculata* Assemblage Zone, *Dinogymnium euclaense*–*Dinogymnium digitus* Subzone: Siegl-Farkas 1999a, 1999b.

Alisogymnium sphaerocephalum (Vozzhennikova 1967) Lentin & Vozzhennikova 1990
Holotype: Vozzhennikova 1967, p. 48, pl. 3, fig. 1; Lentin & Vozzhennikova 1990, p. 25, pl. 2, figs. 6, 11-12; text-fig. 10.

Gymnodinium sphaerocephalum Vozzhennikova 1967.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Alterbidinium Lentin & Williams 1985

Type: *Alterbia recticornis* Vozzhennikova 1967, p. 150–151, pl. 77, fig. 2.

Alterbidinium varium Kirsch 1991

Holotype: Kirsch 1991, p. 98–99, pl. 19, figs. 1-2, text-fig. 46a.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Early Maastrichtian.

Alterbidinium cf. *varium* Kirsch 1991

Hungarian Age: Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas & Wagreich 1996.

Alterbidinium sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Amphidiadema Cookson & Eisenack 1960

Type: *Amphidiadema denticulata* Cookson & Eisenack 1960, p. 4, pl. 1, fig. 11.

Amphidiadema nucula (Cookson & Eisenack 1962b) Lentin & Williams 1976

Holotype: Cookson & Eisenack 1962b, p. 486, pl. 1, fig. 13; Lentin & Williams 1976, p. 61.

Deflandrea nucula Cookson & Eisenack 1962b.

Hungarian Age: Eocene: Rákosi 1973, pl. 1, figs. 3-4.; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Senonian.

Amphigymnium Lentin & Vozzhennikova 1990

Type: *Amphidinium mitratum* Vozzhennikova 1967, p. 40, pl. 1, fig. 2.

Amphidinium „sibiricum” Vozzhennikova 1965

Williams & al. 1998, p. 727: name not validly published: no illustration.

Hungarian Age: Cretaceous, Campanian, Siegl-Farkas 1995, as *Amphidinium sibiricum* Vozzh. 1965.

Amphorosphaeridium Davey 1969

Type: *Amphorosphaeridium fenestratum* Davey, 1969, p. 30, pl. 3, figs. 1-2.

***Amphorosphaeridium fenestratum* Davey 1969c**

Holotype: Davey 1969c, p. 30–33, pl. 3, figs. 1-2; Fensome & al. 1993, p. 1181, fig. 1; p. 1183, figs. 1-2.

Hungarian Age: Late Cretaceous: Kedves 2000a, p. 20, 22, pl. 2.2, figs. 4-5.

Williams & al. 1998 Age: Campanian–Maastrichtian.

Apectodinium (Costa & Downie 1976 p. 608) Lentin & Williams 1977b

Type: *Wetziella homomorpha* Deflandre & Cookson 1955, pl. 5, fig. 7.

***Apectodinium homomorphum* (Deflandre & Cookson 1955) Lentin & Williams 1977b**

Holotype: Deflandre & Cookson 1955, p. 254, pl. 5, fig. 7, text-fig. 19; Eisenack & Klement 1964, p. 829; Fensome & al. 1995, p. 1553, figs. 1-2.

Wetziella homomorpha Deflandre & Cookson 1955.

Hungarian Age: Eocene, NP 15-16 zones: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene, NP 24-25 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993 as *Homomorphum* complex: Thanetian–Bartonian (56-42 Ma).

***Apectodinium quinquelatum* (Williams & Downie 1966b) Lentin & Williams 1977b**

Holotype: Williams & Downie 1966b, p. 191–192, pl. 18, fig. 7; Lentin & Williams 1977b, p. 8.

Wetziella homomorpha var. *quinquelata* Williams & Downie 1966b,

Wetziella homomorpha subsp. *quinquelata* (Williams & Downie 1966b) Lentin & Williams 1973,

Apectodinium homomorphum subsp. *quinquelatum* (Williams & Downie 1966b) Lentin & Williams 1977b,

Wetziella quinquelata (Williams & Downie 1966b) Harland 1979c.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985 as *Apectodinium* cf. *quinquelatum*; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene.

Apteodinium Eisenack 1958

Type: *Apteodinium granulatum* Eisenack 1958, p. 385, pl. 23, fig. 9.

Apteodinium australiense (Deflandre & Cookson 1955) Williams 1978

Holotype: Deflandre & Cookson 1955, p. 248, pl. 5, fig. 1; Williams 1978 p. 794.

Gymnodinium australiense Deflandre & Cookson 1955,

Emslandia australiense (Deflandre & Cookson 1955) Nagy 1965a,

Seriniodinium australiense (Deflandre & Cookson 1955) Cookson & Eisenack 1965.

Hungarian Age: Miocene, Karpatian: Nagy 1965a, p. 202, pl. 1, fig. 6, pl. 2, fig. 7;

Nagy 1969, 1992; Late Miocene, Early Pannonian, (redeposited): Sütőné Szentai: 2002.

Williams & al. 1998 Age: Middle Miocene.

Apteodinium cribrosum Cookson & Eisenack 1968

Holotype: Cookson & Eisenack 1968, p. 112, fig. 1L; Jan du Chêne & al. 1986a, pl. 14, fig. 5; Stover & Evitt 1978 p. 142.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995, 1999a.

Williams & al. 1998 Age: Santonian or Early Campanian.

Apteodinium deflandrei (Clarke & Verdier 1967) Lukas-Clark 1987

Holotype: Clarke & Verdier 1967, p. 26-28, pl. 3, fig. 10; Jan du Chêne & al. 1986, pl. 8, figs. 10-11.

Gardodinium deflandrei Clarke & Verdier 1967,

Aldorfia deflandrei (Clarke & Verdier 1967) Stover & Evitt 1978.

Hungarian Age: Cretaceous, Lower Campanian, Lower part of the *Odontochitina operculata* Assemblage Zone, *Apteodinium deflandrei* Subzone: Siegl-Farkas 1995, 1997; Siegl-Farkas & Wagreich 1996; Lantos & al. 1996.

Williams & al. 1998 Age: Cenomanian–Santonian.

Apteodinium cf. *deflandrei* (Clarke & Verdier 1967) Lukas-Clark 1987

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Apteodinium mecsekense (Nagy 1969) Helenes 1984

Holotype: Nagy 1969, p. 292, pl. 1, figs. 6, 8; text-fig. 3; Jan du Chêne & al. 1986a, pl. 11, figs. 10-12.

Palaeoperidinium mecsekense Nagy 1969,

Gonyaulacysta mecsekensis (Nagy 1969) Lentin & Williams 1976,

Millioudodinium mecsekense (Nagy 1969) Stover & Evitt 1978.

Hungarian Age: Late Miocene, Late Pannonian: Bodor 1983; Bodor in Chikán 1991; Nagy 1969; Late Miocene, Pannonian, *Spiniferites bentorii oblongus*, *Pontiadinium pecsvaradensis*, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zalaszentlászló 1).

Williams & al. 1998 Age: Late Miocene (late Pannonian).

cf. *Apteodinium* sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Araneosphaera Eaton 1976

Type: *Araneosphaera araneosa* Eaton 1976, p. 239–240, pl. 2, fig. 6, text-fig. 6A.

Araneosphaera araneosa Eaton, 1976

Holotype: Eaton 1976, p. 240, 242, pl. 2, fig. 6. text-figs. 6 A-B; Bujak & al. 1980, pl. 6, figs. 4-5.

Hungarian Age: Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 20 zones: Rákosi 1993.

Williams & al. 1998 Age: Middle–Late Eocene.

Areoligera Lejeune-Carpentier 1938a

Type: *Areoligera senonensis* Lejeune-Carpentier 1938, p. B 164. text-fig. 2.

Areoligera coronata (O. Wetzel 1933b) Lejeune-Carpentier 1938a

Holotype: O. Wetzel 1933b, p. 41, pl. 4. fig. 17; Lejeune-Carpentier 1938a, fig. 6.

Hystriosphera penicillata (Ehrenberg 1843b ex Ehrenberg 1854) forma *coronata* O. Wetzel 1933b,

Hystriospheridium penicillatum (Ehrenberg 1843b ex Ehrenberg 1854) forma *coronatum* (O. Wetzel 1933b) Deflandre 1937.

Hungarian Age: Middle Eocene *Pleurozonaria concinna–Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Senonian.

Areoligera senonensis Lejeune-Carpentier 1938a

Holotype: Lejeune-Carpentier 1938a, text-fig. 2. p. B164; Lejeune-Carpentier & Sarjeant 1981, p. 15, pl. 3, figs. 5-6.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Late Campanian–Ypresian (77-50 Ma).

Areoligera undulata Eaton 1976

Holotype: Eaton 1976, p. 248, pl. 4, figs. 4, 6, text-fig. 9; Bujak & al. 1980, pl. 9, figs. 7-8.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1998 Age: Middle Eocene.

Ascodinium Cookson & Eisenack 1960

Type: *Ascodinium acrophorum* Cookson & Eisenack 1960, p. 5, pl. 1, fig. 19.

Ascodinium acrophorum Cookson & Eisenack 1960a

Holotype: Cookson & Eisenack 1960a, p. 5, pl. 1. fig. 19.

Hungarian Age: Eocene (redeposited): Kedves 1992.

Williams & al. 1998 Age: Late Albian–Cenomanian.

Barssidinium Lentin & al. 1994

Type: *Barssidinium wrennii* Lentin & al. 1994, p. 575, 577, pl. 2, figs. 2, 5.

Barssidinium pliocenicum (Head 1993) Head 1994a

Holotype: Head 1993, fig. 22, no. 11.

Sumatradinium pliocenicum Head 1993, p. 40–41, fig. 22, nos. 5–14; fig. 23; Head 1994a, p. 296.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: latest Pliocene.

Batiacasphaera Drugg 1970b

Type: *Batiacasphaera compta* Drugg 1970b, p. 813, figs. 6 A-B.

Batiacasphaera compta Drugg 1970b

Holotype: Drugg 1970b, p. 813–814, figs. 6 A-B.

Hungarian Age: Eocén: Kedves 1992; Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Eocene; Williams & al. 1993: Bartonian–Priabonian (40–37 Ma).

Batiacasphaera hirsuta Stover 1977

Holotype: Stover 1977, p. 72–73, pl. 1, figs. 1–2.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Oligocene–Early Miocene.

Batiacasphaera micropapillata Stover 1977

Holotype: Stover 1977, p. 73, pl. 1, fig. 7.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Oligocene–Early Miocene; Williams & al. 1993: Chattian–Serravallian (30–11 Ma).

Batiacasphaera sphaerica Stover 1977

Holotype: Stover 1977, p. 73, pl. 1, fig. 4.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006;

Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Early Miocene; Williams & al. 1993: Aquitanian–Serravallian (23–11 Ma).

Batiacasphaera sp.

Hungarian Age: Late Pannonian, *Galeacysta etrusca* zone: Sütő-Szentai in Katona & al. 2013.

Biconidinium Islam 1983

Type: *Biconidinium longissimum* Islam 1983, p. 84, pl. 1, fig.3.

cf. *Biconidinium reductum* (May 1980) Kirsch 1991

Holotype: May 1980, p. 84–85, pl. 12, fig. 20.

Palaeocystodinium reductum May 1980.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Late Campanian–Early Maastrichtian.

Biconidinium sp.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.

Brigantedinium (Reid 1977) Lentin & Williams 1993

Type: *Chytroisphaeridia simplex* Wall 1965b, p. 308, text-figs. 7, 20.

Brigantedinium cariaeoense (Wall 1967) Lentin & Williams 1993

Holotype: Wall 1967, p. 113, pl. 16, fig. 14.

Chytroisphaeridia cariaeoensis Wall 1967.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1982b (Szólád 1 bh. p. 333, pl. 5, fig. 5), Sütőné Szentai 1995a (Zalaszentlászló 1, Nagyörbő 1, Hm. 78/18, Őcs 28), 2000, 2002, 2003; Sütő-Szentai 1988, 1994c; Sütő 1995b; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütő-Szentai 1985, 1988, 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Hm. 78/18), 2000, 2002, 2003, 2011; Sütő 1995b; Sütőné Szentai in Jámor & al. 1987; Sütőné Szentai & Selmeczi 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1994c; Sütőné Szentai 1989, 1995a (Zalaszentlászló 1, Hm. 78/18), 2000, 2002, 2003, 2011; Sütő 1995b; Sütőné Szentai in Jámor & al. 1987; Sütő-Szentai in Szuromi-Korecz & al. 2004; Sütő-Szentai in Cziczér & al. 2007; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone: over *S. paradoxus* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988, 1994c; Sütőné Szentai 1989, 2000, 2002, 2011; Sütő 1994a, 1995b; Sütőné Szentai in Jámor & al. 1987; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Spiniferites tihanyensis* zone: Sütő-Szentai 1994c; Sütőné Szentai 2000; Pannonian, *Nematosphaeropsis bicorporis*

zone: Sütőné Szentai 1989; *Galeacysta etrusca* zone: Sütő 1994a (Majs 1, 2, Töttös 1, Villány 7), 1995b; Sütő-Szentai 1994c; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008 (as *Chytroeisphaeridia* sp.); Late Miocene, Pannonian: *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008 (as *Chytroeisphaeridia* sp.).

Williams & al. 1998 Age: Quaternary.

Brigantedinium sp.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.; Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017.

Callaiosphaeridium Davey & Williams 1966

Type: *Hystrichosphaeridium asymmetricum* Deflandre & Courteville 1939, p. 100–101, pl. 4, fig. 1.

Callaiosphaeridium asymmetricum (Deflandre & Courteville 1939) Davey & Williams 1966b

Holotype: Deflandre & Courteville 1939, p. 100–101, pl. 4, fig. 1.

Hystrichosphaeridium asymmetricum Deflandre & Courteville 1939, *Hexasphaera asymmetrica* (Deflandre & Courteville 1939) Clarke & Verdier 1967; Fensome & al. 1993a, p. 949, fig. 1.

Roumanian Age: Late Miocene, Early Pannonian: Sütő & Szegő 2008 (Oarba de Mures/Marosorbó) as *Hystrichosphaeridium* cf. *asymmetricum* Defl. & Courteville 1939.

Williams & al. 1998 Age: Senonian.

Canningia Cookson & Eisenack 1960

Type: *Canningia reticulata* Cookson & Eisenack 1960, p. 251, pl. 38, fig. 1.

Canningia torulosa Davey & Verdier 1973

Holotype: Davey & Verdier 1973, p. 180, pl. 1, fig. 2.

Batiacasphaera torulosa (Davey & Verdier 1973) Dörhöfer & Davies 1980,

Ovoidinium torulosum (Davey & Verdier 1973) Below 1981.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage

Zone: Siegl-Farkas 1995, as cf. *Canningia torulosa* Davey & Verdier 1973.

Williams & al. 1998 Age: Late Albian–Early Cenomanian.

Canninginopsis Cookson & Eisenack 1962

Type: *Canninginopsis denticulata* Cookson & Eisenack 1962, p. 488, pl. 1, fig. 16.

Canninginopsis denticulata Cookson & Eisenack 1962b

Holotype: Cookson & Eisenack 1962b, p. 488, pl. 1, fig. 16; Bint 1986, text fig. 14F; Helby et al. 1987, fig. 38A.

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas & Wagreich 1996; *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Albian–Cenomanian.

Cannosphaeropsis O. Wetzel 1933

Type: *Cannosphaeropsis utinensis* O. Wetzel 1933, p. 6, pl. 3, figs. 9 a-b.

Cannosphaeropsis utinensis O. Wetzel 1933b

Holotype: O. Wetzel 1933b, p. 6, pl. 3, figs. 9 a-b; Lectotype: O. Wetzel, 1933b, pl. 3, fig. 11; Sarjeant 1985b, p. 148, pl. 5, figs. 1-2.

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1996; *Manumiella* Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Senonian.

Carpatella Grigorovich 1969

Type: *Carpatella cornuta* Grigorovich 1969a, p. 74-75, pl. 1, fig. 1.

Carpatella cornuta Grigorovich 1969a

Holotype: Grigorovich 1969a, p. 74–75, pl. 1, fig. 1; Neotype: Damassa 1988, p.174, pl.1, figs. 1, 4, 7.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1966.

Williams & al. 1998 Age: Danian; Williams & al. 1993: Early Paleocene (Danian) (66,5-61 Ma).

Cerebrocysta Bujak in Bujak & al. 1980

Type: *Cerebrocysta bartonensis* Bujak & al. 1980, pl. 13, figs. 4-5; Fensome & al. 1993a, p. 967, figs. 1-2.

Cerebrocysta „cassinascoensis” Zevenboom in Zevenboom & Santarelli 1995

Holotype: Zevenboom, 1995, p. 155–156, pl. 7, figs. 13-15. Williams & al. 1998: Name not validly published.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Langhian–earliest Serravallian.

Cerebrocysta poulsenii de Verteuil & Norris 1996a

Holotype: de Verteuil & Norris 1996a, p. 148–149, pl. 12, figs. 9-14.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aqueductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006;

Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.
Williams & al. 1998 Age: Early–Late Miocene.

Cerodinium Vozzhennikova 1963

Type: *Cerodinium sibiricum* Vozzhennikova 1963, text-fig. 9.

Cerodinium diebelii (Alberti 1959b) Lentin & Williams 1987

Holotype: Alberti, 1959b, 99–100, pl. 9, fig. 18.

Deflandrea diebelii Alberti 1959b,

Ceratiopsis diebelii (Alberti 1959b) Vozzhennikova 1967.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Late Senonian–Paleocene; Williams & al. 1993: Santonian–Early Paleocene (86–63 Ma).

Cerodinium speciosum (Alberti 1959b) Lentin & Williams 1987

Holotype: Alberti, 1959b, p. 97, pl. 9, fig. 13.

Deflandrea speciosa Alberti 1959b,

Ceratiopsis speciosa (Alberti 1959b) Lentin & Williams 1977.

Hungarian Age: Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Paleocene; Williams & al. 1993: Late Maastrichtian–Early Eocene (70–52 Ma).

Charlesdowniea Lentin & Vozzhennikova 1989

Type: *Wetziella coleothrypta* Williams & Downie 1966, pl. 18, fig. 8, text-fig. 47.

Charlesdowniea clathrata (Eisenack 1938b) Lentin & Vozzhennikova 1989

Holotype: Eisenack, 1938b, p. 187, text-fig. 5.

Wetziella clathrata Eisenack 1938b,

Kisselevia clathrata (Eisenack 1938b) Lentin & Williams 1976.

Hungarian Age: Middle Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, NP 16, 18, 19 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Late Eocene–Early Oligocene.

Charlesdowniea coleothrypta (Williams & Downie 1966b) Lentin & Vozzhennikova 1989

Holotype: Williams & Downie 1966b, p. 185–186, pl. 18, fig. 8; text-fig. 47; Bujak & al. 1980, pl. 12, figs. 7–8.

Wetziella coleothrypta Williams & Downie 1966,

Kisselevia coleothrypta (Williams & Downie 1966b) Lentin & Williams 1976.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene.

Charlesdowniea tenuivirgula (Williams & Downie 1966b) Lentin & Vozzhennikova 1989

Holotype: Williams & Downie 1966b, p. 188-189, pl. 20 (not pl. 19), figs. 2, 4; text-fig. 49.

Wetzeliella tenuivirgula Williams & Downie 1966b.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Early Eocene.

Chatangiella Vozzhennikova 1967

Type: *Chatangiella niiga* Vozzhennikova 1967, pl. 56, fig. 1; pl. 57, fig. 1.

Chatangiella? dakotaensis (Stanley 1965) Stover & Evitt 1978

Holotype: Stanley, 1965, p. 217–218, pl. 19, figs. 1-3.

Deflandrea dakotaensis Stanley, 1965,

Isabelidinium dakotaense (Stanley 1965) Lentin & Williams 1977.

Hungarian Age: Cretaceous, Late Campanian: Siegl-Farkas 1986.

Williams & al. 1998 Age: Paleocene.

Chatangiella victoriensis (Cookson & Manum 1964) Lentin & Williams 1976

Holotype: Cookson & Manum 1964, p. 522, pl. 76, figs. 3-4; Helby & al. 1987, fig. 41 A.

Deflandrea victoriensis Cookson & Manum 1964,

Australiella victoriensis (Cookson & Manum 1964) Lentin & Williams 1973,

Chatangiella victoriensis (Cookson & Manum 1964) Lebedeva in Iljina & al. 1994, p. 67.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1999a; Cretaceous, Campanian, Upper part of the *Odontochitina operculata* Assemblage Zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995 as *Chatangiella cf. victoriensis*.

Williams & al. 1998 Age: Senonian.

Chatangiella williamsii Yun Hyesu 1981

Holotype: Yun Hyesu 1981, p. 66–67, pl. 13, fig. 12; Fensome & al. 1991, p. 769, fig. 2.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone *Spinidinium* sp. Subzone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Early Santonian.

Chatangiella sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

cf. *Chatangiella* sp. Vozzhennikova 1967

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Chiropteridium Gocht 1960

Type: *Chiropteridium lobospinosum* Gocht 1960, pl. 17, fig. 1.

Chiropteridium sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Chlamydophorella Cookson & Eisenack 1958

Type: *Chlamydophorella nyei* Cookson & Eisenack 1958, pl. 11, fig. 1.

Chlamydophorella suemegensis (Góczán 1962) Sarjeant & Stancliffe 1994

Holotype: Góczán 1962, p. 192, 199, pl. 2, figs. 12-14.

Micrhystridium suemegense Góczán 1962.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962; Cretaceous, Aptian: Góczán in Fülöp 1966.

Williams & al. 1998 Age: Early Aptian.

Chytroeisphaeridia (Sarjeant 1962a) Downie & Sarjeant 1965

Type: *Chytroeisphaeridia chytrooides* Sarjeant 1962a, pl. 70, fig. 13.

Chytroeisphaeridia hungarica Sütő-Szentai 1990

Holotype: Sütő-Szentai 1990, p. 851, pl. 3, figs. 4 a-b (Paratype: pl. 4, figs. 5a-b).

Sütő-Szentai 1997: Micropaleontological type material of Natural collection at Komló p. 269; Williams & al. 1998 p. 114: Name not validly published (I.C.B.N. Article 37.5)

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii oblongus* zone (*C. hungarica*: thin wall and rare): Sütő-Szentai 1988; Sütőné Szentai 1989, 1995a (Zalaszentlászló 1, Hm. 78/18), 1995b, 2003; Pannonian, *Pontiadinium pecsvaradensis* zone (*C. hungarica*: thin wall): Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1), 2011 (Egerág 7); Sütő 1995b; Sütőné Szentai & Selmeczi 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) (*C. hungarica*: thin wall): Sütőné Szentai: 1982a (as *Nymphaeaceae A form*), 1995a (Zalaszentlászló 1, Zszt 3, Nagyörbő 1, Hm. 78/18), 2000, 2003, 2011; Sütő-Szentai 1994c; Bakrač 2005; Sütő-Szentai in Cziczér & al. 2007; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone over the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) (*C. hungarica*: typical): Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt. 3); Sütő-Szentai in Cziczér & al. 2007; *Spiniferites validus* zone: Sütőné Szentai 1982a (as *Nymphaeaceae A form*); Sütőné Szentai 1989, 2000, 2002, 2011; Sütő-Szentai 1988, 1994c; Sütő 1994a (Töttös 1), 1995b; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *Spiniferites validus* zone: Sütőné Szentai 1982a (as *Nymphaeaceae A form*); Sütő-Szentai 1988, 1994c; Sütőné Szentai 1989, 2000, 2002; Pannonian, *Spiniferites tihanyensis* zone: Bóna & Rumliné Szentai 1966, Pl. 13, Figs. 6-7 (as *Nymphaeaceae A form*), Sütő 1994a (Majs 1, 2, Töttös 1), 1995b; Sütő-Szentai 1994c; Sütőné Szentai 1995a (Hm. 78/18, Öcs 28), 2000, 2002, 2004; Sütő-Szentai in Lennert & al. 1999; Sütőné Szentai in Magyar & al. 2004; *Dinoflagellata*–*Zygnemataceae* interval zone over the *Spiniferites tihanyensis* zone: Sütő 1994a, 1995b; Sütő-Szentai 1994c; Sütőné Szentai 2000, 2002; Pannonian, *Nematosphaeropsis bicorporis* zone: Sütőné Szentai 1989; *Galeacysta etrusca* zone: Sütő 1994a (Töttös 1, Villány 7); 1995b; Sütő-Szentai 1994c; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7); Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis*

subzone: Sütőné Szentai 2011 (Bosta 1); Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *G. etrusca* zone (*C. hungarica*: typical): Sütő-Szentai 1994c; Sütőné Szentai 2011 (Egerág 7).

Williams & al. 1998 Age: Late Pannonian.

Chytroeisphaeridia tuberosa Sütőné Szentai 1982a

Holotype: Sütőné Szentai 1982a, p. 212, 219–220, pl. 6. fig. 1.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló p. 269.

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii oblongus* zone (rare): Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian: *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, Upper part of the *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone) (typical): Sütőné Szentai: 1982a (as *Spiniferites bentorii* zone); Sütő-Szentai as *S. paradoxus* zone: 1988, 1990; Sütőné Szentai 1989; Sütő-Szentai: 1994c; Sütőné Szentai 1995a (Zszt 3), 2000, 2002; Bakrač 2005; Baranyi in Varga & al. 2017; Sütő-Szentai in Cziczér & al. 2007; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai: 1995a (Zalaszentlászló 1, Zszt 3); Pannonian, *Spiniferites validus* zone: Sütőné Szentai: 1982a, 1989, 2000, 2002, 2011; Sütő-Szentai 1985, 1988, 1994c; Sütő: 1994a; Sütőné Szentai in Jámbor & al. 1987 (Lajoskomárom-1 bh.); Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *S. validus* zone: Sütőné Szentai: 1982a; Sütő-Szentai 1985, 1988; Sütőné Szentai in Jámbor & al. 1987; Pannonian, *Spiniferites tihanyensis* zone: Sütő: 1994a; Sütő-Szentai 1994c; Pannonian, *Galeacysta etrusca* zone: Sütő: 1994a.

Williams & al. 1998 Age: Pannonian.

Chytroeisphaeridia sp.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a as cf. *Chytroeisphaeridia* sp. Miocene, Badenian: Sütőné Szentai in Chikán 1991; Miocene, Sarmatian, *Mecsekia incrassata–S. bentorii budajenoensis* zone: Sütő-Szentai: 1988; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus–Lingulodinium machaerophorum* zone: Sütőné Szentai 2002; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai in Magyar & al. 2004; Sütő-Szentai in Szuromi-Korecz & al. 2004.

Circulodinium Alberti 1961

Type: *Circulodinium hirtellum* Alberti 1961, pl. 4, fig. 10.

Circulodinium distinctum (Deflandre & Cookson 1955) Jansonius 1986

Holotype: Deflandre & Cookson 1955, p. 285–286, pl. 2, fig. 14.

Cyclonephelium distinctum Deflandre & Cookson 1955.

Hungarian Age: Cretaceous, Late Aptian: Góczán in Fülöp 1966; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Circulodinium sp.

Hungarian Age: Early Jurassic, Late Sinemurian: Bóna 1983, 1984.

Cleistosphaeridium Davey & al. 1966

Type: *Cleistosphaeridium diversispinosum* Davey & al. 1966, pl. 10, fig. 7.

Cleistosphaeridium „disjunctum” Davey & al. 1966

Holotype: Davey & al. 1966, p. 169–170, pl. 11, fig. 9; Bujak & al. 1980, pl. 8, figs. 1-2.

Hungarian Age: Miocene, Badenian: Nagy & Bodor 1982, Table 1. p. 119.

Williams & al. 1998 Age: Early Eocene.

Cleistosphaeridium sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Cordosphaeridium Eisenack 1963

Type: *Hystriosphaeeridium inodes* Klumpp 1953, p. 391, pl. 18, figs. 1-2.

Cordosphaeridium cracenospinosum Davey & Williams 1966b

Holotype: Davey & Williams 1966b, p. 87, pl. 3, fig. 3 (not fig. 4); Bujak & al. 1980, pl. 7, fig. 9.

Achomosphaera cracenospinosa (Davey & Williams 1966b) Sarjeant 1981.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008 (Oarba de Mures/Marosorbó).

Williams & al. 1998 Age: Early Eocene.

Cordosphaeridium exilimurum (Davey & Williams 1966b) Lentin & Williams 1989

Holotype: Davey & Williams 1966b, p. 87–88, pl. 11, fig. 2; Bujak & al. 1980, pl. 7, figs. 4-5.

Hystriosphaeerina exilimura (Davey & Williams 1966b) Sarjeant 1981.

Tityrosphaeridium exilimurum (Davey & Williams 1966b) Jain & Garg 1986.

Cordosphaeridium exilimurum Davey & Williams 1966b.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene.

Cordosphaeridium fibrospinosum Davey & Williams 1966b

Holotype: Davey & Williams 1966b, p. 86, pl. 5, fig. 5; Bujak & al. 1980, pl. 7, figs. 3, 6.

Emmetrocyta fibrospinosa (Davey & Williams 1966b) Sarjeant 1981.

Tityrosphaeridium fibrospinosum (Davey & Williams 1966b) Jain & Garg 1986.

Cordosphaeridium fibrospinosum (Davey & Williams 1966b) Lentin & Williams 1989, p. 74.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993; Rákosi & Snopkova, P. 1993.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993: Early Maastrichtian–Early Oligocene, Rupelian (72-34 Ma).

Cordosphaeridium funiculatum Morgenroth 1966a

Holotype: Morgenroth 1966a, p. 22–23, pl. 6, fig. 2.

Tityrosphaeridium funiculatum (Morgenroth 1966a) Sarjeant 1981.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 24 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993: Lutetian–Priabonian (49–37 Ma).

Cordosphaeridium gracile (Eisenack 1954b) Davey & Williams 1966b

Holotype: Eisenack 1954b, p. 66, pl. 10, fig. 5.

Hystriochosphaeridium inodes Klumpp, 1953 subsp. *gracile* Eisenack 1954b,

Cordosphaeridium inodes (Klumpp 1953) Eisenack 1963 subsp. *gracile* (Eisenack 1954b) Eisenack 1963,

Tityrosphaeridium gracile (Eisenack 1954b) Sarjeant 1981.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Oligocene; Williams & al. 1993: Early Campanian–Rupelian (79–31 Ma).

Cordosphaeridium inodes (Klumpp 1953) Eisenack 1963b

Holotype: Klumpp 1953, p. 391, pl. 18, figs. 1–2.

Hystriochosphaeridium inodes Klumpp 1953.

Hungarian Age: Eocene: Kedves 1992; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24 zones: Rákosi 1993; Oligocene, Egerian: Nagy 1992 p. 15. Eger, Téglyagyár bh.

Williams & al. 1998 Age: Late Eocene.

Cordosphaeridium latum (Klumpp 1953) Lentin & Williams 1985

Holotype: Klumpp 1953, p. 392, pl. 18, figs. 3–4; Sarjeant 1981, pl. 5, figs. 2–3 (not 3–4).

Hystriochosphaeridium dictyoplocum subsp. *latum* Klumpp 1953,

Cordosphaeridium dictyoplocum subsp. *latum* (Klumpp 1953) Eisenack 1963,

Areosphaeridium diktyoplokum (Klumpp 1953) Eaton 1971 subsp. *latum* (Klumpp 1953) Lentin & Williams 1973,

Plethysyrinx lata (Klumpp 1953) Sarjeant 1981.

Hungarian Age: Eocene: Kedves 1992; Eocene; NP 18, 19, 20 zones: Rákosi & Snopkova 1993; Oligocene: NP 21, 22, 23, 24 zones: Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle–Late Eocene; Williams & al. 1993: Lutetian–Priabonian (49–37 Ma).

Cordosphaeridium minimum (Morgenroth 1966a) Benedek 1972

Holotype: Morgenroth 1966a, p. 24, pl. 5, figs. 6–7.

Cordosphaeridium inodes subsp. *minimum* Morgenroth 1966a.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian,

PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.
Williams & al. 1998 Age: Early Eocene.

Cordosphaeridium sp.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008 (Oarba de Mures/Marosorbó).

Coronifera Cookson & Eisenack 1958

Type: *Coronifera oceanica* Cookson & Eisenack 1958

Coronifera oceanica Cookson & Eisenack 1958

Holotype: Cookson & Eisenack 1958, p. 45, pl. 12, fig. 6; Fensome & al. 1991, p. 697, fig. 2. p. 701, fig. 2.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962; Cretaceous, Late Aptian–Albian: Góczán in Fülöp 1966.

Williams & al. 1998 Age: Albian; Williams & al. 1993: Early Cretaceous, Hauterivian–Late Cretaceous, Early Maastrichtian (119-74 Ma).

Corrudinium Stover & Evitt 1978

Type: *Gonyaulacysta incomposita* Drugg 1970, p. 810-811, figs. 1, I-J.

Corrudinium incompositum (Drugg 1970b) Stover & Evitt 1978

Holotype: Drugg 1970b, p. 810–811, figs. 1, I-J; Jan du Chêne & al. 1986a, pl. 17, figs. 1-2; Fensome & al. 1995, p. 1561, figs. 1-2.

Gonyaulacysta incomposita Drugg 1970b,

Leptodinium incompositum (Drugg 1970b) Lentin & Williams 1973.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 21, 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Oligocene; Williams & al. 1993: Bartonian–Rupelian (41-31 Ma).

Cribroperidinium Neale & Sarjeant 1962

Type: *Cribroperidinium sepimentum* Neale & Sarjeant 1962, p. 443, pl. 19, fig. 4, text-fig. 3a-b.

Cribroperidinium edwardsii (Cookson & Eisenack 1958) Davey 1969a

Holotype: Cookson & Eisenack 1958, p. 32, pl. 3, fig. 6, text-fig. 7; Jan du Chêne & al. 1986a, pl. 32, fig. 4; pl. 33, fig. 3.

Gonyaulax edwardsii Cookson & Eisenack 1958,

Gonyaulacysta edwardsii (Cookson & Eisenack 1958) Clarke & Verdier 1967.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997, 2002 as *Cribroperidinium* cf. *edwardsii*.

Williams & al. 1998 Age: Albian–Early Turonian; Williams & al. 1993: Early Valanginian–Turonian (126–92 Ma).

Cribroperidinium orthoceras (Eisenack 1958a) Davey 1969a

Holotype: Eisenack 1958a, p. 388, pl. 21, fig. 5; Sarjeant 1985a, pl. 1, figs. 1, 4, text-fig. 1; Jan du Chêne & al. 1986a, pl. 24, figs. 7–8.

Gonyaulax orthoceras Eisenack 1958a,

Gonyaulacysta orthoceras (Eisenack 1958a) Sarjeant 1966.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Aptian.

Cribroperidinium pannonicum (Nagy 1965a) Helenes 1984

Holotype: Nagy 1965a, p. 200–201, pl. I, figs. 1–2. Pl. 2, fig. 10, text-figs. 1–2; Jan du Chêne & al. 1986a, pl. 31, figs. 1–4.

Gonyaulax pannonicus Nagy 1965a,

Gonyaulacysta pannonica (Nagy 1965a) Lentin & Williams 1973,

Millioudodinium pannonicum (Nagy 1965a) Stover & Evitt 1978.

Hungarian Age: Late Miocene, Pannonian: Nagy 1965a, 1969; Pannonian, Upper part of the *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2002; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai: 1988; Sütőné Szentai 2002; Pannonian, *Spiniferites validus* zone: Sütő-Szentai: 1988; Sütő 1994a; Sütőné Szentai 2002; Pannonian, *Spiniferites validus* zone, *Dinoflagellata*–*Zygnemataceae* interval zone: Sütő-Szentai 1988; Sütő 1994a; Pannonian, *Spiniferites tihanyensis* zone: Sütő-Szentai in Lennert & al. 1999; Sütő 1994a; Sütőné Szentai 2002; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a.

Williams & al. 1998 Age: Early Pliocene.

Cribroperidinium tenuitabulatum (Gerlach 1961) Helenes 1984

Holotype: Gerlach 1961, p. 159, pl. 25, figs. 10–11; Lectotype: Sarjeant 1984b, pl. 2, fig. 3.

Gonyaulax tenuitabulata Gerlach 1961,

Gonyaulacysta tenuitabulata (Gerlach 1961) de Coninck 1969,

Millioudodinium tenuitabulatum (Gerlach 1961) Stover & Evitt 1978,

Rhynchodiniopsis tenuitabulata (Gerlach 1961) Sarjeant 1984.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Oligocene–Middle Miocene.

Cribroperidinium ventriosum (O. Wetzel 1933a) Lentin & Williams 1973

Holotype: O. Wetzel 1933a, p. 161–162, pl. 2, fig. 4.

Peridinium ventriosum O. Wetzel 1933a.

Hungarian Age: Cretaceous, Campanian, Upper part of the *Odontochitina operculata* Assemblage Zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995; Campanian, *Pyxidinopsis bakonyensis* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Cribroperidinium sp.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, Lower part of the *Pyxidinopsis bakonyensis* Assemblage Zone: Siegl-Farkas 1995.

Ctenidodinium Deflandre 1939a

Type: *Lithodinia jurassica* var. *ornata* Eisenack 1935, p. 176, pl. 4, fig.9.

Ctenidodinium ornatum (Eisenack 1935) Deflandre 1939a

Holotype: Eisenack 1935, p. 176, pl. 4, fig. 9.

Lithodinia jurassica var. *ornata* Eisenack 1935,

Gonyaulacysta ornata (Eisenack 1935) Pocock 1972.

Hungarian Age: Eocene, redeposited: as *Ctenodinium ornatum* Kedves 1992.

Williams & al. 1998 Age: Oxfordian; Williams & al. 1993: Bajocian–Oxfordian (166–147 Ma).

Damassadinium Fensome & al. 1993b

Type: *Danea mutabilis* Morgenroth 1968, pl 48, figs. 5-6.

Damassadinium californicum (Drugg 1967) Fensome & al. 1993b

Holotype: Drugg 1967, p. 30, pl. 5, fig. 15.

Palmnickia californica Drugg 1967,

Samlandia californica (Drugg 1967) Lentin & Williams 1977,

Danea californica (Drugg 1967) Stover & Evitt 1978.

Hungarian Age: Eocene: Kedves 1992, as *Danea mutabilis* Morgenroth 1968.

Williams & al. 1998 Age: Danian.

Dapcodinium Evitt 1961a

Type: *Dapcodinium priscus* Evitt 1961a, pl. 119, figs. 1-2, text-figs. 10-11.

Dapcodinium priscus Evitt 1961a

Holotype: Evitt 1961a, p. 996, pl. 119, figs. 1-2, text-figs. 10-11.

Hungarian Age: Eocene: Kedves 1992 as *D. priscum*.

Williams & al. 1998 Age: Hettangian; Williams & al. 1993: Rhaetian–Early Sinemurian (212–199 Ma).

Dapsilidinium Bujak & al. 1980

Type: *Polysphaeridium pastielsii* Davey & Williams 1966b, pl 4, fig. 10.

Dapsilidinium pseudocolligerum (Stover 1977) Bujak & al. 1980

Holotype: Stover 1977, p. 74–75, pl. 1, figs. 14-16.

Polysphaeridium pseudocolligerum Stover 1977.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Early Oligocene–Early Miocene; Williams & al. 1993: Eocene, Bartonian–Late Miocene, Tortonian (42–8 Ma).

Dapsilidinium simplex (White 1842) Bujak & al. 1980

Holotype: White 1842, p. 38, pl. 4, fig. 10.

Xanthidium tubiferum Ehrenberg 1838 var. *simplex* White 1842,

Xanthidium "simplex" White 1842,

Hystriosphæridium simplex (White 1842) Deflandre 1946,

Polysphaeridium simplex (White 1842) Davey & Williams 1977.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Late Cretaceous.

Dapsilidinium sp.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Deflandrea Eisenack 1938b

Type: *Deflandrea phosphoritica* Eisenack 1938b, p. 187, text-fig. 6.

Deflandrea heterophlycta Deflandre & Cookson 1955

Holotype: Deflandre & Cookson 1955, p. 249–250, text-fig. 5; Verdier 1970, pl. 1, figs. 1–4.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Eocene.

Deflandrea leptodermata Cookson & Eisenack 1965a

Holotype: Cookson & Eisenack 1965a, 121–122, pl. 11, fig. 6.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Eocene.

Deflandrea oebisfeldensis Alberti 1959b

Holotype: Alberti 1959b, p. 95–96, pl. 8, fig. 13.

Hungarian Age: Eocene NP 15-16, 20 zones: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene NP 24 zone: Rákosi 1993; Oligocene NP 25 zone: Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Paleocene–Early Eocene; Williams & al. 1993: Late Maastrichtian–Early Eocene, Ypresian (68-54 Ma).

Deflandrea phosphoritica Eisenack 1938b

Holotype: Eisenack 1938b, p. 187, text-fig. 6.; Eisenack 1954b, pl. 9, fig. 11 (not pl. 9, fig. 8).

Deflandrea phosphoritica Eisenack 1938b subsp. ***australis*** Cookson & Eisenack 1961b, p. 39–40, pl. 1, fig. 2.

Holotype: Cookson & Eisenack 1961b, pl. 1, fig. 2.

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Oligocene: Rákosi 1973, pl. 2, fig. 6.

Williams & al. 1998 Age: Eocene.

Deflandrea phosphoritica subsp. ***phosphoritica*** Eisenack 1938b

Holotype: Eisenack 1938b, text-fig. 6; Eisenack 1954b, pl. 9, fig. 11 (not pl. 9, fig. 8.).

Hungarian Age: Paleogene: Rákosi 1973 pl. 1, figs. 1-2.; Eocene: Kedves 1969, 1986, 1992; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, *Retisphaera microreticulata*–*Tytthodiscus* sp. *A.* Assemblage Zone: Rákosi 1979, 1983; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, Darvastó F.–Szőc Formation: Rákosi 1991; Eocene NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Eocene, Priabonien: Rákosi in Gidai 1971; Eocene, Buda Marl Formation: Rákosi 1985; Oligocene: Rákosi 1966; Rákosi in Jámor & al. 1971; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Eocene–Early Oligocene; Williams & al. 1993: as *Deflandrea phosphoritica* „complex” Early Eocene, Ypresian–Early Miocene Aquitanian (54-24 Ma).

Deflandrea phosphoritica var. ***spinulosa*** (Alberti 1959b) Strauss 1997

Holotype: Alberti 1959b, p. 95, pl. 8, fig. 8.

Deflandrea spinulosa Alberti 1959b, p. 95, pl. 8, fig. 8.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993; Oligocene, Egerian: Eger, borehole Nagy 1992. p. 15; *Deflandrea spinulosa*–*Dicolpopollenites calamooides* Opper Zone: Nagy 1992.

Williams & al. 1998 Age: Middle–Late Oligocene.

cf. *Deflandrea phosphoritica* Eisenack 1938b

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.

Deflandrea sp.

Hungarian Age: Cretaceous, Late Campanian: Siegl-Farkas 1986; Cretaceous, Early Maastrichtian: Siegl-Farkas 1986; Eocene: as *Deflandreidae* Kedves 1992; Late Miocene, Pannonian (redeposited): Rákosi 1963; Kovács 1992; Pannonian, *Spiniferites*

tihanyensis zone (redeposited): Sütőné Szentai 2002; Pannonian, *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone (redeposited): Sütőné Szentai 2011.

Roumanian Age: Miocene, Sarmatian–Early Pannonian (redeposited): Sütő & Szegő 2008.

Dinogymnium Evitt & al. 1967

Type: *Dinogymnium acuminatum* Evitt & al. 1967, pl. 1, figs. 21-23; pl. 2, fig. 5; text-figs. 16-18.

Dinogymnium acuminatum Evitt & al. 1967

Holotype: Evitt & al. 1967, p. 8–16, pl. 1, figs. 21-23; pl. 2, fig. 5; text-figs. 16-18.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a; Cretaceous, Late Campanian, *Krutzschippollis spatiosus*–*Suemegipollis triangularis* Opperl-zone: Siegl-Farkas 1986, 1987; Cretaceous, Early Maastrichtian, *Pseudopapillopollis–Semioculopollis minimus* Opperl-zone: Siegl-Farkas 1986; Cretaceous, Campanian: Siegl-Farkas 1999a as *Dinogymnium* cf. *acuminatum*; Góczán in Haas & al. 1997.

Williams & al. 1998 Age: Maastrichtian.

Dinogymnium cretaceum (Deflandre 1936b) Evitt & al. 1967

Holotype: Deflandre 1934, figs. 9-10; Deflandre, 1935, pl. 5, figs. 6-7, text-figs. 4-5; Deflandre, 1936b, pl. 2, figs. 1-2.

Gymnodinium cretaceum Deflandre 1936b, p. 164–165, pl. 2, figs. 1-2.

Hungarian Age: Cretaceous, Late Campanian: Góczán & Siegl-Farkas 1989; Campanian: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Senonian?

Dinogymnium denticulatum (Alberti 1961) Evitt & al. 1967

Holotype: Alberti 1961, p. 5, pl. 3, fig. 2.

Gymnodinium denticulatum Alberti 1961.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1986; Siegl-Farkas 1999a; Góczán & Siegl-Farkas 1989; 1990.

Williams & al. 1998 Age: Senonian.

Dinogymnium digitus (Deflandre 1936b) Evitt & al. 1967

Holotype: Deflandre 1935, text-figs. 7-8; Deflandre 1936b, p. 166–167, pl. 2, figs. 4-5.

Gymnodinium digitus Deflandre 1936b, p. 166–167, pl. 2, figs. 4-5.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Cretaceous, Upper part of the Middle Campanian, *Odontochitina operculata* Assemblage Zone, *Dinogymnium digitus* Subzone: Siegl-Farkas 1997; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Senonian.

Dinogymnium heterocostatum (Deflandre 1936b) Evitt & al. 1967

Holotype: Deflandre 1935, text-fig. 6; Deflandre 1936b, p. 165–166, pl. 2, fig. 6.
Gymnodinium heterocostatum Deflandre 1936b, p. 165–166, pl. 2, fig. 6.

Hungarian Age: Cretaceous, Late Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinopsis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1996.

Williams & al. 1998 Age: Senonian?

Dinogymnium hyalinum (Vozzhennikova 1967) Lentin & Williams 1973

Holotype: Vozzhennikova 1967, p. 45, pl. 3, fig. 4; Lentin & Vozzhennikova 1990, p. 21, pl. 2, fig. 8; text-fig. 7.

Gymnodinium hyalinum Vozzhennikova 1967, pl. 1, fig. 9; pl. 2, fig. 6; pl. 3, fig. 4; pl. 5, fig. 11.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Dinogymnium microgranulosum Clarke & Verdier 1967

Holotype: Clarke & Verdier 1967, p. 34–35, pl. 5, fig. 9.

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a; Cretaceous, Upper Campanian: Góczán in Haas & al. 1997, pl. 7, figs. K, L.; Late Cretaceous, Devcsér section: Góczán & Siegl-Farkas 1990.

Williams & al. 1998 Age: Santonian.

Dinogymnium nelsonense (Cookson 1956) Evitt & al. 1967

Holotype: Cookson 1956, p. 183, pl. 1, fig. 10; Helby & al. 1987, fig. 42C; Lentin & Vozzhennikova 1990, p. 21, pl. 2, fig. 8.

Gymnodinium nelsonense Cookson 1956, p. 183, pl. 1, figs. 8–11.

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962; Cretaceous, Campanian: Góczán & al. 1989; Cretaceous, Early Maastrichtian: Góczán 1962.

Williams & al. 1998 Age: Senonian.

Dinogymnium undulosum Cookson & Eisenack 1970a

Holotype: Cookson & Eisenack 1970a, p. 138, pl. 10, fig. 3.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinopsis bakonyensis* Assemblage Zone: Siegl-Farkas & Wagreich 1996.

Williams & al. 1998 Age: Senonian.

Dinogymnium westralium (Cookson & Eisenack 1958) Evitt & al. 1967

Holotype: Cookson & Eisenack 1958, p. 25, pl. 1, fig. 9.

Gymnodinium westralium Cookson & Eisenack 1958, p. 25, pl. 1, fig. 9.

Hungarian Age: Cretaceous, Upper part of the Early Campanian, Late Campanian, Early Maastrichtian: Góczán 1962; Cretaceous, Campanian: Góczán & al. 1989; Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Late Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas & Wagreich 1996.

Williams & al. 1998 Age: Senonian.

Dinogymnium sp.

Hungarian Age: Cretaceous, Late Santonian, *Odontochitina operculata* Assemblage Zone, Subzone-1: Siegl-Farkas 1997; Cretaceous, Late Campanian, *Krutzschipollis spatiosus*–*Suemegipollis triangularis* Opperl–zone: Siegl-Farkas 1987; Cretaceous, Late Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas & Wagreich 1996; Góczán & Siegl-Farkas 1990; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas in Lantos & al. 1996; Siegl-Farkas 2002; Cretaceous, Early Maastrichtian, *Pseudopapillopollis*–*Semioculopollis minimus* Opperl–zone: Siegl-Farkas 1987; Góczán & Siegl-Farkas 1990; Late Miocene, Pannonian: Kedves & al. 2000, p. 94, pl. 6.9, fig. 14.

Dinogymnium div. sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinospis bakonyensis* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1993 Age: as *Dinogymnium* spp. Late Cretaceous, Turonian–Late Maastrichtian (90-67 Ma).

Diphyes Cookson 1965

Type: *Hystriospheraedium colligerum* Deflandre & Cookson 1955, pl. 7, fig. 3.

Diphyes colligerum (Deflandre & Cookson 1955) Cookson 1965a

Holotype: Deflandre & Cookson 1955, p. 278–279, pl. 7, fig. 3.

Hystriospheraedium colligerum Deflandre & Cookson 1955, p. 278–279, pl. 7, fig. 3.,

Baltisphaeridium colligerum (Deflandre & Cookson 1955) Downie & Sarjeant 1965.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993: Late Cretaceous, Late Maastrichtian–Late Eocene Priabonian (69-37 Ma).

Disphaeria Cookson & Eisenack 1960

Type: *Disphaeria macropyla* Cookson & Eisenack 1960, p. 11, Pl. 3, fig. 13.

Disphaeria macropyla Cookson & Eisenack 1960a

Holotype: Cookson & Eisenack 1960a, p. 11, pl. 3, fig. 13; Helby & al. 1987, fig. 381; Fensome & al. 1996, p. 2215, fig. 1.

Hungarian Age: Eocene, redeposited: Kedves 1992.

Williams & al. 1958 Age: Turonian.

Distatodinium Eaton 1976

Type: *Distatodinium craterum* Eaton 1976, p. 262–263, pl. 9, fig. 1.

Distatodinium craterum Eaton 1976

Holotype: Eaton 1976, p. 262–263, pl. 9, fig. 1; Bujak & al. 1980, pl. 2, figs. 10-11.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

Distatodinium ellipticum (Cookson 1965a) Eaton 1976

Holotype: Cookson 1965a, p. 87–88, pl. 11, fig. 1.

Hystriochosphaeridium ellipticum Cookson 1965a, p. 87–88, pl. 11, figs. 1-3, 3a.

Tanyosphaeridium ellipticum (Cookson 1965a) Davey & Williams 1969.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Late Eocene.

Distatodinium paradoxum (Brosius 1963) Eaton 1976

Holotype: Brosius 1963, p. 41–42, pl. 4, fig. 6; Fensome & al. 1995, p. 1639, fig. 2.

Hystriochosphaeridium paradoxum Brosius 1963,

Tanyosphaeridium paradoxum (Brosius 1963) Gocht 1969,

Oligosphaeridium paradoxum (Brosius 1963) Davey & Williams 1969,

Bipolaribucina paradoxa (Brosius 1963) Lentin & Williams 1981.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Oligocene, Egerian: Nagy 1992.

Williams & al. 1998 Age: Late Oligocene; Williams & al. 1993: Late Oligocene, Rupelian–Middle Miocene Serravallian (32-15,2 Ma).

Distatodinium solidum Châteauneuf 1980

Holotype: Châteauneuf 1980, p. 137, pl. 22, fig. 1.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Eocene (Lutetian-Ludian) Ludian: Upper part of the Priabonian stage (long ago).

Distatodinium tenerum (Benedek 1972) Eaton 1976

Holotype: Benedek 1972, p. 35, pl. 10, fig. 13; Benedek & Sarjeant 1981, fig. 1, no. 5.

Tanyosphaeridium tenerum Benedek 1972, p. 35, pl. 10, figs. 13-14; text-fig. 14.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle Oligocene.

Downiesphaeridium Islam 1993

Type: *Cleistosphaeridium spinulastrum* Islam 1983b, pl. 2, fig.1.

Downiesphaeridium armatum (Deflandre 1937b) Islam 1993

Holotype: Deflandre 1937b, p. 76–77, pl. 16. (al. Pl. 13), fig. 6.

Hystriochosphaeridium armatum Deflandre 1937b, p. 76–77, pl. 16, figs. 6-7; Islam 1993, p. 84.,

Baltisphaeridium armatum (Deflandre 1937b) Downie & Sarjeant 1965,

Cleistosphaeridium armatum (Deflandre 1937b) Davey 1969.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Late Senonian.

Downiesphaeridium flexuosum (Davey & al. 1966) Islam 1993

Holotype: Davey & al. 1966, p. 169, pl. 2, fig. 5.

Cleistosphaeridium flexuosum Davey & al. 1966, p. 169, pl. 2, fig. 5; Islam 1993, p. 84.,
Polysphaeridium flexuosum (Davey & al. 1966) Below 1982.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 124 as
Cleistosphaeridium flexuosum.

Williams & al. 1998 Age: Cenomanian.

Downiesphaeridium multispinosum (C. Singh 1964) Islam, 1993

Holotype: C. Singh 1964, p. 141–142, pl. 20, fig. 1; Nagy 1965a, p. 203, pl. 2, figs. 8-9.

Zengővárkony 59 bh. 56,0–60,9 m as *Baltisphaeridium multispinosum*.

Baltisphaeridium multispinosum C. Singh 1964, p. 141–142, pl. 20, figs. 1-2; Islam 1993, p. 84.,
Cleistosphaeridium multispinosum (C. Singh 1964) Brideaux, 1971.

Hungarian Age: Miocene, Karpatian: as *Baltisphaeridium multispinosum* Nagy 1965a,
1969, 1992.

Williams & al. 1998 Age: Middle Albian–Early Cenomanian.

Dracodinium Gocht 1955

Type: *Dracodinium solidum* Gocht 1955, text-figs. 3a-b.

Dracodinium condylos (Williams & Downie 1966b) Costa & Downie 1979

Holotype: Williams & Downie 1966b, p. 193–194, pl. 20, fig. 1.

Wetzeliella condylos Williams & Downie 1966b, p. 193–194, pl. 20, figs. 1-2; Costa & Downie 1979, p. 43.,
Rhombodinium condylos (Williams & Downie 1966b) Lentini & Williams 1976.

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata*
Assemblage Zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993: Upper part of the
Ypresian–Lower part of the Lutetian (51-49 Ma).

Emmetrocyta Stover 1975

Type: *Cannosphaeropsis urnaformis* Cookson 1953, pl. 2, figs. 41-42.

Emmetrocyta urnaformis (Cookson 1953) Stover 1975

Holotype: Cookson 1953, p. 118, pl. 2, figs. 41-42.

Cannosphaeropsis urnaformis Cookson 1953, p. 118, pl. 2, figs. 41-43;

Hungarian Age: Eocene: as *Emmetrocyta urnaformis*, Kedves 1992.

Williams & al. 1998 Age: Oligocene.

Enneadocysta Stover & Williams 1995

Type: *Baltisphaeridium pectiniforme* Gerlach 1961, pl. 28, fig. 14.

Enneadocysta arcuata (Eaton 1971) Stover & Williams 1995

Holotype: Eaton 1971, p. 360–363, pl. 3, fig. 1. text-fig. 4; Bujak & al. 1980, pl. 2, fig. 6.

Areosphaeridium arcuatum Eaton 1971.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP
16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

Enneadocysta multicornuta (Eaton 1971) Stover & Williams 1995

Holotype: Eaton 1971, p. 363–364, pl. 4, fig. 1; text-fig. 6.

Areosphaeridium multicornutum Eaton 1971.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Eocene: Rákosi in Michoux & al. 1985 as *Enneadocysta* cf. *multicornuta* (Eaton 1971).

Williams & al. 1998 Age: Eocene.

Evansia Pocock 1972

Type: *Evansia granulata* Pocock 1972, p. 95, pl. 24, fig. 7.

Evansia perireticulata (Århus & al. 1989) Lentin & Williams 1993

Holotype: Århus & al. 1989, p. 46, fig. 5a.

Crussolia perireticulata Århus & al. 1989, p. 46, figs. 5a-i.

Hungarian Age: Eocene, redeposited: as *Crussolia perireticulata* Kedves 1992.

Williams & al. 1998 Age: Jurassic, Callovian.

Exochosphaeridium Davey & al. 1966

Type: *Exochosphaeridium phragmites* Davey & al. 1966, pl. 2, figs. 9-10.

Exochosphaeridium bifidum (Clarke & Verdier 1967) Clarke & al. 1968

Holotype: Clarke & Verdier 1967, p. 72–73, pl. 17, fig. 5.

Baltisphaeridium bifidum Clarke & Verdier 1967, p. 72–73, pl. 17, figs. 5-6.; text-fig. 30.

Hungarian Age: Eocene, redeposited: Kedves 1992.

Williams & al. 1998 Age: Cenomanian–Campanian.

Fibrocysta Stover & Evitt 1978

Type: *Cordosphaeridium bipolare* Cookson & Eisenack 1965b, pl. 16, fig. 8.

Fibrocysta sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Florentinia Davey & Verdier 1973

Type: *Florentinia laciniata* Davey & Verdier 1973, p. 185–186, pl. 2, figs. 1, 3.

Florentinia ferox (Deflandre 1937b) Duxbury 1980

Holotype: Deflandre 1937b, p. 72, pl. 14. (al. pl. 11), figs. 3-4.

Hystrichosphaeridium ferox Deflandre 1937b, p. 72, pl. 14, figs. 3-4.,

Baltisphaeridium ferox (Deflandre 1937b) Downie & Sarjeant 1965,

Hystrichokolpoma ferox (Deflandre 1937b) Davey 1969,

Silicisphaera ferox (Deflandre 1937b) Davey & Verdier 1976.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975.

Williams & al. 1998 Age: Senonian.

Florentinia mantellii (Davey & Williams 1966b) Davey & Verdier 1973

Holotype: Davey & Williams 1966b, p. 66, pl. 6, fig. 6.

Hystriosphæridium mantellii Davey & Williams 1966b, p. 66, pl. 6, fig. 6.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 122. as *Hystriosphæridium mantellii*.

Williams & al. 1998 Age: Late Cenomanian; Williams & al. 1993: Early Cretaceous, Hauterivian–Late Cretaceous, Turonian (117-91 Ma).

Florentinia stellata (Maier 1959) Below 1982a

Holotype: Maier 1959, p. 320–321, pl. 33, fig. 3; Sarjeant 1983, pl. 7, figs. 1-2.

Hystriosphæridium stellatum Maier 1959, p. 320–321, pl. 33, figs. 3-4.

Hungarian Age: Middle Albian–Early Campanian: Bóna in Bodrogi & al. 1994; Miocene, Badenian: Nagyné Bodor in Chikán 1991.

Williams & al. 1998 Age: Middle Oligocene–Middle Miocene.

Galeacysta Corradini & Biffi 1988

Type: *Galeacysta etrusca* Corradini & Biffi 1988, p. 225, pl. 1, figs. 4-5.

Galeacysta etrusca Corradini & Biffi 1988

Holotype: Corradini & Biffi 1988, p. 225. pl. 1, figs. 4-5; Fensome & al. 1993a, p. 1151, figs. 1-2.

Hungarian Age: Late Miocene, Pannonian: Upper part of the *Spiniferites validus* zone (as *Nematosphaeropsis bicorporis*): Sütő-Szentai: 1988, 1990; Sütőné Szentai 1989 as *Nematosphaeropsis bicorporis* zone; Pannonian, *Spiniferites tihanyensis* zone: Sütő: 1994a; Sütőné Szentai: 2002; *Galeacysta etrusca* zone, *Spiniferites tihanyensis* subzone: 2012, 2016; Sütő-Szentai in Cziczér & al. 2014; Sütő-Szentai in Lennert & al. 1999; Sütő-Szentai in Szónoky & al. 1999; *Galeacysta etrusca* zone: Sütő-Szentai 1994c; Sütő 1994a (Magyarbóly 1, Majs 1, Majs 2, Nagyharsány 1, Töttös 1, Villány 7), 1995b; Sütőné Szentai: 1991, 1995c, 1998; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011, 2012, 2016; *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1), 2012, 2016; *Galeacysta etrusca* zone: Bakrač 2012; Geary & al. 2000; Juhász 2006; Sütő-Szentai in Magyar & al. 1999a; Magyar & al. 1999b; Sütőné Szentai in Magyar & al. 2004; Magyar & al. 2007; Magyar 2009, 2010; Müller & al. 1999; *Galeacysta etrusca complex* in the Pannonian Basin: Popescu & al. 2009, p. 110, Plate 2, fig. 8-9; text-fig. 1, location 4, Majs 2 bh; text-fig. 2, chronostratigraphic position of Majs 2 bh.

Williams & al. 1998 Age: Late Miocene (Messinian).

Geiselodinium Krutzsch 1962

Type: *Geiselodinium geiseltalense* Krutzsch 1962, p. 42, pl. 11, figs. 8-13

Geiselodinium eocenicum Krutzsch 1962

Holotype: Krutzsch 1962, p. 42, pl. 7, figs. 17-19, text-fig. 1d.

Hungarian Age: Eocene: Rákosi 1973, pl. 1, figs. 5-6.; Miocene, Otnangian, Freshwater sequence: as *Geiselodinium cf. eocenicum* Nagy 1965b, 1969.

Krutzsch Age: Eocene.

Geiselodinium hallense Krutzsch 1962

Holotype: Krutzsch 1962, p. 44, pl. 11, figs. 14-16, text-fig. 1c.

Hungarian Age: Eocene: Rákosi 1973; Eocene, NP 15, 16 zones: Rákosi 1993; Rákosi & Snopkova 1993; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Middle Eocene.

Geiselodinium miocenicum Nagy 1965a

Holotype: Nagy 1965a, p. 201–202, pl. 1, fig. 3; pl. 2, fig. 11, text-fig. 3.

Hungarian Age: Miocene, Karpatian (as Helvetian): Nagy 1965a, 1969, 1992.

Williams & al. 1998 Age: Middle Miocene.

Geiselodinium sp.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Late Badenian: Nagy & Bodor 1982; Miocene Sarmatian: Nagy & Bodor 1982.

Gillinia Cookson & Eisenack 1960

Type: *Gillinia hymenophora* Cookson & Eisenack 1960, p. 11–12, pl. 3, fig. 4.

Gillinia hymenophora Cookson & Eisenack 1960a

Holotype: Cookson & Eisenack 1960a, p. 11–12, pl. 3, fig. 4;

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.

Williams & al. Age: Turonian?–Maastrichtian.

Gillinia pyriformis Marshall 1990a

Holotype: Marshall 1990a, p. 14, 16, figs. 7G, 17 F-H; Fensome & al. 1996, p. 2311, figs. 1-3, 14.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Campanian.

Ginginodinium Cookson & Eisenack 1960

Type: *Ginginodinium spinulosum* Cookson & Eisenack 1960, p. 7, pl. 2, fig. 9.

Ginginodinium sp.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966.

Glaphyrocysta Stover & Evitt 1978

Type: *Cyclonephelium retiintextum* Cookson 1965, p. 49–50, pl. 11, fig. 4.

Glaphyrocysta divaricata (Williams & Downie 1966c) Stover & Evitt 1978

Holotype: Williams & Downie 1966c, p. 223–224, pl. 25, fig. 1, text-fig. 60.

Cyclonephelium divaricatum Williams & Downie 1966c.

Hungarian Age: Oligocene, NP 21 zone: Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene.

Glaphyrocysta inculta (Morgenroth 1966b) Stover & Evitt 1978

Holotype: Morgenroth 1966b, p. 9, pl. 2, fig. 5.

Cyclonephelium incultum Morgenroth 1966b.

Hungarian Age: Eocene, Np 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Early Oligocene.

Glaphyrocysta laciniiformis (Gerlach 1961) Stover & Evitt 1978

Holotype: Gerlach 1961, p. 206, pl. 29, fig. 4.

Cyclonephelium laciniiforme Gerlach 1961.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle–Late Oligocene.

Glaphyrocysta pastielsii (Deflandre & Cookson 1955) Stover & Evitt 1978

Holotype: Pastiels, 1948, pl. 5, fig. 15 as *Membranilarnax* cf. *liradiscoidea*.

Cyclonephelium pastielsii Deflandre & Cookson 1955, p. 285.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. Early Eocene.

Glaphyrocysta? reticulosa (Gerlach 1961) Stover & Evitt 1978

Holotype: Gerlach 1961, p. 204, pl. 29, fig. 2.

Cyclonephelium reticulosum Gerlach 1961.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 20 zones: Rákosi 1993.

Williams & al. 1998 Age: Middle–Late Oligocene.

Glaphyrocysta? vicina (Eaton 1976) Stover & Evitt 1978

Holotype: Eaton 1976, p. 260–261, pl. 8, fig. 4; text-fig. 13; Bujak & al. 1980, pl. 9, figs. 9, 12.

Cyclonephelium vicinum Eaton 1976.

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979; Eocene: Kedves 1992.

Williams & al. 1998 Age: Early–Middle Eocene.

***Glaphyrocysta* sp.**

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Gonyaulacysta (Deflandre 1964) Lentin & Williams 1973

Type: *Gonyaulax jurassica* Deflandre 1939a, pl. 6, figs. 2-3; text-figs. 1-2.

***Gonyaulacysta* sp.**

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Late Pannonian: Cserny & al. 1991; Nagyné Bodor & Szurominé Korecz 1989; Nagyné Bodor, Szurominé Korecz, Cserny 2000.

Gonyaulax Diesing 1866

Type species: *Peridinium spiniferum* Claparede & Lachmann 1859.

Gonyaulax sp.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966; Early Albian, *Biculisporites torosus* zone: Juhász in Császár & al. 1983; Middle Albian–Early Cenomanian: Bóna in Bodrogi & al. 1994; Late Pannonian: Bodor in Chikán 1991; Late Pannonian I. biozone: Miháltzné Faragó 1979.

Habibacysta Head & al. 1989

Type: *Habibacysta tectata* Head & al. 1989b, p. 458, pl. 4, figs. 1-2, 5-6.

Habibacysta tectata Head & al. 1989b

Holotype: Head & al. 1989b, p. 458, pl. 4, figs. 1-2, 5-6; Head 1994a, pl. 5, figs. 1-6.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Late Miocene–Early Pliocene.

Heteraulacacysta Drugg & Loeblich Jr. 1967

Type: *Heteraulacacysta campanula* Drugg & Loeblich, Jr. 1967, p. 183, pl. 1, figs. 8a-c.

Heteraulacacysta campanula Drugg & Loeblich Jr. 1967

Holotype: Drugg & Loeblich Jr. 1967, p. 183, pl. 1, figs. 8 a-c.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Middle Eocene.

Heteraulacacysta sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Heterosphaeridium Cookson & Eisenack 1968

Type: *Heterosphaeridium conjunctum* Cookson & Eisenack, 1968, p. 115; text-fig. 4H

Heterosphaeridium? *heteracanthum* (Deflandre & Cookson 1955) Eisenack & Kjellström 1972

Holotype: Deflandre & Cookson 1955, p. 276, pl. 2, fig. 5.

Hystriospheridium heteracanthum Deflandre & Cookson 1955, p. 276, pl. 2, figs. 5-6; text-figs. 40-41.,

Baltisphaeridium heteracanthum (Deflandre & Cookson 1955) Downie & Sarjeant 1965,

Cleistrosphaeridium heteracanthum (Deflandre & Cookson 1955) Davey & al. 1966.

Hungarian Age: Miocene, Karpatian? Schlier sequence: Nagy 1969, Hidas 53 borehole 735–738 m, pl. 4, fig. 1; Miocene: Kedves in Varga & al. 2002.

Williams & al. 1998 Age: Late Cretaceous?–Early Eocene.

Heterosphaeridium multifurcatum (Deflandre 1937b) Islam 1993

Holotype: Deflandre 1937b, p. 76, pl. 16 (al. Pl. 13), figs. 1-2; Fensome & al. 1991, p. 691, figs. 1-2; Fensome & al. P. 693, fig. 1; Fensome & al. 1993, p. 1261, fig. 1; p. 1265, figs. 1-2.

Hystriosphæridium multifurcatum Deflandre 1937b,

Baltisphaeridium multifurcatum (Deflandre 1937b) Klement 1960,

Cleistosphaeridium multifurcatum (Deflandre 1937b) Davey & al. 1969.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 124.

Williams & al. 1998 Age: Late Cretaceous.

Homotryblium Davey & Williams 1966b

Type: *Homotryblium tenuispinosum* Davey & Williams, 1966b, p. 100, pl. 12, fig. 5.

Homotryblium floripes (Deflandre & Cookson 1955) Stover 1975

Holotype: Deflandre & Cookson 1955, p. 276, pl. 7, fig. 1.

Hystriosphæridium floripes Deflandre & Cookson 1955, p. 276, pl. 7, figs. 1-2, 7.,

Cordosphaeridium floripes (Deflandre & Cookson 1955) Eisenack 1963.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Tertiary.

Homotryblium floripes (Deflandre & Cookson 1955) Stover 1975 subsp. *breviradiatum* (Cookson & Eisenack 1961b) Lentini & Williams 1977b

Holotype: Cookson & Eisenack 1961b, p. 44, pl. 2, figs. 10-11.

Hystriosphæridium floripes subsp. *breviradiatum* Cookson & Eisenack 1961b,

Cordosphaeridium floripes subsp. *breviradiatum* (Cookson & Eisenack 1961b) Eisenack 1963.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Late Eocene.

Homotryblium oceanicum Eaton 1976

Holotype: Eaton 1976, p. 268, pl. 10, fig. 5; Bujak & al. 1980, pl. 1, figs. 10-12.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

Homotryblium pallidum Davey & Williams 1966b

Holotype: Davey & Williams 1966b, p. 102–103, pl. 12, fig. 6; Bujak & al. 1980, pl. 1, figs. 1-3.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Oligocene, NP 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene.

Homotryblium plectilum Drugg & Loeblich Jr. 1967

Holotype: Drugg & Loeblich Jr. 1967, p. 184–186. pl. 2, fig. 1.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Oligocene; Williams & al. 1993: Middle Eocene, Bartonian–Early Miocene, Burdigalian (41–17 Ma).

Homotryblium tenuispinosum Davey & Williams 1966b

Holotype: Davey & Williams 1966b, p. 101–102, pl. 12, fig. 5.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene.

Homotryblium sp. form A. Rákosi 1979

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage zone: Rákosi 1979, 1983.

Homotryblium sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Hystrichokolpoma Klumpp 1953

Type: *Hystrichokolpoma cinctum* Klumpp 1953, p. 388, pl. 17, figs. 3, 5a.

Hystrichokolpoma cinctum Klumpp 1953

Holotype: Klumpp 1953, p. 388, pl. 17, figs. 3, 5a; Damassa, 1979a, text-fig. 4.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene, Kiscellian: Nagy 1992; Oligocene, Egerian: Nagy 1992 p. 15. Eger, Wind Téglagyár bh.

Williams & al. 1998 Age: Late Eocene.

Hystrichokolpoma granulatatum Eaton 1976

Holotype: Eaton 1976, p. 269–270, pl. 10, fig. 11, text-fig. 15; Bujak & al. 1980, pl. 3, figs. 4–6.

Hungarian Age: Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Early–Middle Eocene; Williams & al. 1993: Early Eocene, Ypresian–Early Miocene, Aquitanian (53–23 Ma).

Hystrichokolpoma poculum Maier 1959

Holotype: Maier 1959, p. 312–313, pl. 31, fig. 3; Sarjeant 1983, pl. 2, fig. 4, text-fig. 1.

Hungarian Age: Miocene, Karpatian: Nagy 1992.

Williams & al. 1998 Age: Middle Miocene.

Hystrichokolpoma rigaudiae Deflandre & Cookson 1955

Holotype: Deflandre & Cookson 1955, p. 279–281, pl. 6, fig. 6.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993; Miocene, Karpatian: Sütő-Szentai, in Püspöki 2001; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (as *H. rigaudiae* s. l. Tengelic 2 bh.); *Cribroperidinium*

tenuitabulatum Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (as *H. rigaudiae* Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (as *H. rigaudiae* Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Eocene–Miocene; Williams & al. 1993: Early Eocene Ypresian–Pleistocene (51–1,4 Ma).

Hystrichokolpoma sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Miocene, Sarmatian, Upper part of the Sarmatian: Sütőné Szentai 2012; Baranyi & al. 2013; Pannonian: Nagy 1992.

Hystrichokolpoma sp. *A* (type) Jiménez-Moreno 2005

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Jiménez-Moreno Age: Badenian.

Hystrichosphaera (O. Wetzel, 1933b) Deflandre, 1937b

Type: *Hystrichosphaera furcata* Deflandre, 1937b, p. 61.

Hystrichosphaera sp.

Hungarian Age: Cretaceous, Late Campanian, *Krutzschipollis spatiosus*–*Suemegipollis triangularis* Opper-zone: Siegl-Farkas 1986, 1987; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas in Lantos & al. 1996, Siegl-Farkas 2002; Cretaceous, Early Maastrichtian, *Pseudopapillopollis*–*Semioculopollis minimus* Opper-zone: Siegl-Farkas 1986; Eocene: Rákosi 1973; Oligocene: Krivánné Hutter 1964; Pannonian: Rákosi 1963; Bóna & Rumliné Szentai 1966: as *Hystrichosphaera* sp. (Sütőné in paper: *Spiniferites bentorii* types).

Hystrichosphaeridium Deflandre 1937

Type: *Xanthidium tubiferum* Ehrenberg 1838, pl. 1, fig. 16.

Hystrichosphaeridium cambayense Varma & Dangwal 1964

Holotype: Varma & Dangwal 1964, p. 63, pl. 1, fig. 1.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, p. 122, Table 1.

Williams & al. 1998 Age: Eocene–Oligocene.

Hystrichosphaeridium magnum (Bóna 1983a) Bóna 1995a

Types: *Porcellispora magna* Bóna 1983a, pl. 1, fig. 1. as *Hystrichosphaeridium magnum* Bóna 1995a, pl. 8. fig. 16. pl. 9, figs. 3 and 6.

Database: The types are stored at József Attila City Library and Museum Collection, Local Government Komló, Városház tér 1.

Hungarian Age: Late Triassic, Karnian–Norian–Rhaetian, Karolinavölgy Sandstone Formation: Bóna 1983, 1984, 1995a, 1995b.

Hystrichosphaeridium mineralosum Varma & Dangwal 1964 subsp. ***jekhowskyi*** Varma & Dangwal 1964

Holotype: Varma & Dangwal 1964, p. 65, pl. 1, fig. 9.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993; Miocene, Early and Late Badenian: Nagy & Bodor 1982, Table 1, p. 121.

Williams & al. 1998 Age: Eocene–Oligocene.

Hystrichosphaeridium recurvatum (White 1842) Lejeune-Carpentier 1940

Holotype: White 1842, p. 39, pl. 4, fig. 12.

Xanthidium tubiferum var. *recurvatum* White 1842.

Hungarian Age: Late Cretaceous: Kedves 2000a, p. 22, pl. 2.2, figs. 2-3, as *Hystrichosphaeridium* cf. *recurvatum* (White 1842); Eocene: Rákosi 1973, pl. 3, fig. 2.; Eocene, *Retisphaera microreticulata*-*Tytthodiscus* sp. *A*. Assemblage zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Senonian.

Hystrichosphaeridium tubiferum (Ehrenberg 1838) Deflandre 1937b

Holotype: Ehrenberg 1838, pl. 1, fig. 16.

Xanthidium tubiferum Ehrenberg 1838,

Hystrichosphaera tubifera (Ehrenberg 1838) O. Wetzel 1933,

Ovum hispidum subsp. *tubiferum* (Ehrenberg 1838) Downie & Sarjeant 1965.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Miocene, Badenian: Nagy & Bodor 1982, Table 1, p. 123.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008 as *Hystrichosphaeridium* cf. *tubiferum*.

Williams & al. 1998 Age: Late Cretaceous; Williams & al. 1993: Early Cretaceous, Aptian–Early Eocene, Ypresian (111–50 Ma).

Hystrichosphaeridium sp.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966; Cretaceous, Middle Albian–Early Campanian Bóna in Bodrogi & al. 1994; Early Eocene: Kedves 1960; Miocene, Karpatian: Bodor 1983; Miocene, Early Badenian: Nagy & Rákosi 1966; Miocene, Early és Late Badenian: Nagy & Bodor 1982; Nagy 1969; Miocene, Sarmatian: Nagy & Bodor 1982; Late Miocene, Late Pannonian: Bodor in Chikán 1991.

Hystrichosphaeropsis Deflandre 1935

Type: *Hystrichosphaeropsis ovum* Deflandre 1935, p. 232, pl. 8, fig. 11.

Hystrichosphaeropsis obscura Habib 1972

Holotype: Habib 1972, p. 379–380, pl. 21, fig. 1.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribopteridinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Sarmatian: *Lejeunecysta* sp.–*Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Miocene, Sarmatian, *Mecsekia incrassata*–*Spiniferites bentorii budajenoensis* zone: Sütő-Szentai 1988; Sütőné Szentai 2012; Late Miocene, Early Pannonian, *Lingulodinium machaerophorum*–*Spiniferites bentorii pannonicus* zone: Sütőné Szentai: 2002; *Spiniferites bentorii pannonicus* primary assemblage zone: Sütőné Szentai: 2012, 2016; Baranyi & al. 2013.

Williams & al. 1998 Age: Late Miocene; Williams & al. 1993: Late Oligocene, Chattian–Pliocene (27–4 Ma).

Hystrichosphaeropsis ovum Deflandre 1935

Holotype: Deflandre 1935, p. 232, pl. 8, fig. 11; Jan du Chêne & al. 1986a, pl. 46, fig. 1.

Hungarian Age: Miocene, Upper part of the Sarmatian: Sütőné Szentai 1984; Sütőné Szentai & Bóna in Hámor T. 1992.

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Late Albian–Late Campanian (98–75 Ma).

Hystrichostrogylon Agelopoulos 1964

Type: *Hystrichostrogylon membraniphorum* Agelopoulos 1964, text-fig. 1.

Hystrichostrogylon membraniphorum Agelopoulos 1964

Holotype: Agelopoulos 1964, p. 674, text-fig. 1.

Achomospaera membraniphora (Agelopoulos 1964) Eaton 1976,

Hystrichostrogylon membraniphorum Agelopoulos 1964, Stover & Evitt 1978, p. 165, retained this species in *Hystrichostrogylon*.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993

Williams & al. 1998 Age: Late Eocene.

Impagidinium Stover & Evitt 1978

Type: *Leptodinium dispertitum* Cookson & Eisenack 1965a, pl. 12, figs. 5–6.

Impagidinium aspinatum (Cookson & Eisenack 1974) Damassa 1979a, p. 826.

Holotype: Cookson & Eisenack 1974, p. 63, pl. 23, fig. 6.

Spiniferites cornutus (Gerlach 1961) Sarjeant 1970 var. *aspinatus* Cookson & Eisenack 1974,

Hystrichosphaera cornuta Gerlach 1961,

Spiniferites cornutus (Gerlach 1961) Sarjeant 1970 subsp. *aspinatus* (Cookson & Eisenack 1974) Lentini & Williams 1974.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Paleocene.

Impagidinium disperitum (Cookson & Eisenack 1965a) Stover & Evitt 1978

Holotype: Cookson & Eisenack 1965a, p. 122–123, pl. 12, figs. 5–6.

Leptodinium disperitum Cookson & Eisenack 1965a.

Hungarian Age: Miocene, Badenian: Nagy & Bodor 1982, p. 130–131, pl. 1 fig. 1–2.; Nagy 1992.

Williams & al. 1998 Age: Late Eocene; Williams & al. 1993: Middle Eocene, Bartonian–Late Oligocene, Chattian (42–27 Ma).

Impagidinium globosum Sütő–Szentai 1985

Holotype: Sütő–Szentai 1985, p. 518–519, pl. 81, fig. 4. (not pl. 85, fig. 3.); Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő–Szentai: 1988, 1994c; Sütőné Szentai 1982a, 1995a (Zalaszentlászló 1, Zszt 3, Hm. 78/18), 2000, 2002, 2003, 2011; Sütő 1995b; Bakrač 2005; Sütő–Szentai in Cziczzer & al. 2007; Kókay & al. 1991; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone: Sütőné Szentai 1995a (over paradoxus zone only Bakony); Pannonian *Spiniferites validus* zone: Sütőné Szentai 1982a, 1983b, 1987, 1989, 1991, 1997, 2000, 2002, 2011; Sütő–Szentai: 1985, 1988, 1994c; Sütő 1994a (as *Hungarodinium globosum* in Tóttös 1, Majs 1, 2), 1995b; Sütőné Szentai in Jámbor & al. 1987; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone: Sütő–Szentai 1988; Kókay & al. 1991; Pannonian, *Spiniferites tihanyensis* zone: Sütő–Szentai in Lennert & al. 1999; Sütő 1994a (as *Hungarodinium globosum*), 1995b; Sütő–Szentai 1994c; Sütőné Szentai 2000, 2002; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (as *Hungarodinium globosum*); Sütő–Szentai 1994c; Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over *G. etrusca* zone: Sütő–Szentai: 1994c; Sütőné Szentai 2011.

Williams & al. 1998 Age: Pannonian.

Impagidinium* cf. *globosum Sütő–Szentai 1985

(*Impagidinium globosum* with smooth wall)

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zalaszentlászló 1), 1989; Sütő–Szentai: 1988; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *S. paradoxus* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, *Spiniferites validus* zone: Sütő–Szentai 1988; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1989 (Lower part of the *Nematosphaeropsis bicorporis* zone); Sütőné Szentai 2000.

Impagidinium margaritifera (Cookson & Eisenack 1960a) Stover & Evitt 1978

Holotype: Cookson & Eisenack 1960a, p. 5–6, pl. 2, fig. 1; Jan du Chêne & al. 1986a, pl. 54, fig. 6.

Gonyaulax margaritifera Cookson & Eisenack 1960a.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a.
Williams & al. 1998 Age: Campanian.

Impagidinium simplicium (Cookson & Eisenack 1961b) Stover & Evitt 1978

Holotype: Cookson & Eisenack 1961b, p. 42, pl. 2, figs. 3-4, text-figs. 1 e-f; Jan du Chêne & al. 1986, pl. 54, figs. 1-5.

Rottnestia simplicia Cookson & Eisenack 1961b,

Psalignonyaulax simplicia (Cookson & Eisenack 1961b) Sarjeant 1969.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966 as *Rottnestia* cf. *simplicia*.

Williams & al. 1998 Age: Eocene.

Impagidinium sphaericum (Wall 1967) Lentin & Williams 1981

Holotype: Wall 1967, p. 108, pl. 15, figs. 11-12.

Leptodinium sphaericum Wall 1967.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zszt 3), 2003; Sütő-Szentai in Cziczér & al. 2007; Pannonian: Upper part of the *Spiniferites validus* zone (V3): Sütő 1994a (Töttös 1); Pannonian: *Dinoflagellata*–*Zygnemataceae* interval zone, over the *Spiniferites validus* zone: Sütő-Szentai 1994c; Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a (Töttös 1), 1995b; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *Spiniferites tihanyensis* zone: Sütő-Szentai 1994c.

Williams & al. 1998 Age: Pleistocene–Holocene.

Impagidinium spongianum Sütő-Szentai 1985

Holotype: Sütő-Szentai 1985, pl. 81, fig. 6. (no fig. 5.) Tengelic 2 bh. 578,5–581,0 m, *Spiniferites validus* zone; *Spiniferites validus* zone V2 section, with thick wall: Sütő-Szentai 1994c: Paks 3 bh. 481,2–493,2 m, pl 5, fig. 3; Sütő-Szentai 1990, p. 860, pl. 2, fig. 2, Detk-1 bh. 497,0–502,0 m, not pl. 2, fig. 3 in Williams & al. 1998, p. 330.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270.

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a, 1995a (Zalaszentlászló 1 bh. 167,0 m Pl. 8, fig. 4. Zalaszántó Zszt 3; Hm. 78/18); 2000, 2002, 2003, 2011; Sütő-Szentai 1990, 1994c; Sütő-Szentai in Cziczér & al. 2007; Bakrač 2005; Pannonian, *Spiniferites validus* zone (abundant): Sütőné Szentai 1982a, 1989, 2000, 2002, 2011; Sütő-Szentai 1988, 1990, 1994c; Sütő 1994a (as *Spongiosphaeridium spongianum*: Töttös 1, Majs 1, Majs 2); Sütőné Szentai in Jámbor & al. 1987; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. validus* zone: Sütő-Szentai 1988; Sütőné Szentai 2002; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1982a, 2000, 2002; Sütő 1994a (Majs 1, 2, Töttös 1); Sütő-Szentai 1994c; Sütő-Szentai in Lennert & al. 1999; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. tihanyensis* zone: Sütőné Szentai 2000, 2002; Pannonian, *Galeacysta etrusca* zone: Sütőné Szentai 1989 (Pl. 7. figs. 6-7); Sütő 1994a; Pannonian *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011; Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné

Szentai 2011 (Bosta 1 bh. Pl. 8, fig. 3.); Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *G. etrusca* zone: Sütő-Szentai 1994c; Sütőné Szentai 2011.

Remark: Pannonian: Kedves & al. 2000, p. 96, pl. 6.10, figs. 2-3. as *Leptodinium ambiguum*, pl. 6.10, figs. 4-5, as *Occisucysta balia*, pl. 6.10, fig. 6, as *Neuffenia willei*, in my opinion equal to the spongy walled variant of *Impagidinium spongianum* Sütő-Szentai 1985. Remark: Sütőné Szentai in this paper.

Impagidinium spongianum subsp. *maior* Sütő-Szentai 1988 nomina nuda

Type: Sütő-Szentai 1988, pl. 4, fig. 3.

Database: The type together with the photo-negatives are stored at József Attila City Library and Museum Collection, Local Government Komló, Városház tér 1.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988; Pannonian, Upper part of the *Spiniferites validus* zone Sütő 1994a (Töttös 1).

Impagidinium sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Miocene, Early Badenien PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenien PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenien PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai in Szuromi-Korecz & al. 2004 (Fig. 5/A); Baranyi in Varga & al. 2017; Late Pannonian: Nagyné Bodor & al. 2000.

Impletosphaeridium Morgenroth 1966a

Type: *Impletosphaeridium transfodum* Morgenroth 1966a, p. 32, pl. 10, fig. 5.

Impletosphaeridium densicomatum (Maier 1959) Morgenroth 1966a

Holotype: Maier 1959, p. 307–308, pl. 29, fig. 7.

Galea densicomata Maier 1959,

Baltisphaeridium densicomatum (Maier 1959) Gerlach 1961,

Sentusidinium densicomatum (Maier 1959) Morgenroth 1966a.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai: 2002 as *Galea densicomata*, redeposited from Badenian.

Williams & al. 1998 Age: Oligocene–Middle Miocene.

Impletosphaeridium implicatum Morgenroth 1966a

Holotype: Morgenroth 1966a, p. 34, pl. 9, figs. 1-2; Neotype: Islam, 1993, p. 86, pl. 1, fig. 12.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene.

Impletosphaeridium insolitum Eaton 1976

Holotype: Eaton 1976, p. 308, pl. 21, fig. 5; Bujak & al. 1980, pl. 5, fig. 5.
Cleistosphaeridium insolitum (Eaton 1976) Stover & Evitt 1978,
Impletosphaeridium insolitum Eaton 1976, retained Islam 1993, p. 86.
Hungarian Age: Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993.
Williams & al. 1998 Age: Early–Middle Eocene.

Impletosphaeridium multispinosum Benedek 1972
Holotype: Benedek 1972, p. 31–32, pl. 12, fig. 15.
Hungarian Age: Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21,
22, 23, 24, 25 zones: Rákosi 1993.
Williams & al. 1998 Age: Middle Oligocene.

Impletosphaeridium polytrichum (Valensi 1947) Islam 1993
Holotype: Valensi 1947, p. 818, text-fig.4.
Hystriosphæridium polytrichum Valensi 1947,
Baltisphaeridium polytrichum (Valensi 1947) Downie & Sarjeant 1965,
Cleistosphaeridium polytrichum (Valensi 1947) Davey, Downie, Sarjeant, Williams 1969.
Hungarian Age: Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.
Williams & al. 1998 Age: Jurassic, Late Bathonian.

Impletosphaeridium rugosum Morgenroth 1966a
Holotype: Morgenroth 1966a, p. 36, pl. 10, figs. 2-3.
Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.
Williams & al. 1998 Age: Early Eocene.

Impletosphaeridium sp. form A. Rákosi 1979
Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata*
Assemblage zone. Rákosi: 1979, 1983.

Isabelidinium Lentin & Williams 1977a
Type: *Deflandrea korojonensis* Cookson & Eisenack 1958, p. 27–28, pl. 4, fig. 10.

Isabelidinium acuminatum (Cookson & Eisenack 1958) Stover & Evitt 1978
Holotype: Cookson & Eisenack 1958, p. 27, pl. 4, fig. 5.
Deflandrea acuminata Cookson & Eisenack 1958,
Alterbia acuminata (Cookson & Eisenack 1958) Lentin & Williams 1976,
Senegalinium acuminatum (Cookson & Eisenack 1958) Loeblich Jr. & Tappan 1977,
Hungarian Age: Cretaceous, Late Campanian: Siegl-Farkas 1986.
Williams & al. 1998 Age: Cenomanian–Early Turonian.

Isabelidinium bakeri (Deflandre & Cookson 1955) Lentin & Williams 1977a
Holotype: Deflandre & Cookson 1955, p. 251, pl. 4, fig. 1.
Deflandrea bakeri Deflandre & Cookson 1955.
Hungarian Age: Late Campanian, Upper part of the *Pyxidinospis bakonyensis*
Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas
& Wagneich 1996; Siegl-Farkas 1997.
Williams & al. 1998 Age: Paleocene–Early Eocene.

Isabelidinium belfastense (Cookson & Eisenack 1961a) Lentin & Williams 1977a
Holotype: Cookson & Eisenack 1961a, p. 71, pl. 11, fig. 4; Helby & al. 1987, fig. 41 D.
Deflandrea belfastensis Cookson & Eisenack 1961a.

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Senonian.

Isabelidinium cooksoniae (Alberti 1959b) Lentin & Williams 1977a

Holotype: Alberti 1959b, p. 97, pl. 9, fig. 2.

Deflandrea cooksoniae Alberti 1959b,
Australiella cooksoniae (Alberti 1959b) Vozzhennikova 1967,
Isabelia cooksoniae (Alberti 1959b) Lentin & Williams 1976.

Hungarian Age: Late Cretaceous, Late Campanian: Siegl-Farkas 1986; Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1996; Campanian, *Pyxidinospis bakonyensis* Assemblage zone, *Dinogymnium euclaense* Subzone: Siegl-Farkas 1995; Late Cretaceous, Maastrichtian: Góczán & Siegl-Farkas 1990.

Williams & al. 1998 Age: Late Senonian.

Isabelidinium microarmum (McIntyre 1975) Lentin & Williams 1977a

Holotype: McIntyre 1975, p. 65, pl. 1, figs. 5-6.

Deflandrea microarma McIntyre 1975.

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Campanian–Maastrichtian.

Isabelidinium div. sp.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone Siegl-Farkas 1995; Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinospis bakonyensis* Assemblage zone: Siegl-Farkas 1997; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1993 Age: Late Cretaceous, Turonian–Early Maastrichtian (90-72 Ma).

Kalyptea Cookson & Eisenack 1960b

Kalyptea sp.

Hungarian Age: Miocene, Badenian, redeposited: Nagy 1969, p. 307, pl. 6, fig. 4.

Kenleyia Cookson & Eisenack 1965b

Type: *Kenleyia pachycerata* Cookson & Eisenack 1965b, p. 136, pl. 17, fig.3.

Kenleyia sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Kleithriasphaeridium Davey 1974

Type: *Kleithriasphaeridium corrugatum* Davey 1974, p. 55–56, pl. 5, figs. 1-2, text-fig. 3.

Kleithriasphaeridium eoinodes (Eisenack 1958a) Davey 1974

Holotype: Eisenack 1958a, p. 402, pl. 27, fig. 3.

Hystriochosphaeridium eoinodes Eisenack 1958a,

Cordosphaeridium eoinodes (Eisenack 1958a) Eisenack 1963.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975.

Williams & al. 1998 Age: Late Aptian.

Komewuia Cookson & Eisenack 1960b

Type: *Komewuia glabra* Cookson & Eisenack 1960b, p. 257, pl. 39, fig. 8.

Komewuia glabra Cookson & Eisenack 1960b

Holotype: Cookson & Eisenack 1960b, p. 257, pl. 39, fig. 8.

Roumanian Age: Early Pannonian *Spiniferites bentorii pannonicus*, and *Spiniferites bentorii oblongus* zones: Sütő & Szegő 2008.

Williams & al. 1998 Age: Tithonian?

Labyrinthodinium Piasecki 1980

Type: *Labyrinthodinium truncatum* Piasecki 1980, p. 67, 70, pl. 2, figs. 9-11; pl. 3, fig. 2; pl. 6, figs. 3-4.

Labyrinthodinium truncatum Piasecki 1980

Holotype: Piasecki 1980, pl. 2, figs. 9–11; Fensome & al. 1995, p. 1855, figs. 1-3.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aqueductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta pousenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Miocene.

Leberidocysta Stover & Evitt 1978

Type: *Hexagoniphaera chlamydata* Cookson & Eisenack 1962b, p. 496, pl. 7, fig. 2.

Leberidocysta chlamydata (Cookson & Eisenack 1962b) Stover & Evitt 1978

Holotype: Cookson & Eisenack 1962b, p. 496, pl. 7, fig. 2; Fensome & al. 1993a, p. 1049, fig. 2.

Hexagonifera chlamydata Cookson & Eisenack 1962b,

Polygonifera chlamydata (Cookson & Eisenack 1962b) Mehrotra & Sarjeant 1984,

Leberidocysta chlamydata (Cookson & Eisenack 1962b) retained Lentin & Williams 1985.

Hungarian Age: Miocene, Badenian, redeposited from Cretaceous: Nagy 1969, p. 307, pl. 6, fig. 3.

Williams & al. 1998 Age: Albian–Cenomanian; Williams & al. 1993: Early Albian–Late Campanian (108-75 Ma).

Lejeunecysta Artzner & Dörhöfer 1978

Type: *Lejeunia hyalina* Gerlach 1961, p. 169–171, pl. 26, figs. 10-11.

Lejeunecysta fallax (Morgenroth 1966b) Artzner & Dörhöfer 1978

Holotype: Morgenroth 1966b, p. 2–3, pl. 1, fig. 6.

Lejeunia fallax Morgenroth 1966b.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Oligocene.

Lejeunecysta hyalina (Gerlach 1961) Artzner & Dörhöfer 1978

Holotype: Gerlach 1961, p. 169–171, pl. 26, figs. 10-11.

Lejeunia hyalina Gerlach 1961.

Hungarian Age: Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Oligocene.

Lejeunecysta marieae (Harland in Harland & al. 1991) Lentin & Williams 1993

Holotype: Harland in Harland & al. 1991, p. 653, fig. 4j.

Protoperidinium marieae Harland in Harland & al. 1991.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Early Pleistocene.

Lejeunecysta sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Upper part of the Sarmatian, *Lejeunecysta-Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Late Miocene, Sarmatian-Pannonian? below of the *Mecsekia ultima* zone: Sütőné Szentai: 2000.

Williams & al. 1993: Middle Eocene, Lutetian–Recent (44-0 Ma).

Lentinia Bujak in Bujak & al. 1980

Type: *Lentinia serrata* Bujak in Bujak & al. 1980, pl. 18, figs. 7-9; text-figs. 18 A-F.

Lentinia sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Leptodinium Klement 1960

Type: *Leptodinium subtile* Klement 1960, p. 46–47, pl. 6, figs. 1-2; text-figs. 23-24.

Leptodinium ambiguum (Deflandre 1939b) Helenes 1984

Holotype: Deflandre 1939b, p. 144, pl. 6, fig. 2; Jan du Chêne & al. 1986a, pl. 68, figs. 1-3.

Gonyaulax ambigua Deflandre 1939b

Gonyaulacysta ambigua (Deflandre 1939b) Sarjeant 1969

Millioudodinium ambiguum (Deflandre 1939b) Stover & Evitt 1978

Rhynchodiniopsis ambigua (Deflandre 1939b) Sarjeant 1982b

Hungarian Age: Pannonian: Kedves & al. 2000, p. 96, pl. 6.10, figs. 2-3. as *L. ambiguum* (Deflandre 1939b).

Remark: In my opinion figs. 2-3., equal to the spongy walled variant of *Impagidinium spongianum* Sütő-Szentai 1985. Remark: Sütőné Szentai in this paper.

Williams & al. 1998 Age: Kimmeridgian.

Leptodinium? bacculatum Baltes 1971

Holotype: Baltes 1971, p. 3, pl. 1, Figs. 4-5.

Millioudodinium bacculatum (Baltes 1971) Stover & Evitt 1978,

Rhynchodiniopsis bacculata (Baltes 1971) Sarjeant 1982b.

Roumanian Age: Lower Pontian Baltes 1971.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone), *Spiniferites validus* zone, *Galeacysta etrusca* zone as *Millioudodinium bacculatum* (Baltes 1971): Sütő 1994a (Töttös 1, Villány 7); Sütőné Szentai 1984, 1995a (Zalaszentlászló 1, Zszt 3), 2000, 2002, 2003. Pannonian: Kedves & al. 2000, p. 94, pl. 6.9, figs. 15-16, as cf. *Acantaulax* sp. 1. In my opinion this is a *Millioudodinium bacculatum* (Baltes 1971). Remark: Sütőné Szentai in this paper.

Williams & al. 1998 Age: Early Pliocene.

Leptodinium? reticulatum (Nagy 1969) Lentin & Williams 1973

Holotype: Nagy 1969, p. 293, pl. 1, figs. 7, 10; text-figs. 4a-b.

Gonyaulax reticulatus Nagy 1969.

Hungarian Age: Late Miocene, Late Pannonian: Nagy 1969; Bodor 1983; Nagyné Bodor in Chikán 1991.

Williams & al. 1998 Age: Late Pannonian.

Lingulodinium Wall 1967

Type: *Hystrichosphaeridium machaerophorum* Deflandre & Cookson 1955, p. 274, pl. 9, fig. 4.

Lingulodinium brevispinosum Matsuoka & Bujak 1988

Holotype: Matsuoka & Bujak 1988, p. 60–61, pl. 7, figs. 8a-b; Head 1994b, pl. 8, figs. 2-5.

Hungarian Age: Late Miocene, Pannonian, first assemblage of the *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2016 (Pusztazámor 2 bh. pl. 5, fig. 3).

Williams & al. 1998 Age: Late Oligocene–Early Miocene.

Lingulodinium machaerophorum (Deflandre & Cookson 1955) Wall 1967

Holotype: Deflandre & Cookson 1955, p. 274, pl. 9, fig. 4.

Hystrichosphaeridium machaerophorum Deflandre & Cookson 1955,

Baltisphaeridium machaerophorum (Deflandre & Cookson 1955) Gerlach 1961,

Cleistosphaeridium machaerophorum (Deflandre & Cookson 1955) Davey, Downie, Sarjeant, Williams 1966.

Hungarian Age: Late Cretaceous: Kedves 2000a p. 23, pl. 2.2, figs. 6-7; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Miocene, Badenian: Nagy & Bodor 1982; Nagy 1992; Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Upper part of the Sarmatian: *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1985, 1988; Sütőné Szentai 1987, 2012, 2016; Baranyi & al. 2013; Sütőné Szentai in Jámor & al. 1987; Miocene, Sarmatian: *Leyeunecysta*–*Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Miocene, Sarmatian-Pannonian below of the *Mecsekia ultima* zone: Sütő-Szentai 2000; Late Miocene, Pannonian: *Spiniferites bentorii pannonicus*–*Lingulodinium machaerophorum* zone (with thin wall *Spiniferites bentorii pannonicus*): Sütőné Szentai 2002 (Nagykozár 2 bh. pl. 1, fig. 8); Pannonian, *Spiniferites bentorii pannonicus* primary assemblage zone: Sütőné Szentai 2012, 2016; Pannonian *Mecsekia ultima* zone: Sütőné Szentai 2002, 2012, 2016; Sütő-Szentai 1985; Jámor & al. 1985.

Williams & al. 1998 Age: Miocene; Williams & al. 1993: Early Eocene, Ypresian–Recent (54-0 Ma).

Lingulodinium pycnospinosum (Benedek 1972) Stover & Evitt 1978

Holotype: Benedek 1972, p. 32, pl. 12, fig. 14; Benedek & Sarjeant 1981, fig. 10, no. 1.

Impletosphaeridium pycnospinosum Benedek 1972.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Middle–Late Oligocene.

Lingulodinium varium Sütőné Szentai 1986

Holotype: Sütőné Szentai 1986, p. 33–34, pl. 1, fig. 1;

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270.

Hungarian Age: Miocene, Sarmatian, *Leyeunecysta*–*Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Miocene, Upper part of the Sarmatian: *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 1986, 2012; Sütő-Szentai 1988; Baranyi in Baranyi & al. 2013; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus*–*Lingulodinium machaerophorum* zone: Sütőné Szentai

2002; Pannonian: *Spiniferites bentorii pannonicus* primary assemblage zone: Sütőné Szentai 2012; Pannonian, *Mecsekia ultima* zone: Sütőné Szentai 2002.
Williams & al. 1998 Age: Late Miocene, Pannonian.

Lingulodinium sp.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008 (Oarba de Mures/ Marosorbó).

Lithodinia Eisenack 1935

Type: *Lithodinia jurassica* Eisenack 1935, p. 175, pl. 4, fig. 5.

Lithodinia jurassica Eisenack 1935

Holotype: Eisenack 1935, p. 175, pl. 4, fig. 5.

Hungarian Age: Eocén, redeposited: Kedves 1992.

Williams & al. 1998 Age: Callovian; Williams & al. 1993: Late Bajocian–Late Callovian (166–154 Ma).

Litosphaeridium Davey and Williams 1966b

Type: *Hystrichosphaeridium siphoniphorum* Cookson and Eisenack 1958, p. 44, pl. 11, fig. 8.

Litosphaeridium siphoniphorum (Cookson and Eisenack 1958) Davey and Williams 1966b

Holotype: Cookson & Eisenack 1958, p. 44, pl. 11, fig. 8.

Hystrichosphaeridium siphoniphorum Cookson and Eisenack 1958.

Hungarian Age: Cretaceous, Middle Albian–Early Cenomanian: Bóna in Bodrogi & al. 1994.

Williams & al. 1998 Age: Albian–Cenomanian; Williams & al. 1993: Late Albian–Turonian (99–92 Ma).

Luehndea Morgenroth 1970

Type: *Luehndea spinosa* Morgenroth 1970, p. 347, pl. 9, fig. 1.

Luehndea cirilliae Bucefalo Palliani & al. 1997b

Holotype: Bucefalo Palliani & al. 1997b, pl. 1, figs. 1–2.

Hungarian Age: Jurassic, Upper Pliensbachian–Early Toarcian, Reka 3 (2): Bucefalo Palliani & al. 1997; Early Toarcian, Assemblage 1: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian–Early Toarcian.

Luehndea microreticulata Bucefalo Palliani & al. 1997b

Holotype: Bucefalo Palliani & al. 1997b, p. 117 and 119. pl. 2, fig. 4.

Hungarian Age: Jurassic, Early Toarcian, Reka 3 (2): Bucefalo Palliani & al. 1997b Early Toarcian, Assemblage 1: Baranyi & al. 2016.

Williams & al. 1998 Age: Early Toarcian.

Luehndea spinosa Morgenroth 1970

Holotype: Morgenroth 1970, p. 347, pl. 9, fig. 1.

Hungarian Age: Jurassic, Late Pliensbachian–Early Toarcian, Reka 3 (2): Bucefalo Palliani & al. 1997b; Early Toarcian, Assemblage 1 and Assemblage 2: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian.

Luehndea spp.

Hungarian Age: Jurassic, Early Toarcian: Baranyi & al. 2016.

Maduradinium Cookson & Eisenack 1970a

Type: *Maduradinium pentagonum* Cookson & Eisenack 1970, p. 150, pl. 10, fig. 13.

Maduradinium pentagonum Cookson & Eisenack 1970a

Holotype: Cookson & Eisenack 1970a, p. 150, pl. 10, fig. 13.

Hungarian Age: Cretaceous, Early Campanian, *Odontochitina operculata* Assemblage Zone, *Apteodinium deflandrei* Subzone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Maduradinium pentagonum subsp. *ovale* (Cookson & Eisenack 1982) Lentin & Williams 1985

Holotype: Cookson & Eisenack 1982, p. 34, pl. 1, fig. 16.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Senonian.

Maduradinium sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997.

Mancodinium Morgenroth 1970

Type: *Mancodinium semitabulatum* Morgenroth 1970, p. 352–353, pl. 12, fig. 3.

Mancodinium semitabulatum Morgenroth 1970

Holotype: Morgenroth 1970, p. 352–353, pl. 12, fig. 3; Fensome & al. 1993a, p. 1319, fig. 1, p. 1323, fig. 1.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 1: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian.

Manumiella Bujak and Davies 1983

Type: *Broomea seelandica* Lange 1969, p. 113–114, pl. 3, fig.3.

Manumiella cretacea (Cookson 1956) Bujak and Davies 1983

Holotype: Cookson 1956, p. 184–185, pl. 1, fig. 1; Helby & al. 1987, fig. 42 L.

Deflandrea cretacea Cookson 1956.

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone: Siegl-Farkas & Wagreich 1996; *Manumiella* div. sp. Subzone: Siegl-Farkas 1997.
Williams & al. 1998 Age: Late Cretaceous.

Manumiella hungarica Siegl-Farkas 1997

Holotype: Siegl-Farkas 1997, p. 81, 88, pl. 7, fig. 7.

Name not validly published: no description: Williams & al. 1998, p. 387.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Late Campanian.

Manumiella seelandica (Lange 1969) Bujak and Davies 1983

Holotype: Lange 1969, p. 113–114, pl. 3, fig. 3; Fensome & al. 1995, p. 1773, fig. 2.

Broomea seelandica Lange 1969.

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagreich 1996; *Manumiella* div. sp. Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Danian.

Manumiella cf. *seelandica* (Lange 1969) Bujak and Davies 1983

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone: Siegl-Farkas 1997.

Margosphaera Nagy 1965a

Genotypus: *Margosphaera velata* Nagy 1965a, p. 208–209, pl. 5, figs. 23–25; text-fig. 7; Nagy 1969, pl. 7, fig. 4. Head (1993, p. 32) considered by implication that the acritarch genus *Margosphaera* Nagy 1965, is the possible taxonomic senior synonym of *Selenopemphix* genus – in Williams & al. 1998, p. 551.

Margosphaera velata Nagy 1965a

Holotype: Nagy 1965a, p. 208–209, pl. 5, figs. 23–25; text-fig. 7; Nagy 1969, pl. 7, fig. 4. Head (1993, p. 32) considered by implication that the acritarch genus *Margosphaera* Nagy 1965, is the possible taxonomic senior synonym of *Selenopemphix* genus – in Williams & al. 1998, p. 551.

Hungarian Age: Middle Miocene: Nagy 1965a, 1969, 1992.

Maturodinium Morgenroth 1970

Type: *Maturodinium inornatum* Morgenroth 1970, p. 354–355, pl. 13, figs. 5–6.

Maturodinium inornatum Morgenroth 1970

Holotype: Morgenroth 1970, p. 354–355, pl. 13, figs. 5–6; Fensome & al. 1993a, p. 1237, figs. 1–2.

Hungarian Age: Early Jurassic, Early Toarcian: Assemblage 1, Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian.

Melitasphaeridium Harland & Hill 1979

Type: *Hystriosphaeeridium choanophorum* Deflandre & Cookson 1955, p. 271–272, text- figs. 23-26.

Melitasphaeridium asterium (Eaton 1976) Bujak & al. 1980

Holotype: Eaton 1976, p. 273, pl. 11, figs. 7-8; Bujak & al. 1980, pl. 2, fig. 3.

Hystriosphaeeridium asterium Eaton 1976.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

Melitasphaeridium choanophorum (Deflandre and Cookson 1955) Harland and Hill 1979

Holotype: Deflandre & Cookson 1955, p. 271–272, text-figs. 23-26; Fensome & al. 1993a, p. 1055, figs. 1-4.

Hystriosphaeeridium choanophorum Deflandre and Cookson 1955.

Hungarian Age: Miocene, Badenian: Sütőné Szentai in Chikán 1991; Badenian, PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Upper part of the Sarmatian, *Spiniferites budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1985; Sütőné Szentai 1987, 2012; Baranyi & al. 2013; Sütőné Szentai in Jám bor & al. 1987; Sütő-Szentai in Jám bor & al. 1985.

Williams & al. 1998 Age: Middle Miocene.

Melitasphaeridium pseudorecurvatum (Morgenroth 1966a) Bujak & al. 1980

Holotype: Morgenroth 1966a, p. 30–31, pl. 8, fig. 5.

Hystriosphaeeridium pseudorecurvatum Morgenroth 1966a,

Operculodinium pseudorecurvatum (Morgenroth 1966a) Stover & Evitt 1978.

Hungarian Age: Middle Eocene: Rákosi in Michoux and al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene; Williams & al. 1993: Ypresian–Priabonian (52-39,4 Ma.).

Membranilarnacia Eisenack 1963a

Type: *Membranilarnax leptoderma* Cookson & Eisenack 1958, p. 50–51, pl. 10, fig. 9.

Membranilarnacia polycladiata Cookson & Eisenack in Eisenack 1963a p. 100.

Holotype: Cookson & Eisenack 1958, p. 51. pl. 10, fig. 8. as *Membranilarnax* sp.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a as cf. *Membranilarnacia polycladiata* Eis.

Williams & al. 1998 Age: Albian.

Membranophoridium Gerlach 1961

Type: *Membranophoridium aspinatum* Gerlach 1961, p. 199–201, pl. 29, fig. 7.

Membranophoridium aspinatum Gerlach 1961

Lectotype: Gerlach 1961, p. 199–201, pl. 29, fig. 7; Fensome et al. 1993a, p. 945, fig. 1.

Chiropteridium aspinatum (Gerlach 1961) Brosius 1963.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Middle Oligocene; Williams & al. 1993: Rupelian–Aquitania (36–23 Ma.).

Membranophoridium sp.

Hungarian Age: Middle Eocene: Rákosi in Michoux & al. 1985.

Mendicodinium Morgenroth 1970

Type: *Mendicodinium reticulatum* Morgenroth 1970, p. 348–349, pl. 9, figs. 5–6.

Mendicodinium sp.

Hungarian Age: Jurassic, Lower Toarcian, Assemblage 1: Baranyi & al. 2016.

Microdinium Cookson and Eisenack 1960a

Type: *Microdinium ornatum* Cookson & Eisenack 1960a, p. 6–7, pl. 2 figs. 3–4; text-fig. 2.

Microdinium carinatum (Below 1987b) Lentin & Williams 1989

Holotype: Below 1987b, p. 41–43, pl. 10, figs. 1–5; Fensome & al. 1993a, p. 1035, figs. 1–4.

Phanerodinium carinatum Below 1987b

Hungarian Age: Cretaceous, Late Campanian, *Pyxidiniopsis bakonyensis* Assemblage Zone, *Pterodinium cingulatum–Isabelidinium bakeri* Subzone: Siegl-Farkas & Wagneich 1996.

Williams & al. 1998 Age: Late Campanian.

Microdinium sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1993 Age: Late Albian–Paleocene (10–66,5 Ma) as *Microdinium* spp.

Millioudodinium Stover & Evitt 1978

Type: *Gonyaulacysta fetchamensis* Sarjeant 1966, p. 128, 130, pl. 15, figs. 1–2; text-fig. 33.

Millioudinium bacculatum (Baltes 1971) Stover & Evitt 1971

Type: Baltes 1971, p. 3, pl. 1, figs. 4–5.

Leptodinium bacculatum Baltes 1971

Rhynchodiniopsis bacculata (Baltes 1971) Sarjeant 1982b

Hungarian Age: Late Miocene, Pannonian, *Spiniferites paradoxus* zone: Sütőné Szentai 1995a; *Galeacysta etrusca* zone: Sütő 1994a, 1995a.

Williams & al. 1998 Age: Early Pliocene; Balteş 1971: Lower Pontian in Romania.

Millioudodinium detkensis Sütő-Szentai 1990

Holotype: Sütő-Szentai 1990, p. 853–854, pl. 5, fig. 4; text-fig. 78c;

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270. Name not validly published Williams & al. 1998. Williams & al. 1998 p. 406, as *Millioudodinium „dektense”*.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1990, 1994c; Sütőné Szentai 1986, 1995a (Zszt 3); Sütő 1995b; Sütő-Szentai in Cziczér & al. 2007; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone over *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone: Sütőné Szentai 1995a (Zszt 3). Pannonian: Kedves & al. 2000, p. 94, pl. 6.9, fig. 17, and p. 96, pl. 6.10, fig. 1, as cf. *Acanthaulax* sp. 2. In my opinion this is a *Millioudodinium detkensis* Sütő-Szentai 1990. Remark: Sütőné Szentai in this paper.

Williams & al. 1998 Age: Late Pannonian.

Millioudodinium gracillimum Sütőné Szentai 1983a

Type: Sütő–Szentai 1983a, p. 21, pl. 3 text-fig. 7.

Hungarian Age: Pannonian.

Williams & al. 1998 Age: Name not validly published, no description.

Millioudodinium jambori Sütő–Szentai 1988

Type: Sütő–Szentai 1988, p. 356, pl. 4, fig. 4. nom. nud.

Williams & al. 1998: Name not validly published, no description.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő-Szentai 1988; Sütőné Szentai in Jám bor & al. 1987; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988; Sütőné Szentai 1995a; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a, 1995a; Sütő-Szentai 1988; Sütő: 1995b; Sütőné Szentai in Jám bor & al. 1987; Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988; Sütő: 1994a.

Williams & al. 1998 Age: Pannonian.

Millioudodinium lörentheyi Sütő-Szentai 1988

Type: Sütő-Szentai 1988, p. 355, pl. 3, fig. 1 (two illustrations).

Williams & al. 1998: Name not validly published.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2003.

Williams & al. 1998 Age: Pannonian.

Millioudodinium punctatum (Balteş 1971) Stover & Evitt 1978

Types: Balteş 1971, p. 3, pl. 1. figs. 2, 3, 6, 7.

Leptodinium punctatum Balteş 1971.

Williams & al. 1998: Name not validly published.

Roumanian Age: Lower Pliocene Pontian; Balteş 1971.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1983a, 2002; Pannonian: *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1983a, 2002; Sütőné Szentai & Selmeczi 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a, 2000, 2002, 2003; Pannonian, *Spiniferites validus* zone: Sütőné Szentai 1982a, 1983a, 2000, 2002; Sütő: 1994a; Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a; Sütőné Szentai 2000, 2002; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a; Sütőné Szentai in Chikán 1991.

Williams & al. 1998 Age: Early Pliocene.

Millioudodinium quadratum Sütő-Szentai 1988

Williams & al. 1998: Name not validly published.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites validus* zone V3 asszociacion: Sütő-Szentai 1988; Sütőné Szentai 2000.

Williams & al. 1998 Age: Pannonian.

Millioudodinium sp.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites validus* zone: Sütő-Szentai in Szuromi-Korecz & al. 2004.

Muderongia Cookson & Eisenack 1958

Type: *Muderongia mcwhaei* Cookson & Eisenack 1958, p. 41, pl. 6, fig. 2.

Muderongia simplex Alberti 1961

Holotype: *Muderongia simplex* Alberti 1961, p. 12, pl. 2, fig. 4.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995 (as *Muderongia* cf. *simplex*).

Williams & al. 1998 Age: Valanginian–Early Barremian.

Nannoceratopsis Deflandre 1939a

Type: *Nannoceratopsis pellucida* Deflandre 1939a, p. 183, pl 8, fig. 10.

Nannoceratopsis deflandrei Evitt 1961b subsp. *senex* (van Helden 1977) Ilyina in Ilyina & al. 1994

Holotype: van Helden 1977, p. 165, pl. 33. 1, figs. 6-7.

Nannoceratopsis senex van Helden 1977.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 4: Baranyi & al. 2016 as *Nannoceratopsis senex*.

Williams & al. 1998 Age: Late Pliensbachian–Early Bajocian.

Nannoceratopsis gracilis Alberti 1961

Holotype: Alberti 1961, p. 30, pl. 7, fig. 17.

Hungarian Age: Jurassic, Late Sinemurian: Bóna 1983, 1984a, 1984b, 1995;
Pliensbachian: Bóna in Lachkar, Bóna Pavillon 1984; Early Jurassic, Early Toarcian,
Assemblage 2: Baranyi & al. 2016.

Williams & al. 1998 Age: Bajocian; Williams & al. 1993: Early Pliensbachian–Late
Bathonian (191–159 Ma).

Nannoceratopsis gracilis subsp. ***obsoleta*** (Prauss 1989) Lentin & Williams 1993

Holotype: Prauss 1989, p. 13–14, pl. 7, fig. 16.

Nannoceratopsis gracilis var. *obsoleta* Prauss 1989.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 2: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian–Late Toarcian.

Nannoceratopsis magnicornus Bucefalo Palliani & Riding 1998

Holotype: Bucefalo Palliani & Riding 1998, p. 123., pl. 1, figs. 9–15.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 2: Baranyi & al. 2016 as
Nannoceratopsis sp. cf. *Nannoceratopsis magnicornus* Bucefalo Palliani & Riding 1998.

Nannoceratopsis spiculata Stover 1966

Holotype: Stover 1966, p. 42–43, pl. 8, figs. 1 A–D.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 5: Baranyi & al. 2016.

Williams & al. 1998 Age: Bajocian–Bathonian.

Nelsoniella Cookson & Eisenack 1960a

Type: *Nelsoniella aceras* Cookson & Eisenack 1960a, p. 4, pl. 1, fig. 12.

Nelsoniella aceras Cookson & Eisenack 1960a

Holotype: Cookson & Eisenack 1960a, p. 4, pl. 1, fig. 12.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage
Zone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Santonian–Campanian.

Nelsoniella tuberculata Cookson & Eisenack 1960a

Holotype: Cookson & Eisenack 1960a, p. 4, pl. 1, fig. 14.

Hungarian Age: Cretaceous, Campanian Siegl-Farkas 1999a; Cretaceous, Campanian,
Upper part of the *Odontochitina operculata* Assemblage zone, *Spinidinium* sp. Subzone:
Siegl-Farkas 1995.

Williams & al. 1998 Age: Santonian–Campanian.

Nematosphaeropsis Deflandre & Cookson 1955

Type: *Nematosphaeropsis balcombiana* Deflandre & Cookson 1955, p. 268–269, pl. 8, fig.
5.

Nematosphaeropsis balcombiana Deflandre & Cookson 1955

Holotype: Deflandre & Cookson 1955, p. 268–269, pl. 8, fig. 5.

Hungarian Age: Miocene, Sarmatian, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 2012; Baranyi & al. 2013.
Williams & al. 1998 Age: Middle Miocene.

Nematosphaeropsis bicorporis Sütő-Szentai 1990

Holotype: Sütő-Szentai 1990, p. 847, 849, pl. 2 fig. 1ab, text-figs. 76d, 77a.

Williams & al. 1998: Name not validly published. Sütőné Szentai 1997: Micropaleontological typematerial of Natural collection at Komló p. 271.

Hungarian Age: Late Miocene, Pannonian, *Galeacysta etrusca* zone: Sütő-Szentai 1994c (Kaskantyú 2 bh. 460,1–461,5 m); Sütőné Szentai 1989 in Szentlőrinc XII bh. as *Nematosphaeropsis bicorporis* and *N. bicorporis* zone; Sütő-Szentai 1990, 1988 (Upper part of the *Spiniferites validus* zone, Table I.).

Williams Age: Pannonian.

Nematosphaeropsis labyrinthus (Ostenfeld 1903) Reid 1974

Holotype: Ostenfeld 1903, p. 578, fig. 127.

Pterosperma labyrinthus Ostenfeld 1903,

Coccolperum labyrinthus (Ostenfeld 1903) Silva 1970.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: extant. (lat. extendo).

Nematosphaeropsis reticulensis (Pastiels 1948) Sarjeant 1986

Holotype: Pastiels 1948, p. 49, pl. 5, fig. 10.

Cannosphaeropsis reticulensis Pastiels 1948,

Adnatosphaeridium reticulense (Pastiels 1948) Coninck 1969.

Hungarian Age: Eocene: Kédvés 1992; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 24, 25 zones: Rákosi 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Early Eocene.

Nematosphaeropsis sp.

Hungarian Age: Miocene, Sarmatian: Sütő-Szentai 1988.

Neuffenia Brenner & Dürr 1986

Type: *Neuffenia willei* Brenner & Dürr 1986, p. 13, fig. 2, No. 1; fig. 3, nos. 1-2.

Neuffenia willei Brenner & Dürr 1986

Holotype: Brenner & Dürr 1986, p. 13, fig. 2, no. 1; fig. 3, nos. 1-2; Fensome & al. 1995, p. 1919, figs. 1-3.

Hungarian Age: Late Miocene, Pannonian: Kedves & al. 2000, p. 96, pl. 6.10, fig. 6, as *Neuffenia willei* Brenner & Dürr 1986. Remark: Sütőné Szentai in this paper: In my opinion fig. 6, equal to the spongy walled variant of *Impagidinium spongianum* Sütő-Szentai 1985.

Williams & al. 1998 Age: Late Oxfordian.

Occisucysta Gitmez 1970

Type: *Occisucysta balios* Gitmez 1970, p. 267, pl. 5, figs. 1-2; text-fig. 16.

Occisucysta balios Gitmez 1970

Holotype: Gitmez 1970, p. 267, pl. 5, figs. 1-2; text-fig. 16; Jan du Chêne & al. 1986a, pl. 77, figs. 1-3; Jan du Chêne & al. 1986b, pl.1, figs. 1-3.

Hungarian Age: Late Miocene, Pannonian: Kedves & al. 2000, p. 96, pl. 6-10. figs. 4-5, as *Occisucysta balia* Gitmez 1970. Remark Sütőné Szentai in this paper: In my opinion figs. 4-5, equal to the spongy walled variant of *Impagidinium spongianum* Sütő-Szentai 1985.

Williams & al. 1998 Age: Early Kimmeridgian.

Odontochitina Deflandre 1937b

Type: *Odontochitina silicorum* Deflandre 1937b, p. 94, pl. 18 (al. Pl. 15), fig. 8.

Odontochitina costata Alberti 1961

Holotype: Alberti 1961, p. 31, pl. 6, fig. 12.

Hungarian Age: Late Cretaceous, Campanian, *Odontochitina operculata* Assemblage zone: Siegl-Farkas Á. 1999a; Late Cretaceous, Early Campanian *Odontochitina operculata* Assemblage zone, *Apteodinium deflandrei* Subzone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Cenomanian–Turonian; Williams & al. 1993: Cenomanian–Late Campanian (96-75 Ma.).

Odontochitina operculata (O. Wetzel 1933a) Deflandre & Cookson 1955

Holotype: O. Wetzel 1933a, p. 170, pl. 2, fig. 21.

Ceratium (Eoceratium) operculatum O. Wetzel 1933a,

Palaeoceratium (Eoceratium) operculatum (O. Wetzel 1933a) O. Wetzel 1948.

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962; Cretaceous, *Odontochitina operculata* Assemblage Zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas & Wagreich 1996; Siegl-Farkas in Lantos & al 1996; Cretaceous, Upper Santonian–Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997, 1999a; Early Badenian: Nagy & Rákosi 1966 (as redeposited).

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Hauterivian–Early Maastrichtian (117-73 Ma.).

Odontochitina porifera Cookson 1956

Holotype: Cookson 1956, p. 188, pl. 1, fig. 17.

Hungarian Age: Cretaceous, Campanian, Upper part of the *Odontochitina operculata* Assemblage zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995; Cretaceous, Upper Santonian–Middle Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Coniacian–Santonian (89–87 Ma).

Odontochitina striatoperforata Cookson & Eisenack 1962b

Holotype: Cookson & Eisenack 1962b, p. 490, pl. 3, fig. 16.

Hungarian Age: Cretaceous, Campanian, Upper part of the *Odontochitina operculata* Assemblage zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995; Cretaceous, Upper Santonian–Middle Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Albian–Cenomanian.

Odontochitina wetzelii Wilson in Foucher in Robaszinski & al. 1985

Holotype: Wilson 1985, p. 33, pl. 10, figs. 9–12.

Williams 1998: Name not validly published.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995 as *O. cf. wetzeli*.

Williams & al. 1998 Age: Campanian–Early Maastrichtian.

Odontochitinopsis Eisenack 1961

Type: *Ceratocystidiopsis molesta* Deflandre, 1937b, p. 90, pl. 17 (al. Pl. 14), figs. 2–3.

Odontochitinopsis molesta (Deflandre 1937b) Eisenack 1961

Holotype: Deflandre 1937b, p. 90, pl. 17 (al. Pl. 14.) figs. 2–3.

Ceratocystidiopsis molesta Deflandre 1937b.

Hungarian Age: Cretaceous, Upper part of the Middle Campanian, Upper part of the *Odontochitina operculata* Assemblage Zone, *Dinogymnium digitus* Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Senonian.

Oligosphaeridium Davey & Williams 1966b

Type: *Xanthidium tubiferum* var. *complex* White, 1842, p. 39, pl. 4, fig. 11.

Oligosphaeridium asterigerum (Gocht 1959) Davey & Williams 1969

Holotype: Gocht 1959, p. 67, pl. 3, fig. 1.

Hystrichosphaeridium asterigerum Gocht 1959.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962 (p. 190) as *Hystrichosphaeridium* cf. *asterigerum* Gocht 1959; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975.

Williams & al. 1998 Age: Late Valanginian–Late Hauterivian.

Oligosphaeridium complex (White 1842) Davey & Williams 1966b

Holotype: White 1842, p. 39, pl. 4, fig. 11.

Xanthidium tubiferum White 1842 var. *complex* White 1842,
Xanthidium complex (White 1842) Bronn 1848,
Hystriochosphaeridium complex (White 1842) Deflandre 1946.

Hungarian Age: Cretaceous, Late Aptian–Albian: Góczán in Fülöp 1966.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008.

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Valanginian–Lutetian (126–49 Ma).

Oligosphaeridium irregulare (Pocock 1962) Davey & Williams 1969

Holotype: Pocock 1962, p. 82, pl. 15, figs. 228–229.

Hystriochosphaeridium irregulare Pocock 1962.

Hungarian Age: Miocene, Early Badenian: Nagy & Bodor 1982, Table 1, p. 120.

Williams & al. 1998 Age: Late Barremian–Aptian.

Oligosphaeridium sp.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Operculodinium Wall 1967

Type: *Hystriochosphaeridium centrocarpum* Deflandre & Cookson 1955, p. 272–273, pl. 8, figs. 3–4.

Operculodinium? borgerholtense Louwe 2001

Holotype: Louwe 2001, p. 126–127, pl. 4, figs. 1–5.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Louwe 2001 Age: Lower–Middle Miocene.

Operculodinium centrocarpum (Deflandre & Cookson 1955) Wall 1967

Holotype: Deflandre & Cookson 1955, p. 272–273, pl. 8, figs. 3–4.

Hystriochosphaeridium centrocarpum Deflandre & Cookson 1955,

Baltisphaeridium centrocarpum (Deflandre & Cookson 1955) Gerlach 1961,

Cordosphaeridium centrocarpum (Deflandre & Cookson 1955) Coninck 1965,

Cordosphaeridium tiara (Klumpp 1953) subsp. *centrocarpum* (Deflandre & Cookson 1955) Morgenroth 1966,

Cordosphaeridium microtriainum (Klumpp 1953) subsp. *centrocarpum* (Defl. & Cookson 1955) Coninck 1969,

Cleistosphaeridium centrocarpum Jiabo 1978,

Operculodinium centrocarpum Lentin & Williams 1973.

Hungarian Age: Eocene: Rákosi 1973, pl. 2, figs. 1–3; Eocene, Buda Marl Formation: Rákosi 1985; Eocene, NP 16, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993; Miocene Sarmatian: *Lejeunecysta–Hystriochosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Miocene Sarmatian: *Mecsekia incrassata–S. bentorii budajenoensis* zone: Sütő-Szentai 1988; Sütőné Szentai 2012; Baranyi & al. 2013.

Roumanian Age: Miocene, Sarmatian–Early Pannonian: Sütő & Szegő 2008.
Williams & al. 1998 Age: Miocene.

Operculodinium divergens (Eisenack 1954b) Stover & Evitt 1978

Holotype: Eisenack 1954b, p. 67, pl. 9, fig. 14.

Hystriosphæridium divergens Eisenack 1954b,

Baltisphaeridium divergens (Eisenack 1954b) Downie & Sarjeant 1963,

Cordosphaeridium divergens (Eisenack 1954b) Eisenack 1963.

Hungarian Age: Eocene: Kedves 1992; Miocene, Badenian: Nagyné Bodor in Chikán 1991.

Williams & al. 1998 Age: Early Oligocene.

***Operculodinium?* „*hirsutum*”** (Ehrenberg 1838) Lentin & Williams 1973

Holotype: Ehrenberg 1838, p. 109–135, pl. 1, fig. 13.

Williams & al. 1998: Name not validly published.

Xanthidium hirsutum Ehrenberg 1838,

Ovum hispidum subsp. *hirsutum* (Ehrenberg 1838) Eisenack 1931,

Hystriosphæra hirsuta (Ehrenberg 1838) O. Wetzel 1933,

Hystriosphæridium hirsutum (Ehrenberg 1838) Deflandre 1939,

Baltisphaeridium hirsutum (Ehrenberg 1838) Downie & Sarjeant 1965.

Hungarian age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Middle Albian–Early Cenomanian: Bóna in Bodrogi & al. 1994; Cretaceous, Late Campanian: Góczán 1962 (p. 191) as *Hystriosphæridium* „cf. *hirtum* (Ehrenberg) W. Wetzel” nec. *hirsutum* Deflandre; Eocene, Buda Marl Formation: Rákosi 1985; Eocene, NP 20 zone: Rákosi 1993.

Williams & al. 1998 Age: Late Cretaceous.

Operculodinium israelianum (Rossignol 1962) Wall 1967

Holotype: Rossignol 1962, p. 132, pl. 2, fig. 3.

Hystriosphæridium israelianum Rossignol 1962,

Baltisphaeridium israelianum (Rossignol 1962) Downie & Sarjeant 1965,

Cleistosphaeridium israelianum (Rossignol 1962) Davey & al. 1966.

Hungarian Age: Miocene, Badenian, PD2 zone Jiménez-Moreno 2005 (as *Operculodinium centrocarpum-israelianum* Head 1996 Tengelic 2 bh.); *Cribopteridium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (as *Operculodinium centrocarpum-israelianum* Head 1996 Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (as *Operculodinium centrocarpum-israelianum* Head 1996 Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian, PD5 zone Jiménez-Moreno 2005 (as *Operculodinium centrocarpum-israelianum* Head 1996 Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 2012; Baranyi & al. 2013.

Williams & al. 1998 Age: Pleistocene.

Operculodinium longispinigerum Matsuoka 1983b

Holotype: Matsuoka 1983b, p. 125, pl. 9, figs. 8 a-b.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (as *Operculodinium? longispinigerum* Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Late Miocene–Early Pleistocene.

Operculodinium microtriainum (Klumpp 1953) Islam 1983a

Holotype: Klumpp 1953, p. 390, pl. 17, figs. 6-7.

Hystriosphæridium microtriainum Klumpp 1953,
Cordosphaeridium microtriainum (Klumpp 1953) Eisenack 1963,
Polysphaeridium microtriainum (Klumpp 1953) Kar 1979,
Achomosphæra microtriaina (Klumpp 1953) Sarjeant 1981.

Hungarian Age: Miocene, Badenian: Nagyné Bodor in Chikán 1991.

Williams & al. Age: Late Eocene.

Operculodinium piaseckii Strauss & Lund 1992

Holotype: Strauss & Lund 1992, p. 167, pl. 3, fig. 3.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Miocene.

Operculodinium tiara (Klumpp 1953) Stover & Evitt 1978

Holotype: Klumpp 1953, p. 390–391, pl. 17, figs. 8-9.

Hystriosphæridium tiara Klumpp 1953,
Baltisphaeridium tiara (Klumpp 1953) Downie & Sarjeant 1965,
Cordosphaeridium tiara (Klumpp 1953) Morgenroth 1966,
Cleistosphaeridium tiara (Klumpp 1953) Davey & al. 1969.

Hungarian Age: Eocene: Rákosi 1973; Bignot & al. 1985; Late Eocene, *Retisphaera microreticulata*–*Tytthodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Eocene.

Operculodinium xanthium (Benedek 1972) Stover & Evitt 1978

Holotype: Benedek 1972, p. 27–28, pl. 9, fig. 8.

Cordosphaeridium xanthium Benedek 1972,
Lingulodinium xanthium (Benedek 1972) Benedek & Sarjeant 1981.

Hungarian Age: Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Middle–Late Oligocene.

Operculodinium sp.

Hungarian Age: Eocene: Rákosi 1973, pl. 6, figs. 16-17; Rákosi in Michoux & al. 1985.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Operculodinium sp. form. „A” Rákosi 1979

Hungarian Age: Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983.

Palaeocystodinium Alberti 1961

Type: *Palaeocystodinium golzowense* Alberti 1961, p. 20, pl. 7, fig. 12.

Palaeocystodinium golzowense Alberti 1961

Holotype: Alberti 1961, p. 20, pl. 7, fig. 12.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23 zones: Rákosi 1993; Miocene, Badenian: Nagy 1992; Sütőné Szentai in Chikán 1991; Miocene Sarmatian, *Mecsekia incrassata*–*Spiniferites bentorii budajenoensis* zone: Sütő-Szentai 1988; *S. bentorii budajenoensis*–*Mecsekia incrassata* zone Sütőné Szentai 2012; Baranyi & al. 2013.

Williams & al. 1998 Age: Late Eocene–Late Oligocene; Williams & al. 1993: Late Eocene–Late Miocene (37-9 Ma).

Palaeocystodinium minor Strauss & al. 2001

Holotype: Strauss & al. 2001, p. 407. pl. 2, figs. 1-3; text-fig. 2.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Strauss & al. 2001 Age: Middle Miocene.

Palaeocystodinium miocenicum Strauss & al 2001

Holotype: Strauss & al. 2001, p: 407–409. pl. 2, figs. 4-5; text-fig 2.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006.

Strauss & al. 2001 Age: Middle Miocene.

Palaeocystodinium powellense Strauss & Lund 1992

Holotype: Strauss & Lund 1992, pl. 5, fig. 1.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Strauss & Lund 1992 Age: Middle Miocene.

Palaeocystodinium sp.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas & Wagreich 1996; Siegl-Farkas 1997.

Palaeohystrichophora Deflandre 1935

Type: *Palaeohystrichophora infusorioides* Deflandre 1935, 230–231, pl. 8, fig. 4.

Palaeohystrichophora infusorioides Deflandre 1935

Holotype: Deflandre 1934, fig. 8; Deflandre 1935, p. 230–231, pl. 8, fig. 4; Deflandre 1936b, p. 186–187, pl. 9, fig. 7.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Siegl-Farkas 1997, 1999a as cf. *Palaeohystrichophora infusorioides* Deflandre 1935.

Williams & al. 1998 Age: Senonian.

Palaeoperidinium Deflandre 1934

Type: *Peridinium pyrophorum* Ehrenberg 1838, pl. 1, fig. 4.

Palaeoperidinium sp.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966; Miocene, Szászvár Formation: Bodor in Chikán 1991; Miocene, Badenian: Nagy 1992; Miocene, Late Pannonian: Bodor 1983; Nagyné Bodor in Chikán 1991; Nagyné Bodor in Cserny & al. 1991; Nagyné Bodor, Szuromi-Korecz, Cserny 2000.

Williams & al. 1998 Ages: *Palaeoperidinium* spp. Jurassic–Eocene.

Pareodinia Deflandre 1947d

Type: *Pareodinia ceratophora* Deflandre 1947d, p. 4, text-fig. 1.

Pareodinia aphelia Cookson & Eisenack 1958

Holotype: Cookson & Eisenack 1958, p. 60, pl. 12, fig. 4.

Hungarian Age: Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas & Wagreich 1996.

Williams & al. 1998 Age: Middle Jurassic–Early Cretaceous.

Pentadinium Gerlach 1961

Type: *Pentadinium laticinctum* Gerlach 1961, p. 165–166, pl. 26, figs. 5-6; text-figs. 6-7.

Pentadinium laticinctum Gerlach 1961

Holotype: Gerlach 1961, p. 165–166, pl. 26, figs. 5-6; text-figs. 6-7; Benedek & al. 1982, text-figs. 3 E-F; Jan du Chêne & al. 1986a, pl. 80, fig. 3.

Hungarian Age: Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23 zones: Rákosi 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval

Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Oligocene–Middle Miocene; Williams & al. 1993: Early Eocene Ypresian–Middle Miocene Serravallian (50-13 Ma).

Peridinium Ehrenberg 1830

Dinoflagellate genus based on the motile stage, Williams & al. 1998.

Peridinium sp.

Hungarian Age: Late Miocene, Late Pannonian I. biozone: Miháltzné Faragó 1979.

Phthanoperidinium Drugg & Loeblich Jr. 1967

Type: *Phthanoperidinium amoenum* Drugg & Loeblich Jr. 1967, p. 182, pl. 1, fig 4.

Phthanoperidinium amoenum Drugg & Loeblich Jr. 1967

Holotype: Drugg & Loeblich Jr. 1967, p. 182, pl. 1, fig. 4.

Hungarian Age: Eocene: Kedves 1992; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Oligocene.

Phthanoperidinium comatum (Morgenroth 1966b) Eisenack & Kjellström 1972

Holotype: Morgenroth 1966b, p. 1, pl. 1, fig. 1.

Peridinium comatum Morgenroth 1966b.

Hungarian Age: Eocene, Middle Eocene: as *Phthanoperidinium* cf. *tritonium* Eaton 1976: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Oligocene.

Phthanoperidinium crenulatum (de Coninck 1975) Lentin & Williams 1977b

Holotype: de Coninck 1975, p. 96, pl. 17, figs. 12-13.

Peridinium crenulatum de Coninck 1975.

Hungarian Age: Eocene: as *Peridinium* cf. *crenulatum* Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene, Ypresian.

Phthanoperidinium? lambdaoideum (Nagy 1966) Eisenack & Kjellström 1972

Holotype: Nagy 1966, p. 39–40, pl. 1, figs. 1-3; text-figs. 1a-b. Hidas 53 bh. 134,8–135,5 m.

Peridinium lambdaoideum Nagy 1966.

Hungarian Age: Pannonian: Nagy 1966, 1969.

Williams & al. 1998 Age: Early Pliocene.

Phthanoperidinium resistente (Morgenroth 1966a) Eisenack & Kjellström 1972

Holotype: Morgenroth 1966a, p. 5, pl. 2, figs. 1-2.

Peridinium resistente Morgenroth 1966.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene.

Polysphaeridium Davey & Williams 1966b

Type: *Polysphaeridium subtile* Davey & Williams 1966, p. 92, pl. 11, fig. 1.

Polysphaeridium zoharyi (Rossignol 1962) Bujak & al. 1980

Holotype: Rossignol 1962, p. 132, pl. 2, fig. 10.

Hystrichosphaeridium zoharyi Rossignol 1962,

Hemicystodinium zoharyi (Rossignol 1962) Wall 1967.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Miocene, Badenian: Nagyné Bodor in Chikán 1991; Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene Sarmatian PD5 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Early Sarmatian: Sütőné Szentai 2001; Miocene, Late Sarmatian *Mecsekia incrassata*–*Spiniferites bentorii budajenoensis* zone/*Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 1983a, 2012, 2016; Sütő-Szentai 1985, 1988; Baranyi & al. 2013; Sütőné Szentai in Jám bor & al. 1987; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* primary assemblage zone: Sütőné Szentai 2012, 2016; Late Miocene, *Mecsekia ultima* zone: Sütőné Szentai 2012, 2016; Late Miocene, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai: 1983a, 1986, 2002; Sütő-Szentai 1988; Sütő-Szentai in Jám bor & al. 1985; Sütőné Szentai in Jám bor & al. 1987.

Roumanian Age: Sarmatian stage, (Section „A”, 5,7 m) Sütő & Szegő 2008.

Williams & al. 1998 Age: Pleistocene; Williams & al. 1993: Early Eocene Ypresian–recent (51-0 Ma).

Polysphaeridium zoharyi (Rossignol 1962) subsp. *ktana* (Rossignol 1964) Lentin & Williams 1981

Holotype: Rossignol 1964, p. 88, pl. 2, fig. 7.

Hystrichosphaeridium zoharyi var. *ktana* Rossignol 1964,

Hemicystodinium zoharyi subsp. *ktana* Lentin & Williams 1973,

Polysphaeridium zoharyi subsp. *ktana* Lentin & Williams 1981.

Hungarian Age: Eocene: Kedves 1992 (as *Hystrichosphaeridium brevium* Morgenroth 1966); Late Miocene Sarmatian, Upper part of the Sarmatian, *Chytroeisphaeridium*–*Michrhystridium*–*Lingulodinium machaerophorum* assemblage: Sütő-Szentai 1985; Sütőné Szentai 1987; Sütőné Szentai in Jám bor & al. 1987; Late

Miocene, Pannonian, *Spiniferites bentorii pannonicus*–*Lingulodinium machaerophorum* zone, *Mecsekia ultima* zones: Sütő-Szentai 1985; Sütőné Szentai 2002.

Williams & al. 1998 Age: Pleistocene.

Polysphaeridium sp.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene Sarmatian PD5 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: as *Polysphaeridium* spp. Jurassic Toarcian–Miocene.

Pontiadinium Stover & Evitt 1978

Type: *Diconodinium inequicornutum* Balteş 1971, p. 5, pl. 2, fig. 2.

Williams & al 1998: Name not validly published. Taxonomic senior synonym: *Komewuia*, according to Yow-yuh Chen 1982. p. 36; Stover & Evitt 1978, p. 180; Fensome & al. 1996, p. 2161, fig. 5.

Pontiadinium inequicornutum (Balteş 1971) Stover & Evitt 1978

Types: *Diconodinium inequicornutum* Balteş 1971, p. 5, var. I. pl. 1, figs. 8-12; var. II. pl. 2, figs. 2-3; var. III. pl. 2, fig. 1; as Lectotype Stover & Evitt 1978, p. 180; Fensome & al. 1996, p.2161, fig.5.

Diconodinium inequicornutum Balteş 1971.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone (rare): Sütő-Szentai in Szuromi–Korecz & al. 2004; Sütőné Szentai 2003; Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone (frequent): Sütőné Szentai 1983a, 1987, 1991, 1995a (Zalaszentlászló 1), 2002, 2003; Sütő 1995b; Sütő-Szentai 1988; Sütőné Szentai in Jámber & al. 1987; Sütőné Szentai & Selmeczi 2003; Sütő-Szentai in Szuromi–Korecz & al. 2004; Pannonian *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017; Pannonian, Upper part of the *Spiniferites validus* zone V3 association (frequent): Sütőné Szentai 1982a, 1983a, 1983b, 1987, 1989, 1991, 2000, 2002, 2004, 2011; Sütő-Szentai 1988, 1994c; Sütő 1995b; Sütőné Szentai in Chikán 1991; Sütőné Szentai in Jámber & al. 1987; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Galeacysta etrusca* zone: Sütőné Szentai 1989, 2011; Sütő 1994a; Sütő-Szentai 1994c; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over *G. etrusca* zone: Sütő-Szentai 1994c; Sütőné Szentai 2011.

Roumanian Age: Lower Pliocene (Pontian) Balteş 1971.

Williams & al. 1998 Age: Early Pliocene.

Pontiadinium obesum Sütőné Szentai 1982a

Holotype: Sütőné Szentai 1982a, p. 210–211., 218–219, pl. 4, fig. 2. (three illustrations), text-fig. 5.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 271.

Impagidinium? obesum (Sütőné Szentai 1982a) Williams & al. 1998.

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988; Sütő 1995b; Sütőné Szentai 1995a (Hm. 78/18), 2002, 2003; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Hm. 78/18), 2000, 2002, 2003, 2011, 2016; Sütő 1995b; Sütőné Szentai in Jámbor & al. 1987; Sütőné Szentai & Selmeczi 2003, pl. 2. fig. 4. (not pl. 1, fig. 4.); Sütő-Szentai in Szuromi-Korecz 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1990; Sütőné Szentai 1986, 1991, 1995a (Hm. 78/18), 1997, 2002, 2003; Baranyi in Varga & al. 2017; Sütőné Szentai 1982a (as *S. bentorii* zone); Pannonian, *Spiniferites validus* zone: Sütő 1994a; Sütőné Szentai 2011; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1995a (Hm. 78/18); Pannonian, *Galeacysta etrusca* zone: Sütő 1994a.

Williams & al. 1998 Age: Pannonian.

Pontiadinium pecsvaradensis Sütőné Szentai 1982a

Holotype: Sütőné Szentai 1982a. p. 209–210, 218. pl. 3. figs. 1 (two illustrations); text-fig. 4 (two illustrations);

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 271.

Impagidinium? pecsvaradensis (Sütőné Szentai 1982a) Williams & al. 1998.

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii oblongus* zone (rare): Sütőné Szentai 1995a (Zalaszentlászló 1), 2000, 2003; Pannonian, *Pontiadinium pecsvaradensis* zone (abundant): Sütőné Szentai 1983a, 1983b, 1987; 1991, 1995a Zalaszentlászló 1, Hm. 78/18, Öcs-28), 1995c, 1997, 2000, 2002, 2003, 2011, 2012, 2016; Sütő-Szentai 1985, 1988, 1994c; Sütő 1995b; Geary & al. 2000; Hámor G. 2001; Hámor T. 1992; Sütőné Szentai in Jámbor & al. 1987; Kovács 1992; Magyar & al. 1999b, Sütő-Szentai in Magyar et al. 1999a; Sütőné Szentai in Magyar & al. 2004; Magyar 2009, 2010; Müller & al. 1999; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) (rare): Sütőné Szentai 1982a, 1995a (Zszt 3, Hm. 78/18), 2003; Sütő-Szentai 1994c; Pannonian, *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone (rare): Sütőné Szentai 1998, 2011.

Williams & al. 1998 Age: Pannonian.

Pontiadinium pecsvaradensis–*Pontiadinium inequicornutum* (continuous forms)

Type: Sütőné Szentai & Selmeczi 2003, pl. 2, figs. 1-2. (not pl. 1, figs. 2)

Hungarian Age: Late Miocene Pannonian, *Pontiadinium pecsvaradensis* zone (abundant): Sütőné Szentai 2000, 2003, 2011; Sütő 1995b; Sütőné Szentai & Selmeczi 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) (rare): Sütőné Szentai 2003.

Pontiadinium sp.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone (rare): Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1, Nagygörbő 1, Öcs 28); Sütő 1995b; Pannonian *Pontiadinium pecsvaradensis* zone (abundant): Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1), 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1989, 1995a (Zalaszentlászló 1), 2003; Pannonian, *Spiniferites validus* zone: Sütőné Szentai 1985, 1989, 1991, 1994a, 2000; Sütő-Szentai 1988; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Villány 7); Sütőné Szentai 2000.

Roumanian Age: Late Miocene, Pannonian: *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008 as *Komewuia* sp; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008 (as *Pontiadinium* sp.).

Pseudokomewuia He Chengquan 1980

Type: *Pseudokomewuia laevigata* He Chengquian 1980, p. 2-3, pl. 1, fig. 1.

Pseudokomewuia laevigata He Chengquan 1980

Holotype: He Chengquan 1980, p. 2–3. pl. 1, fig. 1.

Hungarian Age: Oligocene, NP 22 zone: Rákosi 1993.

Williams & al. 1998 Age: Oligocene.

Pterodinium Eisenack 1958

Type: *Pterodinium aliferum* Eisenack 1958 p. 395–396, pl. 24, fig. 6; text-fig.6.

Pterodinium aliferum Eisenack 1958

Holotype: Eisenack 1958a, p. 395–396, pl. 24, fig. 6, text-fig. 6; Sarjeant 1985a, pl. 5, figs. 1-2, text-fig. 5; Jan du Chêne & al. 1986a, pl. 87, figs. 1-6.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997 (as *Pterodinium* cf. *aliferum*).

Williams & al. 1998 Age: Late Aptian.

Pterodinium cingulatum (O. Wetzel 1933b) Below 1981a

Holotype: O. Wetzel 1933b, p. 28, pl. 4, fig. 10.

Cymatiosphaera cingulata O. Wetzel 1933b,

Hystriosphera cingulata (O. Wetzel 1933b) Deflandre & Cookson 1955,

Spiniferites cingulatus (O. Wetzel 1933b) Sarjeant 1970.

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962 (p. 189) as *Hystriosphera cingulata* (O. Wetzel) Deflandre; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporum* Subzone: Siegl-Farkas 1999a; Campanian, Upper Part of the *Pyxidinospis bakonyensis* Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas & Wagreich 1996; Siegl-Farkas 1995, 1997; Eocene: Rákosi 1973; Early Eocene, Ypresian, Darvastó Formation–Szóc Formation: Rákosi 1991; Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Senonian.

Pterodinium cingulatum* ssp. *conterminatum Marheinecke 1992

Holotype: Marheinecke 1992, p. 39–40, pl. 5, figs. 10–12.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Pterodinium cingulatum*–*Isabelidinium bakeri* Subzone: Siegl-Farkas 1997.

Williams & al. 1998 Age: Early Maastrichtian.

Pyxidiella Cookson & Eisenack 1958

Type: *Pyxidiella pandora* Cookson & Eisenack 1958, p. 52, pl. 6, fig. 10.

Pyxidiella pandora Cookson & Eisenack 1958

Holotype: Cookson & Eisenack 1958, p. 52, pl. 6, figs. 10.

Hungarian Age: Late Miocene, Early Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1982b (S. bentorii biozone, pl. 5, fig. 4).

Williams Age: Late Jurassic.

Pyxidiella sp.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Late Miocene, Pannonian: Nagy & Planderova 1985; Nagy 1969, pl. 6, fig. 6; Pannonian: *Spiniferites bentorii oblongus*, *Pontiadinium pecsvaradensis* zones: Sütőné Szentai 1983a, 1995a (Zalaszentlászló 1bh. pl. 2, fig. 6); Sütő 1995b (pl. 2 fig. 3).

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Cretaceous–Miocene.

Pyxidinospis Habib 1976

Type: *Pyxidinospis challengerensis* Habib 1976, p. 382, pl. 1, figs. 1a–b.

Pyxidinospis bakonyensis (Góczán 1962) Stover & Evitt 1978

Holotype: Góczán 1962, p. 193–194, 200. pl. 3, figs. 4–5.

Palaeostomocystis bakonyensis Góczán 1962.

Hungarian Age: Cretaceous, late Maastricht: Góczán 1962; Cretaceous, late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Dinogymnium euclaense* Subzone: Siegl-Farkas 1995, 1997, 1999b; Siegl-Farkas & Wagreich 1996; Cretaceous, late Maastricht, *Palaeostomocystis bakonyensis*–*Pseudopapillopollis praesubhercynicus* Assemblage zone: Góczán 1964; Góczán 1962; Siegl-Farkas 1983, 1991; Góczán & Siegl-Farkas 1990; Eocene: Rákosi 1973, pl. 6, figs. 11–15; Eocene: Early Eocene, Ypresian, Darvastó Formation–Szöc Formation: Rákosi 1991; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Maastrichtian.

Pyxidinospis challengerensis Habib 1976

Holotype: Habib 1976, p. 382, pl. 1, figs. 1a–b.

Hungarian Age: Eocene, redeposited: Kedves 1992 (as *P. diallengerensis*).

Williams & al. 1998 Age: Berriasian–Hauterivian.

Pyxidinospis? nuda (Nagy 1969) Williams & al. 1998

Holotype: Nagy 1969, p. 291, pl. 1, fig. 1.

Palaeoperidinium nudum Nagy 1969 p. 291, pl. 1, fig. 1.,
Palaeoperidinium pannonium (Nagy 1969) Lentin & Williams 1973,
Phthanoperidinium pannonium (Lentin & Williams 1973) Harker & Sarjeant 1975,
Gonyaulacysta? nuda (Nagy 1969) Lentin & Williams 1976,
Tectatodinium? nudum (Nagy 1969) Lentin & Williams 1977b,
Tectatodinium pannonium (Lentin & Williams 1973) Lentin & Williams 1981,
Pyxidinospis? pannonia (Lentin & Williams 1973) Head 1994a.

Hungarian Age: Late Miocene, Late Pannonian: Nagy 1969; Bodor 1983; Nagyné Bodor in Chikán 1991.

Williams & al. 1998 Age: Pannonian.

Pyxidinospis psilata (Wall & Dale in Wall & al. 1973) Head 1994a

Holotype: Wall & al. 1973, p. 22–23, pl. 1, fig. 9.

Tectatodinium psilatatum Wall & Dale, in Wall & al. 1973.

Hungarian Age: Pannonian, *Galeacysta etrusca* zone, *Galeacysta etrusca–Spiniferites cruciformis* subzone: Sütőné Szentai 2011.

Williams & al. 1998 Age: Holocene.

Pyxidinospis sp. (rombico-cruciform, ornament fine) Jiménez-Moreno 2005

Hungarian Age: Miocene, Badenian, PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Pyxidinospis sp.

Hungarian Age: Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2011.

Raetiaedinium Kirsch 1991

Type: *Raetiaedinium evittigratum* Kisch 1991, p. 126, pl. 28, figs. 2–4.

Raetiaedinium truncigerum (Deflandre 1937b) Kirsch 1991

Holotype: Deflandre 1937b, p. 71–72, pl. 13 (al. Pl. 10), fig. 6.

Hystriospheraedidium truncigerum Deflandre 1937b,
Litosphaeridium truncigerum (Deflandre 1937b) Davey & Williams 1969,
Cordosphaeridium truncigerum (Deflandre 1937b) De Coninck 1975,
Exosphaeridium truncigerum (Deflandre 1937b) Davey 1978,
Pervosphaeridium truncigerum (Deflandre 1937b) Yun Hiesu 1981,
Tityrosphaeridium truncigerum (Deflandre 1937b) Sarjeant 1981,
Florentinia truncigera (Deflandre 1937b) Below 1982.

Hungarian Age: Cretaceous, Aptian–Albian: Góczán in Fülöp 1966, p. 111, Pl. VIII, fig. 12, as *H. truncigerum*; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Senonian.

Raphidodinium Deflandre 1936b

Type: *Raphidodinium fucatum* Deflandre 1936b, p. 184–185, pl. 10, figs. 1-2, 7.

Raphidodinium? singulare (Firtion 1952) Stancliffe & Sarjeant 1996

Holotype: Firtion 1952, p. 160, pl. 8, figs. 1-2.

Micrhystridium singulare Firtion 1952.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995.

Williams & al. 1998 Age: Cenomanian.

Reticulosphaera Matsuoka 1983b

Type: *Reticulosphaera stellata* Matsuoka, 1983b, p. 116–117, pl. 4, fig. 8.

Reticulosphaera actinocoronata (Benedek 1972) Bujak & Matsuoka 1986

Holotype: Benedek 1972, p. 34, pl. 12, fig. 13; Benedek & Sarjeant 1981, fig. 10, no. 5, text-fig. 11; Fensome & al. 1993a, p. 879, fig. 1.

Cleistosphaeridium actinocoronatum Benedek 1972,

Areosphaeridium actinocoronatum (Benedek 1972) Stover & Evitt 1978.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle–Late Oligocene; Williams & al. 1993: Early Oligocene, Rupelian–Pleistocene (36–1,4 Ma).

Rhaetogonyaulax Sarjeant 1966b

Type: *Gonyaulax rhaetica* Sarjeant 1963b, p. 353, text-figs. 1-2 (left).

Rhaetogonyaulax cf. *rhaetica* (Sarjeant 1963) Loeblich Jr. & Loeblich III 1968

Holotype: Sarjeant 1963, p. 353, text-figs. 1-2 (left).

Gonyaulax rhaetica Sarjeant 1963.

Hungarian Age: Triassic, Norian, Rhaetian: Góczán in Haas & al. 2000.

Williams & al. 1998 Age: Carnian.

Rhombodinium Gocht 1955

Type: *Rhombodinium draco* Gocht 1955, p. 86, text-fig. 1c.

Rhombodinium draco Gocht 1955

Holotype: Gocht 1955, p. 86, text-fig. 1c.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 21, 22, 23, 24 zones: Rákosi 1993; Pannonian: Kedves 2000b, p. 69, pl. 5.4, fig. 1. as *Rhombodinium* cf. *draco* Gocht; Remark: Kedves 2000b, p. 69, pl. 5.4, fig. 1, illustrates *Mougeotia laetevirens* (A. Braun) Wittrock. Remark: Sütőné Szentai in this paper.

Williams & al. 1998 Age: Middle Oligocene; Williams & al. 1993: Middle Eocene Bartonian–Early Oligocene Rupelian (41–32 Ma).

Rhombodinium perforatum (Jan du Chêne & Châteauneuf 1975) Lentin & Williams 1977b

Holotype: Jan du Chêne & Châteauneuf 1975, p. 30–31, pl. 1, figs. 8–9.

Wetzeliella perforata Jan du Chêne & Châteauneuf 1975.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle Lutetian–Late Priabonian.

Rhombodinium porosum Bujak 1979

Holotype: Bujak 1979, p. 314–315, pl. 1, figs. 5–6; Bujak & al. 1980, pl. 20, fig. 8.

Hungarian Age: Eocene, NP 16, 17 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene; Williams & al. 1993: Middle Eocene, Bartonian–Late Eocene, Priabonian (40–39,4) as *Rhombodinium porosum complex*.

Rhynchodiniopsis Deflandre 1935

Type: *Rhynchodiniopsis aptiana* Deflandre 1935, p. 231, pl. 5, fig. 10; pl. 8, figs. 7–9.

Rhynchodiniopsis serrata (Cookson & Eisenack 1958) Jan du Chêne & al. 1985b

Holotype: Cookson & Eisenack 1958, p. 34, pl. 3, fig. 2; Jan du Chêne & al. 1986a, pl. 99, figs. 3–4.

Gonyaulax serrata Cookson & Eisenack 1958,

Gonyaulacysta serrata (Cookson & Eisenack 1958) Sarjeant 1969,

Hystrihogonyaulax serrata (Cookson & Eisenack 1958) Stover & Evitt 1978.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975.

Williams & al. 1998 Age: Late Jurassic–Neocomian.

Rigaudella Below 1982b

Type: *Hystriosphæridium aemulum* Deflandre 1939a, p. 187–189, pl. 11, fig. 1.

Rigaudella aemula (Deflandre 1939a) Below 1982b

Holotype: Deflandre 1939a, 187–189, pl. 11, fig. 1; Eisenack & Kjellström, 1972, p. 43, figure to left; Fensome & al. 1995, p. 1473, fig. 1, p. 1473, fig. 2.

Hystriosphæridium aemulum Deflandre 1939a,

Cannosphæropsis aemula (Deflandre 1939a) Deflandre 1947,

Adnatosphaeridium aemulum (Deflandre 1939a) Williams & Downie 1969.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 123, pl. 1, fig. 9. as *Adnatosphaeridium aemulum*.

Williams & al. 1998 Age: Oxfordian.

Romanodinium Baltes 1971

Type: *Romanodinium areolatum* Baltes 1971, p. 9, pl. 3. figs. 1–2. (not Plate 5.)

Romanodinium areolatum Baltes 1971

Type: Baltes 1971, p. 9, pl. 3. figs. 1-2. (not Plate 5.)

Hungarian Age: Late Miocene, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017; Sütő-Szentai in Szuromi–Korecz & al. 2004; Pannonian, *Spiniferites validus* zone: Sütőné Szentai 1982a, 1983a, 1983b, 1987, 1989, 2002; Sütő-Szentai 1985, 1988, 1994c; Sütő 1994a; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 2000; Sütő-Szentai 1994c; Sütőné Szentai in Magyar & al. 2004; Sütőné Szentai 1989 (lover part of the *Nematosphaeropsis bicorporis* zone).

Williams & al. 1998 Age: Early Pliocene.

Samlandia Eisenack 1954b

Type: *Samlandia chlamydophora* Eisenack 1954b, p. 76, pl. 11, fig. 12.

Samlandia chlamydophora Eisenack 1954b

Holotype: Eisenack 1954b, p. 76, pl. 11, fig. 12.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Oligocene; Williams & al. 1993: Early Eocene, Ypresian–Early Oligocene, Rupelian (51-31 Ma).

Scrippsiella Balech 1959 ex Loeblich III 1965

Type: General morphology and tabulation of *Scrippsiella* genus Fensome & al. 1993, p. 135; text. figures 136, A-B-C-D.

Scrippsiella crystallina Lewis

as tipe pared Jiménez-Moreno 2005

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Selenopemphix Benedek 1972

Type: *Selenopemphix nefroides* Benedek 1972, p. 47–48, pl. 11, fig. 13.

Selenopemphix brevispinosa Head & al. 1989c

Holotype: Head & al. 1989c, p. 494, pl. 7, fig. 5.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium*

aquaeductus Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle or early Late? Miocene.

Selenopemphix brevispinosa subsp. ***conspicua*** de Verteuil & Norris 1992

Holotype: de Verteuil & Norris 1992, p. 399–401, pl. 2, figs. 2-3.

Hungarian Age: Miocene, Badenian, PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: late Middle–Late Miocene.

Selenopemphix nephroides Benedek 1972

Holotype: Benedek 1972, p. 47–48, pl. 11, fig. 13; Benedek & Sarjeant 1981, fig. 8, nos. 5-6; Head 1993, fig. 20, no. 12.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle–Late Oligocene.

Selenopemphix quanta (Bradford 1975) Matsuoka 1985a

Holotype: Bradford 1975, p. 3067, 3069, fig. 5; Fensome & al. 1995, p. 1725, fig. 1.

Multispinula quanta Bradford 1975.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl).

Williams & al. 1998 Age: Holocene.

Selenopemphix selenoides Benedek 1972

Holotype: Benedek 1972, p. 48, pl. 11, fig. 15; Benedek & Sarjeant 1981, fig. 9, nos. 6-7; Head 1993, fig. 20, no. 1.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1998 Age: Middle–Late Oligocene.

Selenopemphix sp.

Hungarian Age: Miocene, Sarmatian, *Lejeunecysta–Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000, 2012; Baranyi & al. 2013; Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 2003.

Williams & al. 1993 Age: Middle Eocene Upper part of the Lutetian–Recent (43-0 Ma).

Senegalinium Jain & Millepied 1973

Type: *Senegalinium bicavatum* Jain & Millepied 1973, p. 23, pl. 1, figs. 1-3; Fensome & al. 1993a, p. 975, figs. 1-2.

Senegalinium macrocystum (Cookson & Eisenack 1960a) Stover & Evitt 1978

Holotype: Cookson & Eisenack 1960a, p. 3. pl. 1, fig. 7.

Deflandrea macrocysta Cookson & Eisenack 1960a,

Alterbia macrocysta (Cookson & Eisenack 1960a) Lentin & Williams 1976.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Miocene, Karpatian: Nagy 1992.

Williams & al. 1998 Age: Campanian; Williams & al. 1993: Late Campanian–Early Paleocene (77-66,5 Ma).

Senegalinium microgranulatum (Stanley 1965) Stover & Evitt 1978

Holotype: Stanley 1965, p. 219, pl. 19, figs. 4-5.

Deflandrea microgranulata Stanley 1965,

Alterbia microgranulata (Stanley 1965) Lentin & Williams 1976.

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage zone: Rákosi 1979, 1983; Eocene: as *Deflandrea microgranulata* Kedves 1992.

Williams & al. 1998 Age: Paleocene.

Seriliodinium Eaton 1996

Type: *Seriliodinium explicatum* Eaton 1996, pl. 1, figs. 1-2, text-figs. 2 A, B, 5 A B

Seriliodinium? imperfecta Soliman & Riding 2017

Holotype: Soliman & Riding 2017, plate VI. figs. 4–6; Hennersdorf Clay Pit, Záhorie Member of the Bzenec Formation, Upper Miocene, Pannonian, Vienna Basin, Austria.

Soliman & Riding 2017 Age: Pannonian.

Hungarian Age: Miocene, Pannonian, as *Nematosphaeropsis balcombiana*: *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1995a (*Zalaszentlászló* 1 bh. and *Nagygörbő* 1 bh. Pl. III, fig. 3.); Sütőné Szentai 2002, 2003; Sütő-Szentai 1994c, pl. VII fig. 5; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütő-Szentai 1994c, pl. VII, fig. 4; Sütőné Szentai, 2002, 1995a (*Zalaszentlászló* 1bh. Pl. III, fig. 2; Hm. 78/18, Öcs 28), 2011; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1994c; Sütőné Szentai 1995a (Hm. 78/18), 2011; Sütőné Szentai in Jámber & al. 1987 (as *Dinoflagellata* 90. form).

Spinidinium Cookson & Eisenack 1962b

Type: *Spinidinium styloniferum* Cookson & Eisenack 1962b, p. 489, pl. 1, figs. 1-2.

Spinidinium ornatum (May 1980) Lentin & Williams 1981

Holotype: May 1980, p. 77–78, pl. 9, figs. 3–4.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas and Wagreich 1996.

Williams & al. 1998 Age: Campanian–basal Maastrichtian.

Spinidinium sverdrupianum (Manum 1963) Lentin & Williams 1973

Holotype: Manum 1963, p. 59–60, pl. 2, figs. 12–13.

Deflandrea sverdrupiana Manum 1963,

Subtilisphaera sverdrupiana Jain & Millepied 1973,

Cooksoniella sverdrupiana Williams & Brideaux 1975.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: as *Spinidinium* cf. *sverdrupianum* Siegl-Farkas in Lantos & al. 1996.

Williams & al. 1998 Age: Cenomanian.

Spinidinium sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage zone, *Spinidinium* sp. Subzone: Siegl-Farkas 1995; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997.

Spiniferella Stover & Hardenbol 1994

Type: *Hystrichosphaera cornuta* Gerlach 1961, p. 180, pl. 27, figs. 10–12.

Spiniferella cornuta subsp. *cornuta* (Gerlach 1961) Stover & Hardenbol 1994

Holotype: Gerlach 1961, p. 180, pl. 27, figs. 10–12.

Hystrichosphaera cornuta Gerlach 1965,

Spiniferites cornutus (Gerlach 1961) var. *cornutus* Sarjeant 1970.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle Oligocene–Middle Miocene.

Spiniferites Mantell 1850 p. 191. emend. Sarjeant 1970

Type: *Spiniferites ramosus* (Ehrenberg 1838, pl. 1, fig. 1, 5) Loeblich Jr. & Loeblich III 1966.

Xanthidium ramosum Ehrenberg 1838, pl. 1, fig. 5. Holotype not designated. Lectotypus: Ehrenberg 1838, pl. 1 fig. 5. Designated by Lentin & Williams 1966, p. 32; Sarjeant 1970, p. 75.

Spiniferites balcanicus (Balteş 1971) Sütő-Szentai 1994c

Holotype: *Thalassiphora balcanica* Baltes, 1971, p. 6, pl. 3, figs. 3–7.

Types: Sütőné Szentai 1991, p. 189, pl. E, text-fig. a (two illustrations); Sütőné Szentai 2004, p. 100, pl. 1, figs. 2–3, pl. 2, figs. 4, 6, 7, 10–11, pl. 2, text-figs. 5, 8.

Thalassiphora balcanica Baltes 1971,

Disphaeria balcanica (Baltes 1971) Norvick 1976, p. 99. Combination not validly published Williams & al. 1998,

Subathua balcanica (Baltes 1971) Khanna & Singh 1980, p. 308, and 1981, p. 394. Combination not validly published Williams & al. 1998,

Spiniferites balcanicus (Baltes 1971) Sütő-Szentai 1994c Combination not validly published Williams & al. 1998.

Hungarian Age: Late Miocene, Pannonian: Upper part of the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1); Sütőné Szentai 2002; Sütő 1995b; Baranyi in Varga & al. 2017; Pannonian, *Spiniferites validus* zone: Sütőné Szentai 1982a, 1989, 1991, 2000, 2002, 2004, 2011; Sütő-Szentai 1988, 1994c; Sütő 1994a, 1995b; Kovács 1992; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone over the *Spiniferites validus* zone: Sütőné Szentai 1989; Sütő-Szentai 1994c; Pannonian, *Spiniferites tihanyensis* zones: Sütőné Szentai 1994a, 2000, 2004; Sütő-Szentai 1994c; Sütőné Szentai in Magyar & al. 2004; Sütőné Szentai 1989, Lower part of the *Nematosphaeropsis bicorporis* zone.

Williams & al. 1998 Age: Early Pliocene.

Spiniferites balcanicus (Balteş 1971) var. 77. Sütőné Szentai 2004

Type: Sütőné Szentai 2004, p. 101. pl. 2, fig. 9; Sütő 1994a, pl. 6, fig. 1 (two illustration)

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites validus* zone (V3 subzone): Sütő-Szentai 1994c.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970

Holotype: Rossignol 1964, p. 84–85, pl. 1, figs. 3, 7–8.

Hystrichosphaera bentorii Rossignol 1964, p. 84–85, pl. 1, figs. 3, 7–8.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii* main zone: Sütőné Szentai 1982, 1983, 1985, 1987, 1995a, 2005, 2012, 2016; Sütő-Szentai 1988; Sütő-Szentai in Jámbor & al. 1985; Sütőné Szentai in Jámbor & al. 1987; Nagy 1992. p. 237. Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 1995a (Nagygörbő 1); Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Nagygörbő 1, Hm. 78/18, Öcs 28), 2000, 2002; Sütő 1995b; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Hm. 78/18), 1995b, 2002; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zszt 3, Hm. 78/18), 1995b, 2000, 2002; Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1994c; Sütő 1995b.

Roumanian Age: Balteş 1971, as *Hystrichosphaera* cf. *bentorii* (Rossignol) pl. 3, fig. 8; Lower Pliocene, Pontian; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Pleistocene–Holocene.

Spiniferites bentorii subsp. *bentorii* (Rossignol 1964) Wall & Dale 1970

Autonym: Rossignol 1964, p. 84–85, pl. 1, figs. 3, 7–8.

Hungarian Age: Late Miocene, Pannonian: Nagy 1992; *Spiniferites bentorii oblongus* zone: Sütőné Szentai 2002, pl. III, fig. 6.

Williams & al. 1998 Age: Pleistocene–Holocene.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *budajenoensis* Sütőné Szentai 1986

Holotype: Sütőné Szentai 1986, p. 34–35, pl. 1, fig. 5; Sütőné Szentai 1983a, p. 18, Table I., p. 19, Table II, text-fig. 2.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló p. 271–272.

Williams & al. 1998: This name not validly published Sütőné Szentai 1983, p. 18.

Hungarian Age: Late Miocene, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 1983a, 1986, 1991, 1997, 2005, 2012, 2016; Sütő-Szentai 1988; Bakrač 2012; Baranyi & al. 2013; Sütőné Szentai & Bóna in Hámor T. 1992.

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 ***coniunctus*** Sütő-Szentai 1990 Holotype: Sütő-Szentai 1990, p. 846–847, pl. 5, fig. 1, text-fig. 78a.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló p. 272. Williams & al. 1998: This name not validly published.

Hungarian Age: Late Miocene, *Spiniferites bentorii oblongus* zone: Baranyi in Varga & al. 2017; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1990, 1994c; Sütőné Szentai 1989 pl. 4, fig. 4; 1991, 1995c, 2000, 2002; Bakrač 2005; Baranyi & al. 2013; Baranyi in Varga & al. 2017; Sütő-Szentai in Cziczzer & al. 2007; Kókay & al. 1991; Sütő-Szentai in Szuromi-Korecz & al. 2004.

Williams & al. 1998 Age: Late Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. ***granulatus*** Sütő-Szentai in Fuchs & Sütő-Szentai 1991

Holotype: Sütőné Szentai 1991, p. 24, pl. 9, fig. 3, text-fig. 2, no. 4;

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló p. 272. Williams & al. 1988: This name was not validly published in Sütő-Szentai 1988, p. 355.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Fuchs & Sütő-Szentai 1991, p. 33, figs. 1, 3; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a (Nagygörbő 1, Hm. 78/18), 2000, 2002, 2016; Fuchs & Sütő-Szentai 1991, p. 33, pl. 9, fig. 2. (two illustrations), p. 28, pl. 4. figs 1-4.

Roumanian Age: Late Miocene, Pannonian, *S. bentorii oblongus* zone: Sütő & Szegő 2008; Late Miocene, Sarmatian as *Spiniferites bentorii* (Rossignol 1964) Wall & Dale 1970 cf. *granulatus* Sütő & Szegő 2008.

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *matraensis* Sütő-Szentai 1988

Type: Sütőné Szentai 2016 p. 103, pl. 3, figs. 1-2.

Williams & al. 1998: this name not validly published.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus*, *S. bentorii oblongus* zones: Sütőné Szentai 1983a, 2016; Sütő-Szentai 1988; Sütő 1995b.

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *oblongus* Sütőné Szentai 1986

Holotype: Sütőné Szentai 1986, p. 36–37, pl. 2. fig. 3; Sütőné Szentai 1983a, p. 19, Table II, text-fig. 5, p. 18. Table I; Sütőné Szentai 1984, p. 72, table II, fig. 1; Sütő-Szentai 1988, pl. 2, fig. 4;

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 272.

Williams & al. 1998. This name not validly published Sütőné Szentai 1983, p. 18 and 1984, p. 72.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1983a, 1984, 1986, 1989, 1991 (text-fig. 6), 1995a (Zalaszentlászló 1, Nagygörbő 1, Hm. 78/18, Öcs 28), 1995c, 2000, 2002, 2003, 2005, 2010, 2011, 2012, 2016; Sütő-Szentai 1988, 1990, 1994c; Sütő 1995b; Bakrač 2005, 2012; Baranyi in Varga & al. 2017; Cziczér 2014; Fuchs & Sütő-Szentai 1991; Geary & al. 2000; Hámor G. 2001; Kovács 1992; Sütő-Szentai in Magyar & al. 1999a; Magyar & al. 1999b, 2007; Magyar 2009, 2010; Müller & al. 1999; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1983a, 1995a (Zalaszentlászló 1, Hm. 78/18, Öcs 28), 2000, 2002, 2011; Sütő-Szentai 1988; Sütőné Szentai & Selmeczi 2003; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1994c; Sütőné Szentai 1989, 1995a (Zszt 3), 2002, 2003 (Lower part of the zone); Baranyi in Varga & al. 2017; Sütő-Szentai in Cziczér & al. 2007; Sütő-Szentai in Szuromi-Korecz 2004; Pannonian, *Spiniferites validus* zone: Sütőné Szentai 1983a, 1989, 2011; Sütő-Szentai 1988, 1994c; Sütő 1994a; Sütő-Szentai in Szuromi-Korecz 2004; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1989, 1994a, 2002, 2004; Sütő-Szentai 1994c; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. tihanyensis* zone: Sütő-Szentai 1994c; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a.

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008 (Oarba de Mures/Marosorbó: *S. bentorii oblongus* with thin wall).

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *pannonicus* Sütőné Szentai 1986.

Holotype: Sütőné Szentai 1986, p. 35–36, pl. 2. fig. 1 (two illustration);

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 273.

Williams & al. 1998: This name was not validly published Sütőné Szentai 1983, p. 18, and 1984, p. 62.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii pannonicus* primary assemblage zone: Sütő-Szentai: 1988 pl. 1. fig. 9: no *Spiniferites* cf. *bentorii*, this is a thin wall *Spiniferites bentorii* subsp. *pannonicus*; Sütőné Szentai 2002, pl. 2 figs. 1-3, this is a thin wall *S. bentorii* subsp. *pannonicus*; Sütőné Szentai 2012, 2016; Baranyi & al. 2013; Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 1983a, 1984, 1986,

1991, 1995a, 1995c, 2002, 2005, 2010, 2012, 2016, pl. I, figs. 2-4.; Sütő-Szentai 1988, 1994c; Bakrač 2012; Cziczér 2014; Fuchs & Sütő-Szentai 1991; Hámor G. 2001; Hámor T. 1992; Sütő-Szentai in Magyar & al. 1999a; Magyar & al. 1999b, 2007; Magyar 2009, 2010; Müller & al. 1999; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988; Sütőné Szentai 1986, 1989, 1991, 1995a, 2000, 2002, 2003; Sütő: 1995b; Baranyi in Varga & al. 2017; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai & Selmeczi 2003; Sütő-Szentai 1988; Sütőné Szentai 2002, 2003, 2011; Sütő-Szentai in Szuromi-Korecz 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai: 1988; Sütőné Szentai 1989, 1991, 2003, 2011; Baranyi in Varga & al. 2017; Sütő-Szentai in Szuromi-Korecz & al. 2004.

Roumanian Age: Late Miocene, Pannonian. *Mecsekia ultima* zone: Sütő & Szegő 2008; Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *piriformis* Sütő-Szentai 1988

Type: Sütő-Szentai 2016, p. 103. pl. 4 figs. 1-3, nom. nud. Williams & al. 1998: Name not validly published.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus*–*Spiniferites bentorii oblongus* zones: Sütő-Szentai 1988; Sütőné Szentai 2016.

Williams & al. 1998 Age: Pannonian.

Spiniferites bentorii (Rossignol 1964) Wall & Dale 1970 subsp. *truncatus* (Rossignol 1964) Lentin & Williams 1973

Holotype: Rossignol 1964, p. 85, pl. 1, figs. 5-6.

Hystriochosphaera bentorii var. *truncata* Rossignol 1964.

Hungarian Age: Early Pannonian: *Spiniferites bentorii pannonicus* zone: Sütő-Szentai 1988.

Williams & al. 1998 Age: Quaternary.

Spiniferites cf. *bentorii* (Rossignol 1964) Wall & Dale 1970

Type: Sütőné Szentai 2016, pl. 5, fig. 1.

Hungarian Age: Miocene, Upper part of the Sarmatian *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 2012, 2016; Late Miocene, Pannonian: *Spiniferites bentorii pannonicus* primary assemblage zone, *Mecsekia ultima* zone, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2002, 2012, 2016; Sütőné Szentai in Jámor & al. 1987; Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1995a, 2002, 2003, 2012, 2016; Sütő-Szentai 1985, 1988; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2012, 2016; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 2003, 2012, 2016; Sütő-Szentai in Cziczér & al. 2007.

Spiniferites bulloideus (Deflandre & Cookson 1955) Sarjeant 1970

Holotype: Deflandre & Cookson 1955, p. 264, pl. 5, figs. 3-4.

Hystriosphera bulloidea Deflandre & Cookson 1955.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995, 1999a.

Williams & al. 1998 Age: Eocene–Miocene.

Spiniferites cornutus (Gerlach 1961) subsp. ***opisthophorus*** (Cookson & Eisenack 1974)
Lentin & Williams 1977b

Holotype: Cookson & Eisenack 1974, p. 62, pl. 23, fig. 1.

Spiniferites cornutus (Gerlach 1961) var. *opisthophorus* Cookson & Eisenack 1974.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Paleocene.

Spiniferites cruciformis Wall & Dale in Wall & al. 1973

Holotype: Wall & Dale 1973, p. 21–22, pl. 1, figs. 2-3.

Hungarian Age: Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis*
subzone: Sütő 1994a; Sütőné Szentai 2005; Sütőné Szentai 2011, pl. 9, fig. 3, pl. 10, figs.
2-4; Sütőné Szentai 2012, 2016; Baranyi & al. 2013.

Williams & al. 1998 Age: Early Holocene.

Spiniferites dentatus (Gocht 1959) Lentin & Williams 1973

Holotype: Gocht 1959, p. 75–76, pl. 4, fig. 11.

Hystriosphera dentata Gocht 1959.

Hungarian Age: Cretaceous, Santonian–Campanian, *Odontochitina operculata*
Assemblage Zone, *Isabelidium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Late Hauterivian.

Spiniferites furcatus (Ehrenberg 1838) Lentin & Williams 1973, p. 128.

Holotype: *Xanthidium furcatum* Ehrenberg 1838, pl. 1, figs. 12, 14.

Williams et al 1998: Holotype not designated. Combination not validly published.

Hystriosphera furcata (Ehrenberg 1838) Deflandre 1937 p. 61,

Ovum hispidum Eisenack 1931 subsp. *furcatum* (Ehrenberg 1838) Downie & Sarjeant 1965, p. 174.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous,
Late Campanian: Góczán 1962 (p. 190) as *Hystriosphera* cf. *furcata* (Ehrenberg) O.
Wetzel; Cretaceous, Early Maastrichtian: Siegl-Farkas 1986; Eocene: Rákosi 1973;
Miocene, Badenian: Nagy 1992.

Roumanian Age: Late Miocene, Sarmatian: (as *H.* cf. *furcata*) Sütő & Szegő 2008.

Williams & al. 1998 Age: Late Cretaceous.

Spiniferites galeiformis Sütő 1994a

Holotype: Sütő 1994a, p. 456, pl. 8, fig. 1;

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló
1997, p. 272.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites validus* zone, V3 section:
Sütőné Szentai 1989 pl. 4, figs. 1-2; 2000, 2011; Sütő 1994a, 1995b; Sütő-Szentai 1994c;
Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a, 1995b; Sütőné Szentai 2000, 2002;
Sütőné Szentai in Magyar & al. 2004.

Williams & al. 1998 Age: Late Miocene, Pannonian.

Spiniferites hyperacanthus (Deflandre & Cookson 1955) Cookson & Eisenack 1974
Holotype: Deflandre & Cookson 1955, p. 264–265, pl. 6, fig. 7.

Hystriosphraera hyperacantha Deflandre & Cookson 1955,

Achomosphaera hyperacantha (Deflandre & Cookson 1955) Davey & Williams 1969.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1998 Age: Miocene.

Spiniferites maisensis Sütő 1994a

Holotype: Sütő 1994a, p. 456–457, pl. 1, fig. 1, text-figs. A. 1a-b.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 272.

Hungarian Age: Late Miocene, Pannonian, *S. bentorii oblongus* zone: Baranyi in Varga & al. 2017; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017; Pannonian, *Spiniferites validus* zone: Sütő 1994a (Majs 2, V2 section); Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a (Majs 2); Late Miocene, Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Majs 1).

Williams & al. 1998 Age: Late Miocene, Pannonian.

Spiniferites membranaceus (Rossignol 1964) Sarjeant 1970

Holotype: Rossignol 1964, p. 86, pl. 1, figs. 4, 9-10.

Hystriosphraera membranacea Rossignol 1964,

Hystriosphraera furcata (Ehrenberg 1838) Deflandre 1937 var. *membranacea* Rossignol 1964,

Hystriosphraera ramosa (Ehrenberg 1838) Deflandre 1937 var. *membranacea* (Rossignol 1964) Davey & Williams 1966.

Hungarian Age: Cretaceous, Campanian Góczán 1962; Siegl-Farkas 1995; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993; Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 2003; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 2003; Sütő-Szentai in Cziczér & al. 2007.

Williams & al. 1998 Age: Pleistocene–Holocene.

Spiniferites mirabilis (Rossignol 1964) Sarjeant 1970

Holotype: Rossignol, 1964 p. 86–87, pl. 2, figs. 1-2.

Hystriosphraera mirabilis Rossignol 1964.

Hungarian Age: Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Pleistocene; Williams & al. 1993: Late Oligocene Chattian–Recent, (27-0 Ma).

Spiniferites multibrevis (Davey & Williams 1966a) Below 1982c

Holotype: Davey & Williams 1966a, p. 35–36, pl. 4, fig. 6.

Hystriosphraera ramosa var. *multibrevis* Davey & Williams 1966a,

Spiniferites ramosus var. *multibrevis* (Davey & Williams 1966a) Davey & Verdier 1971,

Spiniferites ramosus subsp. *multibrevis* (Davey & Williams 1966a) Lentin & Williams 1973.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985.
Williams & al. 1998 Age: Hauterivian.

Spiniferites nodosus (Wall 1967) Sarjeant 1970

Holotype: Wall 1967, p. 101, pl. 14, figs. 7-9.

Hystriosphera nodosa Wall 1967.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982b; Sütő-Szentai 1988; Sütőné Szentai in Chikán 1991.

Roumanian Age: Late Miocene, Pannoniai: *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Quaternary.

Spiniferites nortonensis Matsuoka & Bujak 1988

Holotype: Matsuoka & Bujak 1988, p. 79–80, pl. 13, figs. 1 a-b, text-fig. 19.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2016, p. 94, Table 2 part one, and p. 104, pl. 5, fig. 1, as *Spiniferites cf. nortonensis*.

Williams Age: Late Miocene.

Spiniferites ovatus Matsuoka 1983b

Holotype: Matsuoka 1983b, p. 134–135, pl. 3, figs. 1a-c.

Hungarian Age: Late Miocene, Pannonian: *Pontiadinium pecsvaradensis*, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1994c.

Williams & al. 1998 Age: Late Miocene.

Spiniferites pachydermus (Rossignol 1964) Reid 1974

Holotype: Rossignol 1964, p. 86, pl. 1, figs. 1-2.

Hystriosphera furcata (Ehrenberg 1838) Deflandre 1937 var. *pachyderma* Rossignol 1964,

Hystriosphera ramosa (Ehrenberg 1838) Deflandre 1937 var. *pachyderma* Rossignol 1964) Harland & Downie 1969,

Spiniferites ramosus (Ehrenberg 1838) Mantell 1854 var. *pachydermus* (Rossignol 1964) Lentin & Williams 1973.

Hungarian Age: Late Miocene, Pannonien, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai: 1994c; Sütőné Szentai 2000, 2002.

Williams & al. 1998 Age: Pleistocene–Holocene.

Spiniferites paradoxus (Cookson & Eisenack 1968) Sarjeant 1970

Holotype: Cookson & Eisenack 1968, p. 114, text-figs. 2 G, 3.

Hystriosphera paradoxa Cookson & Eisenack 1968

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Baranyi in Varga & al. 2017; Pannonian: *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) Sütőné Szentai 1982b, pl. 7. fig.1; 1983, 1984, 1986, 1987, 1991, 1995a (Zalaszentlászló 1, Zszt 3, Hm. 78/18), 2000, 2002, 2003, 2005, 2011, 2012, 2016; Sütő-Szentai 1985, 1988, 1994c; Sütő 1995b; Bakrač 2005, 2012;

Baranyi & al. 2013; Baranyi in Varga & al. 2017; Sütő-Szentai in Cziczter & al. 2007; Cziczter 2014; Geary & al. 2000; Kókay & al. 1991; Juhász 2006; Kovács 1992; Sütő-Szentai in Magyar & al. 1999a; Magyar et al. 1999b, 2007; Magyar 2009, 2010; Müller & al. 1991; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites validus* zone: Sütőné Szentai in Jámbor & al. 1987; Sütőné Szentai 1987.

Williams & al. 1998 Age: Senonian.

Spiniferites cf. *paradoxus* (Cookson & Eisenack 1968)

Type: Sütő-Szentai in Cziczter & al. 2007, pl. 2, fig. g.

Hungarian Age: Late Miocene, Pannonian, Lower part of the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai in Cziczter & al 2007; Sütőné Szentai 2000, 2003.

Spiniferites pseudofurcatus (Klumpp 1953) Sarjeant 1970

Holotype: Klumpp 1953, p. 388, pl. 16, figs. 12, 14; Sarjeant 1981, pl. 3, figs. 1-2, text-fig. 2; Fensome & al. 1995, p. 1709, figs. 1-2.

Hystrichokibotium pseudofurcatum Klumpp 1953,

Hystrichosphaera pseudofurcata (Klumpp 1953) Gocht 1969.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16, 20 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Eocene; Williams & al. 1993: Late Cretaceous, Maastrichtian–Late Miocene, Serravallian (67-11 Ma).

Spiniferites ramosus (Ehrenberg 1838) Davey & Williams 1966a

Holotype not designated. Lectotype: Ehrenberg, 1838, pl. 1. fig. 5. Designated by Davey & Williams 1966a, p. 32.

Xanthidium ramosum Ehrenberg 1838,

Ovum hispidum subsp. *ramosum* (Ehrenberg 1838) Eisenack 1931,

Hystrichosphaera ramosa (Ehrenberg 1838) Deflandre 1937,

Bion ramosum (Ehrenberg 1838) Eisenack 1938,

Spiniferites ramosus (Ehrenberg 1838) Sarjeant 1970.

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962 (p. 190) as *Hystrichosphaera ramosa* (Ehrenberg) O. Wetzel; Cretaceous, Campanian: Siegl-Farkas 1995; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidium microarmum* Subzone: Siegl-Farkas 1999a; Eocene: Rákosi 1973, pl. 3, fig. 3; Eocene: Kedves 1992; Eocene, Darvástó Formation–Szóc Formation: Rákosi 1991; Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. A Assemblage zone: Rákosi 1979, 1983; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993; Miocene, Badenian: Nagy & Bodor 1982, Table 1, p. 123, as *Hystrichosphaera ramosa*; Sütőné Szentai in Chikán 1991; Late Miocene, Pannonian: Kedves & al. 2000; Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Sütőné Szentai 2016 (Pusztázámor 2 bh.); Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt 3, Hm. 78/18); Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. paradoxus* zone: Sütőné Szentai 1995a (Zalaszentlászló 1);

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Late Cretaceous.

Spiniferites ramosus subsp. ***brevifurcatus*** (Cookson & Eisenack 1974) Lentin & Williams 1977b

Holotype: Cookson & Eisenack 1974, p. 57, pl. 21, fig. 6.

Spiniferites ramosus var. *brevifurcatus* Cookson & Eisenack 1974.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995.

Williams & al. 1998 Age: Turonian–Senonian.

Spiniferites ramosus subsp. ***granomembranaceus*** (Davey & Williams 1966a) Lentin & Williams 1973

Holotype: Davey & Williams 1966a, p. 37–38, pl. 4, fig. 4; Bujak & al. 1980, pl. 4, figs. 10–11.

Hystrichosphaera ramosa var. *granomembranacea* Davey & Williams 1966a.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995.

Williams & al. 1998 Age: Early Eocene.

Spiniferites ramosus subsp. ***granosus*** (Davey & Williams 1966a) Lentin & Williams 1973

Holotype: Davey & Williams 1966a, p. 35, pl. 4, fig. 9.

Hystrichosphaera ramosa var. *granosa* Davey & Williams 1966a,

Spiniferites ramosus var. *granosus* (Davey & Williams 1966a) Corradini 1973.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1994, 1995; Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1998 Age: Early Eocene.

Spiniferites ramosus var. ***ramosus*** (Ehrenberg 1838) Davey & Williams 1966a

Lectotype: Ehrenberg 1838, pl. 1, fig. 5.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997; Kedves 2000a, as *Hystrichosphaera ramosa* var. *ramosa* (Ehrenberg 1838) p. 26–27, pl. 2.4, figs. 2–3; Eocene: Rákosi in Michoux & al. 1985; Pannonian: Kedves & al. 2000, p. 94–95, pl. 6.9, figs. 12–13.

Williams & al. 1998 Age: Late Cretaceous.

Spiniferites sagittarius Sütő-Szentai 1990

Holotype: Sütő-Szentai 1990, p. 848, 851, pl. 2, figs. 3–4; text-fig. 76a;

Williams & al. 1998: Name not validly published: lodgment of holotype not specified.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997 p. 273.

Hungarian Age: Pannonian, *Spiniferites bentorii oblongus* zone: Baranyi in Varga & al. 2017 as cf. *S. sagittarius*; Pannonian: *Spiniferites validus* zone: Sütőné Szentai 1986, 2000, Sütő-Szentai 1990; Sütőné Szentai 1989 pl. 4, fig. 3; Sütő-Szentai 1988; Sütő 1995b.

Williams & al. 1998 Age: Late Pannonian.

Siniferites scabrosus (Clarke & Verdier 1967) Lentin & Williams 1975

Holotype: Clarke & Verdier 1967, p. 49–50, pl. 9, fig. 10.

Hystriochosphaera scabrosa Clarke & Verdier 1967.

Hungarian Age: Cretaceous, Campanian: Sieglné Farkas 1986; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidium microarmum* Subzone: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Cenomanian–Santonian.

Spiniferites splendidus Harland 1979b

Holotype: Harland 1979b, p. 537, pl. 3, figs. 1-2.

Hungarian Age: Cretaceous: Kedves 2000a, p. 26, pl. 2,4, figs. 6-7.

Williams & al. 1998 Age: Late Miocene–Early Pliocene; Williams & al. 1993: Late Miocene, Messinian–Early Pliocene (7.0-5,2 Ma).

Spiniferites supparus (Drugg 1967) Sarjeant 1970

Holotype: Drugg 1967, p. 24, pl. 4, fig. 5.

Hystriochosphaera suppara Drugg 1967.

Roumanian Age: Miocene, Sarmatian: (as *H. cf. suppara*) Sütő & Szegő 2008.

Williams & al. 1998 Age: as *S. supparus*: Maastrichtian–Danian.

Spiniferites tengelicensis Sütőné Szentai 1982a

Holotype: Sütőné Szentai 1982a, p. 208–209, pl. 1. fig. 7; text-fig. 1.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 273.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a (as *Spiniferites bentorii* zone); Sütőné Szentai 1982a, 1987; Sütő-Szentai 1985, 1988.

Williams & al. 1998 Age: Pannonian.

Spiniferites tihanyensis Sütő-Szentai 1994c

Holotype: Sütő-Szentai 1994c p. 350, pl. 3, fig. 1 (two illustrations), text-figs. 5a, (two illustrations).

Williams & al. 1998: Name not validly published Sütő-Szentai 1988, p. 350. Type material is deposited in the Natural Historical Collection at Komló.

Hungarian Age: Late Miocene, Pannonian: Upper part of the *Spiniferites validus* zone: Sütő-Szentai 1988; Sütőné Szentai 1991, 2011; Pannonian, *Spiniferites tihanyensis* zone (or *Galeacysta etrusca* zone, *Spiniferites tihanyensis* subzone): Sütő 1994a; Sütő-Szentai 1994c; Sütőné Szentai 1995c, 2000, 2002, 2005, 2012, 2016; Baranyi & al. 2013; Cziczser 2014; Sütőné Szentai in Magyar & al. 2004.

Williams & al. 1998 Age: Pannonian.

Spiniferites validus Sütőné Szentai 1982b

Holotype: Sütőné Szentai 1982b, p. 316–318, pl. 6, figs. 1-2.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 273.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017; Late Miocene, Pannonien, *Spiniferites validus* zone: Sütőné Szentai 1982a, 1983a, 1983b, 1984, 1986, 1987, 1989, 1991, 1995c, 1997, 2000, 2002, 2005, 2012, 2016; Sütő-Szentai 1985, 1990, 1994c; Sütő 1994a, 1995b; Bakrač 2012; Baranyi & al. 2013; Bodor 1983; Sütőné Szentai in Chikán 1991; Cziczzer 2014; Geary 2000; Sütőné Szentai & Bóna in Hámor T. 1992; Sütő-Szentai in Jámor et al. 1985; Sütőné Szentai in Jámor et al. 1987; Juhász 2006; Kovács 1992; Sütő-Szentai in Magyar & al. 1999a; Sütőné Szentai in Magyar et al. 2004; Magyar et al. 1999b, 2007; Magyar 2009, 2010; Müller & al. 1999; Nagyné Bodor & Szuromi-Korecz 1989; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, Lower part of the *Spiniferites tihanyensis* zone: Sütő 1995b.

Williams & al. 1998 Age: Late Miocene, Pannonian.

cf. *Spiniferites validus* Sütőné Szentai 1982b

Hungarian Age: Late Miocene, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017.

Spiniferites validus subsp. *robustus* Sütőné Szentai 1983a

Type: Sütő-Szentai 1983a, p. 19, pl. 2, text-fig. 8. Sütő-Szentai 1985, p. 532–533, Taf. 82, fig. 2. *Spiniferites validus* veridicte form. Williams & al. 1998. p.582. Name not valyldly published. No description.

Hungarian Age: Pannonian, *Spiniferites validus* zone, Sütőné Szentai 1983a.

Spiniferites virgulaeformis Sütő 1994a

Holotype: Sütő 1994a, p. 457, pl. 2. figs. a-c. text-figs. 7, 2a-b.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 273.

Hungarian Age: Pannonian, *Galeacysta etrusca* zone, *S. virgulaeformis* subzone: Sütő 1994a, 1995b; Sütő-Szentai 1994c; Sütőné Szentai 1998, 2005, 2011, 2012, 2016.

Williams & al. 1998 Age: Late Miocene, Pannonian.

Spiniferites cf. *virgulaeformis* Sütő 1994a

Hungarian Age: Late Miocene, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al 2017.

Spiniferites sp.

Hungarian Age: Cretaceous, Youngen part of the Santonian Siegl-Farkas 1999a; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone, *Pyxidinopsis bakonyensis* Assemblage Zone: Siegl-Farkas 1995, 1997; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone Jiménez-Moreno 2005 (Tengelic

2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Sarmatian: Sütőné Szentai 2000; Pannonian, *Spiniferites bentorii* main zone: Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a (Nagygörbő 1, Hm. 78/18, Öcs 28), 2000, 2003, 211 (Egerág 7); Sütő 1995b; Baranyi in Varga & al. 2017 (in *S. bentorii oblongus* zone); Sütőné Szentai in Chikán 1991; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Hm. 78/18), 2000, 2003; Baranyi in Varga & al. 2017; *Galeacysta etrusca* zone: Sütő 1994a (Villány 7), 2011; Pannonian: Nagyné Bodor 1989.

Roumanian Age: Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008.

Spiniferites sp. (with membran)

Type: Sütőné Szentai 1995a, Zalaszentlászló 1 bh. P. 48–49, pl. 1, fig. 1. in *Spiniferites bentorii oblongus* zone.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1, Nagygörbő 1, Hm. 78/18, Öcs 28), 2002, 2003; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai & Selmecezi 2003; Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1, Öcs 28); Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zszt-3, Hm. 78/18), 2002, 2003; Bakrač 2005; Sütő-Szentai in Cziczér & al. 2007 (as *Dinoflagellate form 25. Spiniferites paradoxus* lateral view); Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a.

Sumatradinium Lentin & Williams 1976

Type: *Xenicodinium hispidum* Drugg 1970a, p. 120–121, fig. 12.

Sumatradinium druggii Lentin & al. 1994

Holotype: Lentin & al. 1994, p. 574–575, pl. 1, fig. 4.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Burdigalian–Pliocene?; Williams & al. 1993: Late Oligocene Chattian–Late Miocene Messinian (30–7 Ma).

Sumatradinium soucouyantiae de Verteuil & Norris 1992

Holotype: de Verteuil & Norris 1992, p. 402, 404, 406, pl. 8, figs. 1–2.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (as cf. *soucouyantiae*, Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (as cf. *soucouyantiae*, Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Early–Late Miocene.

Surculosphaeridium Davey & al. 1966

Type: *Hystriospheridium cribratubiferum* Sarjeant 1960a, p. 137, pl. 6, fig. 2.

Surculosphaeridium cribrotubiferum (Sarjeant 1960a) Davey & al. 1966

Holotype: Sarjeant 1960a, p. 137, pl. 6, fig. 2, text-fig. 1.

Hystriospheraidium cribrotubiferum Sarjeant 1960a.

Hungarian Age: Eocene, redeposited: Kedves 1992.

Williams & al. 1998 Age: Early Oxfordian.

Surculosphaeridium? phoenix (Duxbury 1980) Lentin & Williams 1981 subsp. *stella* (W. Wetzel 1952) Sarjeant 1984c

Holotype: W. Wetzel 1952, pl. A, fig. 4.

Hystriospheraidium oligacanthum subsp. *stella* W. Wetzel 1952,

Baltisphaeridium oligacanthum (W. Wetzel 1952) Downie & Sarjeant 1965 subsp. *stella* (W. Wetzel 1952) Downie & Sarjeant 1965,

Cleistosphaeridium oligacanthum (W. Wetzel 1952) subsp. *stella* Lentin & Williams 1973.

Hungarian Age: Pannonian: Nagy 1969 in Hidas 53 borehole 298–299, 1 m, pl. 5, fig. 6. as *Baltisphaeridium oligacanthum* Nagy 1969, holotype; Pannonian: Kedves in Varga & al. 2002 as redeposited.

Williams & al. 1998 Age: Paleocene.

Systematophora Klement 1960

Type: *Systematophora areolata* Klement 1960, p. 62–65, pl. 9, figs. 1–3.

Systematophora diversispinosa (Davey & al. 1966) Islam 1993

Holotype: Davey & al. 1966, p. 167, pl. 10, fig. 7.

Cleistosphaeridium diversispinosum Davey & al. 1966.

Hungarian Age: Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Eocene.

Systematophora placacantha (Deflandre & Cookson 1955) Davey & al. 1969

Holotype: Deflandre & Cookson 1955, p. 276–277, pl. 9, figs. 1–2.

Hystriospheraidium placacanthum Deflandre & Cookson 1955,

Baltisphaeridium placacanthum (Deflandre & Cookson 1955) Downie & Sarjeant 1965,

Cleistosphaeridium placacanthum (Deflandre & Cookson 1955) Sarjeant 1984,

Impletosphaeridium placacanthum (Deflandre & Cookson 1955) Morgenroth 1966,

Systematophora placacantha (Deflandre & Cookson 1955) Davey & al. 1969.

Hungarian Age: Eocene, NP 16, 17, 18, 19 zones: Rákosi 1993; Eocene, Middle Eocene: as *S. cf. placacantha*: Rákosi in Michoux & al. 1985; Oligocene, NP 24, 25 zones: Rákosi 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (as *Cleistosphaeridium placacanthum* Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (as *Cleistosphaeridium placacanthum* Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (as *Cleistosphaeridium placacanthum* Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-Moreno 2005 (as *Cleistosphaeridium placacanthum* Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Miocene; Williams & al. 1993: Eocene Lutetian–Late Miocene Serravallian (45–11 Ma).

Tanyosphaeridium Davey & Williams 1966b

Type: *Tanyosphaeridium variecalamum* Davey & Williams 1966b, p.98–99, pl. 6, fig. 7; text-fig. 20.

Tanyosphaeridium regulare Davey & Williams 1966b

Holotype: Davey & Williams 1966b, p. 99–100, pl. 3, fig. 4; Bujak & al. 1980, pl. 8, figs. 3, 6.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995 as *T. cf. regulare*.

Williams & al. 1998 Age: Early Eocene.

Tanyosphaeridium variecalamum Davey & Williams 1966

Holotype: Davey & Williams 1966, p. 98–99, pl. 6, fig. 7, text-fig. 20.

Hungarian Age: Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone: Siegl-Farkas & Wagreich 1996.

Williams & al. 1998 Age: Cenomanian; Williams & al. 1993: Late Valanginian–Early Maastrichtian (123–72 Ma).

Tanyosphaeridium xanthiopyxides (O. Wetzel 1933b ex Deflandre 1937b) Stover & Evitt 1978

Holotype: O. Wetzel 1933b, p. 44–45, pl. 4, fig. 25; Morgenroth 1968, pl. 48, fig. 5; Sarjeant 1985b, pl. 3, figs. 2–3.

Hystrichosphaera xanthiopyxides O. Wetzel 1933b

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008 (as *H. cf. xanthiopyxides*).

Williams & al. 1998 Age: Late Cretaceous.

Tanyosphaeridium sp.

Hungarian Age: Cretaceous, Youngen part of the Santonian: Siegl-Farkas 1999a, Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas 1999a.

Tectatodinium Wall 1967

Type: *Tectatodinium pellitum* Wall 1967, p.113, pl. 16, fig. 12

Tectatodinium pellitum Wall 1967

Holotype: Wall 1967, p. 113, pl. 16, fig. 12; Head 1994a, pl.1, figs. 1–9.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Sarmatian PD5 zone: Jiménez-

Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Late Miocene, Pannonian: Nagy & Planderova 1985; Pannonian, Upper part of the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1990; Sütőné Szentai 2000, 2002, 2011; Pannonian, *Spiniferites validus* zone (abundant): Sütőné Szentai 1982a, 1989, 2000, 2002, 2011 (Bosta 1, Egerág 7); Sütő-Szentai 1994c, pl. 5, fig. 1; 1988, 1990; Sütőné Szentai in Jámor & al. 1987; Sütő 1994a (as *Spongiosphaeridium spongianum* nom. nud.); Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. validus* zone: Sütőné Szentai 1982a, pl.5, fig. 2; Sütőné Szentai 2002; Sütő-Szentai 1988, 1994c; Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a (as *Spongiosphaeridium spongianum* nom. nud.); Sütő-Szentai 1994c; Sütőné Szentai 2000, 2002; Sütő-Szentai in Lennert & al. 1999; Sütőné Szentai in Magyar & al. 2004; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *S. tihanyensis* zone: Sütő-Szentai 1994c; Sütőné Szentai 2002; Pannonian, *Galeacysta etrusca* zone: Sütő-Szentai as *Nematosphaeropsis bicorporis* zone 1989, pl. 7. figs. 6-7; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone Sütő 1994a; Sütő-Szentai 1994c; Sütőné Szentai 2011; *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone Sütőné Szentai 2011, Bosta 1 bh. pl. 8, fig. 3; Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over the *G. etrusca* zone: Sütő-Szentai 1994c; Sütőné Szentai 2011 (Egerág 7).

Roumanian Age: Late Miocene, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008;

Williams & al. 1998 Age: Miocene–Holocene.

Tectatodinium sp. form A, Rákosi L. 1979

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage zone: Rákosi 1979, 1983; Eocene, *Retisphaera microreticulata*–*Tytthodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983.

Tectatodinium sp.

Hungarian Age: Late Miocene, Pannonian: Nagy 1992; Nagy & Planderova 1985 (Naszály 1 bh. TVG 26 bh.); Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017.

Tenua Eisenack 1958a

Type: *Tenua hystrix* Eisenack 1958, p. 410, pl. 23, fig. 1.

Tenua hystrix Eisenack 1958a

Holotype: Eisenack 1958a, p. 410, pl. 23, fig. 1.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962; Cretaceous, Aptian–Albian: Góczán in Fülöp 1966; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian: Siegl-Farkas 1995.

Williams & al. 1998 Age: Aptian.

Tenua sp.

Hungarian Age: Early Jurassic, Late Sinemurian: Némedi Varga & Bóna 1972; Bóna 1983, 1984.

Thalassiphora Eisenack & Gocht 1960

Type: *Pterospermopsis pelagica* Eisenack 1954b, p.71, pl. 12, fig. 17.

Thalassiphora delicata Williams & Downie 1966c

Holotype: Williams & Downie 1966c, p. 235, pl. 26, fig. 8; Bujak & al. 1980, pl. 10, fig. 8.

Thalassiphora delicata Williams & Downie 1966c,

Disphaeria delicata (Williams & Downie 1966c) Norvick 1973; Lentin & Williams (1977b, p. 54) retained this species in *Thalassiphora*.

Hungarian Age: Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage zone: Rákosi 1979, 1983; Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Early Eocene.

Thalassiphora pelagica (Eisenack 1954b) Eisenack & Gocht 1960

Holotype: Eisenack 1954b, p. 71, pl. 12, fig. 17.

Pterospermopsis pelagica Eisenack 1954b,

Disphaeria pelagica (Eisenack 1954b) Norvick 1973; Lentin & Williams (1977b, p. 54) retained this species in *Thalassiphora*.

Hungarian Age: Eocene, NP 15, 16, 17, 18, 19, 20 zones: Rákosi 1979, 1983, 1993; Rákosi & Snopkova 1993; Oligocene: Rákosi 1973, pl. 3, fig. 1; Oligocene, NP 21-22-23-24-25 zones: Rákosi 1993; Rákosi & Snopkova 1993; Miocene, Karpatian: Nagy 1992; Badenian: Nagy 1992; Sarmatian: Nagy 1969, p. 306, pl. 9, fig. 1; Nagy 1992; Sarmatian, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütőné Szentai 2012; Baranyi & al. 2013; Late Miocene, Pannonian: Nagy 1969, p. 499, fig. 56/a.

Williams & al. 1998 Age: Late Eocene–Early Oligocene; Williams & al. 1993: Late Maastrichtian–Late Oligocene Chattian (70-27 Ma).

Thalassiphora velata (Deflandre & Cookson 1955) Eisenack & Gocht 1960

Holotype: Deflandre & Cookson 1955, p. 291, pl. 8, fig. 8.

Pterocystidiopsis velata Deflandre & Cookson 1955,

Disphaeria velata (Deflandre & Cookson 1955) Yun Hyesu 1981; Brinkhuis & Biffi (1993, p. 179) retained this species in *Thalassiphora*.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, Tokod Formation: Rákosi 1993; Eocene, NP 16 zone: Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Early Tertiary.

Thalassiphora sp.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Oligocene, Egerian: Nagy 1992; Miocene, Karpatian: Nagy 1992; Sarmatian: Nagy & Bodor 1982, p. 124.

cf. *Thalassiphora* sp.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995.

Tityrosphaeridium Sarjeant 1981

Type: *Hystriosphæridium cantharellus* Brosius 1963, p. 40–41, pl. 6, fig. 1.

Tityrosphaeridium cantharellus (Brosius 1963) Sarjeant 1981

Holotype: Brosius 1963, p. 40–41, pl. 6, fig. 1; Fensome & al. 1993a, p. 1021, fig. 1.

Hystriosphæridium cantharellus Brosius 1963,

Cordosphaeridium cantharellus (Brosius 1963) Gocht 1969.

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, Egerian: Nagy 1992; Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Late Oligocene.

Trichodinium Eisenack & Cookson 1960

Type: *Trichodinium pellitum* Eisenack & Cookson 1960, p. 5, pl. 2, fig. 4.

Trichodinium castanea (Deflandre 1935) ex Clarke & Verdier 1967

Holotype: Deflandre 1935, p. 229, pl. 6, fig. 8; Deflandre 1936b, pl. 6, fig. 1; Jan du Chêne & al. 1986a, pl. 122, figs. 9-10.

Palaeoperidinium castanea Deflandre 1935.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995; Cretaceous, Campanian: Siegl-Farkas 1999a as cf. *Trichodinium castanea*.

Williams & al. 1998 Age: Senonian? (erratic); Williams & al. 1993: Early Valanginian–Late Campanian (128-75 Ma).

Trigonopyxidia Cookson & Eisenack 1961a

Type: *Trigonopyxis ginella* Cookson & Eisenack 1960a, p. 11, pl. 3, fig. 19.

Trigonopyxidia sp.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995 as *Trigonopyxis* sp.

Trinovantedinium Reid 1977

Type: *Trinovantedinium capitatum* Reid 1977, p.437-438, pl. 1, figs. 6-8.

Trinovantedinium harpagonium de Verteuil & Norris 1992

Holotype: de Verteuil & Norris 1992, p.414–415, pl. 4, figs. 1-3.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Miocene.

Trinovantedinium? *xylochoporum* de Verteuil & Norris 1992

Holotype: de Verteuil & Norris 1992, p. 416, 418, 420, pl. 6, fig. 1.

Hungarian Age: Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Miocene.

Trithyrodinium Drugg 1967

Type: *Trithyrodinium evittii* Drugg 1967, p. 20, pl. 3, fig. 2.

Trithyrodinium evittii Drugg 1967

Holotype: Drugg 1967, p. 20, pl. 3, fig. 2.

Hungarian Age: Cretaceous, Late Santoni–Early Campani, *Odontochitina operculata* Assemblage Zone, *Apteodinium deflandrei* Subzone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1997 as *T. cf. evitti*.

Williams & al. 1998 Age: Danian.

Trithyrodinium sp.

Hungarian Age: Cretaceous, Late Santoni–Early Campani, *Odontochitina operculata* Assemblage Zone, *Apteodinium deflandrei* Subzone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1997; Cretaceous, Santonian: Siegl-Farkas 1999a as cf.

Trithyrodinium sp.

Williams & al. 1993: as *Trithyrodinium* spp. Cretaceous Albian–Paleocene (98-59 Ma).

Tuberculodinium Wall 1967

Type: *Pterospermopsis vancampoae* Rossignol 1962, p. 134, pl. 2, fig. 1.

Tuberculodinium vancampoae (Rossignol 1962) Wall 1967

Holotype: Rossignol 1962, p. 134, pl. 2, fig. 1.

Pterospermopsis Van Campoae Rossignol 1962.

Pyrophacus vancampoae (Rossignol 1962) Wall & Dale 1971; Head (1966b, p. 1232) retained this species in *Tuberculodinium*.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006 Miocene, Badenian PD3 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Pleistocene; Williams & al. 1993: Late Oligocene Chattian–Recent (27-0 Ma).

Turbiosphaera Archangelsky 1969a

Type: *Cordosphaeridium filosum* Wilson 1967a, p. 66, figs. 2b, 32.

Turbiosphaera filosa (Wilson 1967a) Archangelsky 1969

Holotype: Wilson 1967a, p. 66, figs. 2b, 32.

Cordosphaeridium filosum Wilson 1967a.

Hungarian Age: Middle Eocene, as *Turbiosphaera cf. filosa*: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Paleocene–Oligocene.

Umbriadinium Bucefalo Palliani & Riding 1997

Type: *Umbriadinium mediterraneense* Bucefalo Palliani & Riding 1997, p. 199–201, pl. 1, fig. 1.

Umbriadinium mediterraneense Bucefalo Palliani & Riding 1997

Holotype: Bucefalo Palliani & Riding 1997, p. 199–201, pl. 1, fig. 1.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 1: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian–Early Toarcian.

Unipontidinium Wrenn 1988

Type: *Nematosphaeropsis aquaeductum* Piasecki 1980, p. 70, pl. 1, figs. 1-3.

Unipontidinium aquaeductum (Piasecki 1980) Wrenn 1988

Holotype: Piasecki 1980, p. 70, pl. 1, figs. 1-3.

Nematosphaeropsis aquaeductum Piasecki 1980,

Impagidinium aquaeductum (Piasecki 1980) Lentin & Williams 1985.

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribroperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.);

Unipontidinium aquaeductus Interval Biozone (Uaq) Jiménez-Moreno & al. 2006.

Williams & al. 1998 Age: Middle Barremian.

Valvaeodinium Morgenroth 1970

Type: *Valvaeodinium armatum* Morgenroth 1970, p. 350–351, pl. 11, figs. 1-2.

Valvaeodinium armatum Morgenroth 1970

Holotype: Morgenroth 1970, p. 350–351, pl. 11, figs. 1-2; Fensome & al. 1993a, p. 935, figs. 1-2.

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 1: Baranyi & al. 2016.

Williams & al. 1998 Age: Late Pliensbachian.

Valvaeodinium koessenium (Morbey 1975) Below 1987b

Holotype: Morbey 1975, p. 44, pl. 15, figs. 14 a-b, text-fig. 19a, no: a; Fensome & al. 1995, p. 1589, figs. 1-3.

Comparodinium koessenium Morbey 1975.

Hungarian Age: Eocene, redeposited: as *Comparodinium koessinum* Kedves 1992.

Williams & al. 1998 Age: Rhaetian–Hettangian.

Valvaeodinium spp.

Hungarian Age: Early Jurassic, Early Toarcian, assemblage 1: Baranyi & al. 2016.

Virgodinium Sütőné Szentai 2010

Genotypus: *Virgodinium asymmetricum* subsp. *primus* Sütőné Szentai 2010, p. 225, pl. 1, fig. 1; text-fig. 2i.

Database: The genotype of the genus *Virgodinium* and the preparations of the holotypes and paratypes together with the photo-negatives are stored at József Attila City Library and Museum Collection, Local Government Komló, Városház tér 1.

***Virgodinium asymmetricum* Sütőné Szentai 2010**

Holotype: *Virgodinium asymmetricum* subsp. *primus* Sütőné Szentai 2010, p. 226–228. pl. 1, figs. 1; text fig. 2 i.

Gonyaulax digitalis (Pouchet 1883) Kofoid 1911.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 1982b, 1987, 1995a (Nagygörbő 1), 2002 (as *G. digitale*); Sütőné Szentai in Jámor & al. 1987 (as *G. digitalis*); Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1982b, 1987, 1995a (Hm. 78/18, Öcs 28), 1995b, 2000, 2002, 2003 (as *G. digitale*); Sütő-Szentai 1985, 1988, 1994c (as *G. digitale*); Baranyi & al. 2013 (as *V. asymmetricum*); Sütőné Szentai in Jámor & al. 1987 (as *G. digitale*); Kókay & al. 1991 (as *G. digitale*); Sütő-Szentai in Szuromi–Korecz & al. 2004 (as *G. digitale*); Pannonian, *Pontadinium pecsvaradensis* zone: Sütőné Szentai & Selmeczi 2003 (as *G. digitale*); Sütő-Szentai 1985, 1994c (as *G. digitale*); Sütőné Szentai 1995a (Hm. 78/18, Öcs 28), 1995b, 2002, 2003 (as *G. digitale*); Sütőné Szentai 2011 (Egerág 7) (as *V. asymmetricum*); Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a, 1995a (Zszt 3, Hm. 78/18) 2000, 2002, 2003 (as *G. digitale*); Sütő 1995b (as *G. digitale*); Sütőné Szentai 2011 (as *V. asymmetricum*); Sütő-Szentai 1994c (as *G. digitale*); Baranyi in Varga & al. 2017 (as *V. asymmetricum*); Sütő-Szentai in Cziczser & al. 2007 (as *G. digitale*); Jámor & al. 1987 (as *G. digitale*); Sütő-Szentai in Szuromi-Korecz & al. 2004 (as *G. digitale*); Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over *S. paradoxus* zone: Sütőné Szentai 1995a (Zszt 3 as *G. digitale*); Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1985, 1994c (as *G. digitale*); Sütő 1995b (as *G. digitale*); Sütőné Szentai 1987, 2000 (as *G. digitale*); Sütőné Szentai 2011 (as *V. asymmetricum*); Sütőné Szentai in Jámor & al. 1987 (as *G. digitale*); Pannonian, *S. tihanyensis* zone: Sütő 1994a (Töttös 1), 1995b (as *V. assymm. tertius*); Sütőné Szentai 2000 (as *G. digitale*); Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone: Sütőné Szentai 1995a (as *G. digitale*); Sütő 1995b (as *G. digitale*); Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Villány 7 as *V. asymmetricum*); Pannonian, *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7 as *V. asymmetricum*); Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1 as *V. asymmetricum*).

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008 (as *Gonyaulax digitalis*).

Hungarian Age: Pannonian.

***Virgodinium asymmetricum* subsp. *primus* Sütő–Szentai 2010**

Holotype: Sütőné Szentai 2010, p. 227–228, pl. 1, fig. 1, text-fig. 2i.

Gonyaulax digitalis (Pouchet 1883) Kofoid 1911 subsp. *primus* Sütő–Szentai 1988, pl. 3, fig. 2.

Name not validly published: no description Williams & al. 1998 p. 731.

Hungarian Age: Late Miocene, Pannonian: Upper part of the *Spiniferites bentorii pannonicus* zone: Fuchs & Sütőné Szentai 1991, Pl. 2, figs. 2, 4; Pl. 3, figs. 1, 2, 5; Pl. 7, figs. 5, 6, this is *V. asymmetricum* ssp. *primus* (as *G. digitalis*, or Dinofl. 72, 71 form);

Sütőné Szentai 1983a, pl. 3, text-figs. 2 (as *G. digitale*); Sütőné Szentai 2010, 2016 (as *V. asymmetricum* ssp. *primus*); Pannonian *S. bentorii oblongus* zone: Sütőné Szentai 1983a, pl. 3, text-figs. 3-4, (as *G. digitale*); Sütőné Szentai 1995a, 2003, (as *G. digitale*); Sütőné Szentai 2016 (as *V. asymmetricum*); Fuchs & Sütő-Szentai 1991, Pl. 3. figs. 1, 2; Pl. 7, figs. 5, 6 as Dinoflagellata form 72, form 71, this is *V. asymmetricum* ssp. *primus*; Pannonian *Pontadinium pecsvaradensis* zone: Sütő-Szentai 1988 (as *G. digitale*); Sütőné Szentai 1995a (as *G. digitale*); Sütőné Szentai 2000, 2003 (as *G. digitale*); Sütőné Szentai 2010, 2011 (as *V. asymmetricum*); Pannonian *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Fuchs & Sütő-Szentai 1991, Pl. 6, fig. 5 as *G. digitale* (this is *V. asymmetricum* ssp. *primus*); Sütő-Szentai 1988 (as *G. digitale*); Sütőné Szentai 1989, 1995a, 2000, 2003 (as *G. digitale*); Sütőné Szentai 2010, 2011 (as *V. asymmetricum*); Sütőné Szentai 1991 (as *G. digitale*); Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988 (as *G. digitale*).

Williams & al. 1998 Age: Pannonian.

Virgodinium asymmetricum* subsp. *secundus (Fuchs & Sütő-Szentai 1991) Sütőné Szentai 2010

Holotype: Sütő-Szentai in Fuchs & Sütő-Szentai, 1991, pl. 8, fig. 5; text-fig. 2. 2 (two illustrations), no text-fig. 2. 1; Sütőné Szentai 2010, p. 229–230, pl. IV, figs. 4-6.

Gonyaulax digitalis (Pouchet 1883) Kofoid 1911 subsp. *secundus* Sütő-Szentai in Fuchs & Sütő-Szentai 1991, p. 24, pl. 8, figs. 1-5. text-figs. 2-3; Sütő-Szentai 1988, pl. 3. fig. 4, nom. nud.

Williams & al. 1998 p. 731.: This name was not validly published in Sütő-Szentai 1988.

Sütő-Szentai 1997: Micropaleontological type material of Natural collection at Komló, 1997 p. 269.

Hungarian Age: Late Miocene, Pannonian, Upper part of the *Spiniferites bentorii pannonicus* zone: Sütő-Szentai in Fuchs & Sütő-Szentai 1991 (as *Gonyaulax digitalis* ssp. *secundus*); Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai in Fuchs & Sütő-Szentai 1991; Sütő 1995b; Sütőné Szentai 2010 p. 229–230, pl. 4. figs. 4-6.

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008 (as *G. digitalis* subsp. *secundus*).

Williams & al. 1998 Age: Pannonian.

Virgodinium asymmetricum* subsp. *tertius Sütő-Szentai 2010

Holotype: Sütőné Szentai 2010, pl. 1, fig. 2; text-fig. 2j.

Gonyaulax digitale (Pouchet 1883) Kofoid 1911 subsp. *tertius* Sütő-Szentai 1988, p. 356, pl. 3, fig. 6, nom. nud.

Williams & al. 1998. p. 731: Name not validly published: no description, Sütő-Szentai 1988.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai 1989, pl. 1, figs. 5-7, as *Gonyaulax digitale tertius*; Sütőné Szentai 2010; Kókay & al. 1991; Pannonian, *Pontadinium pecsvaradensis* zone: Sütőné Szentai 2010, 2011 (Egerág 7) as *V. asymmetricum subsp. tertius*; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai in Fuchs & Sütő-Szentai 1991, pl 5. fig. 6 without tabulation, this is a *V. asymmetricum tertius*; Sütőné Szentai 2010, 2011 (Egerág 7); Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988, as *Gonyaulax digitale tertius*; Sütőné Szentai 2011 (Egerág 7, Bosta 1); Pannonian, *Galeacysta etrusca* zone: Sütő 1994a, as *V. asymmetricum tertius* (nom. nud); Pannonian,

Galeacysta etrusca zone, *Spiniferites virgulaeformis* subzone 2011; Pannonian, *Galeacysta etrusca* zone, *Spiniferites cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1); Pannonian, *Dinoflagellata–Zygnemataceae* interval zone (over *Galeacysta etrusca* zone): Sütőné Szentai 2011 (Egerág 7).

Williams & al. 1998 Age: Pannonian

Virgodinium asymmetricum subsp. *quatuor* Sütőné Szentai 2010

Holotype: Sütőné Szentai 2010, pl. 3, figs. 1-2, text-fig. 2k.

Gonyaulax digitalis (Pouchet 1883) Kofoid 1911 subsp. *quatuor* Sütő-Szentai 1988, p. 356, Pl. 3, fig. 5.

Name not validly published: no description Sütő-Szentai 1988, Williams & al. 1998 p. 731.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii oblongus*, *Pontiadinium pecsvaradensis* zones Sütőné Szentai 1995a (Zalaszentlászló 1, Hm. 78/18, Öcs 28); Sütő-Szentai 1988, as *Gonyaulax digitalis quatuor*; *Spiniferites bentorii coniunctus–Spiniferites paradoxus*, *Spiniferites validus* zones: Sütő-Szentai 1988; Pannonian, *Dinoflagellata–Zygnemataceae* interval zone: Sütő-Szentai 1988; Sütőné Szentai 1995a (Zalaszentlászló 1) as *G. digitalis quatuor*; Pannonian, *Galeacysta etrusca* zone: Sütő 1994a as *V. asymmetricum quatuor*.

Williams & al. 1998 Age: Pannonian.

Virgodinium asymmetricum (with small antapical pick)

Types: Sütőné Szentai 1995a, pl. 5, fig. 4, pl. 6, fig. 5.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* and *Pontiadinium pecsvaradensis* zones: Sütőné Szentai 1995a; Sütő 1995b.

Virgodinium baltesi (Sütő-Szentai 1990) Sütőné Szentai 2010

Holotype: Sütő-Szentai 1990, p. 851, 853; pl. 5. fig. 3, text-fig. 77b (two illustrations).

Millioudodinium baltesi Sütő-Szentai 1990.

Williams & al. 1998 p. 405: *Millioudodinium baltesi* name not validly published lodgment of holotype not specified (I.C.B.N. Article 37,5).

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő-Szentai 1988; Sütőné Szentai 1995a (Öcs 28); Pannonian, *Pontiadinium pecsvaradensis* zone: Sütő-Szentai 1988, 1990; Sütőné Szentai 1997; Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1990; Sütőné Szentai 1997; Bakrač in Cziczér & al. 2007; *Spiniferites validus* zone: Bakrač 2012.

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Williams & al. 1998 Age: Late Pannonian.

Virgodinium foveolatum (Sütőné Szentai 1982a) Sütőné Szentai 2010

Holotype: Sütőné Szentai 1982, p. 219, pl. 2, fig. 1.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 270.

Millioudodinium foveolatum Sütőné Szentai 1982a, p. 211–212, 219, pl. 2, figs. 1-5,
Apteodinium? foveolatum Lentin & Williams 1989, p. 21.

Hungarian Age: Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1983a; Sütő-Szentai 1985, 1988; Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982a (in *S. bentorii* zone); 1983a, 1987; Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1), 2000, 2002; Bakrač 2005; Sütő-Szentai in Cziczzer & al. 2007; Pannonian, *Dinoflagellata-Zygnemataceae* interval zone, over the *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt 3); Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988.

Williams & al. 1998 Age: Late Miocene (Pannonian).

Virgodinium pelagicum (Sütő-Szentai 1990) Sütőné Szentai 2010

Holotype: Sütő-Szentai 1990, p. 854, pl. 4, fig. 3; text-fig. 78d.

Williams & al. 1998, p. 408: Not validly published: lodgment of holotype not specified (I.C.B.N.) Article 37,5);

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997 p. 271.

Millioudodinium pelagicum Sütő-Szentai 1990.

Hungarian Age: Late Miocene, Pannonian: *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 1987; Sütőné Szentai in Jámbor & al. 1987 (as *Dinofl. 42* form); Sütőné Szentai 1995a (Zalaszentlászló-1bh.); Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988, 1990, 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt 3), 1997, 2000, 2002, 2003, 2011; Bakrač 2005; Sütő-Szentai in Cziczzer & al. 2007; Sütő-Szentai in Szuromi-Korecz & al. 2004; Pannonian, *Dinoflagellata-Zygnemataceae* interval zone (over *S. paradoxus* zone) Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt 3); Pannonian, Lower part of the *Spiniferites validus* zone: Sütő-Szentai 1988, 1990, 1994c; Sütőné Szentai 1997, 2000 (V1 section), 2002 (V1 section); Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a; Sütőné Szentai in Magyar & al. 2004.

Williams & al. 1998 Age: Late Pannonian.

Virgodinium transdanuvianum (Sütő-Szentai 1990) Sütőné Szentai 2010

Holotype: Sütő-Szentai 1990, p. 855, pl. 4, figs. 1-2; text-fig. 78b.

Williams & al. 1998, p. 409: Name not validly published: lodgment of holotype not specified (I.C.B.N.) Article 37,5; Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997, p. 271.

Millioudodinium transdanuvianum Sütő-Szentai 1990.

Hungarian Age: Late Miocene, Pannonian: *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütő-Szentai 1988; Sütőné Szentai 2011; Bakrač 2005; Sütő-Szentai in Cziczzer & al. 2007; Pannonian, *Spiniferites validus* zone: Sütő-Szentai 1988, 1990; Sütőné Szentai 1989, 1997, 2011; Sütő 1994a; Pannonian, *Spiniferites tihanyensis* zone: Sütő 1994a.

Williams & al. 1998 Age: late Pannonian.

Virgodinium transformis Sütőné Szentai 2010

Holotype: Sütőné Szentai 2010, p. 229, pl. 1, fig. 4-5; text fig. 2, g-h.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő-Szentai 1988; Pannonian, *Spiniferites bentorii oblongus* zone: Sütőné Szentai in Jámbor & al. 1987; Sütő-Szentai 1988; Sütőné Szentai 2003; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai in Jámbor & al. 1987; Sütő-Szentai 1988; Sütőné Szentai 2011; Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai in Jámbor & al. 1987; Sütő-Szentai 1988; Sütőné Szentai 2011; Pannonian, *Spiniferites validus* zone: Sütőné Szentai in Jámbor & al. 1987; Sütő-Szentai 1988.

Hungarian Age: Pannonian.

Virgodinium sp.

Hungarian Age: Late Miocene, *Spiniferites bentorii oblongus* zone: Baranyi in Varga & al. 2017; Late Miocene, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Baranyi in Varga & al. 2017.

Wetziella Eisenack 1938b

Type: *Wetziella articulata* Eisenack 1938b, p. 187, fig. 4.

Wetziella articulata Eisenack 1938b

Holotype: Eisenack 1938b, p. 187, fig. 4; Eisenack 1954b, pl. 7, fig. 3, (not pl.7, fig. 1.).

Hungarian Age: Eocene: Rákosi 1991; Eocene: Darvastó Formation–Szóc Formation: Rákosi 1991; Middle Eocene: as *W.* aff. *articulata* and *W.* cf. *articulata*: Rákosi in Michoux & al. 1985; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Eocene: Buda Marl Formation: Rákosi 1985; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993; Williams & al. 1998 Age: Late Eocene–Early Oligocene; Williams & al. 1993: as *W. articulata* complex Early Eocene Ypresian–Early Oligocene Rupelian (53-35 Ma).

Wetziella gochtii Costa & Downie 1976

Holotype: Costa & Downie 1976, p. 609–610, pl. 92, fig. 2.

Hungarian Age: Eocene, NP 19, 20 zones: Rákosi 1993; Oligocene, NP 21 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle Oligocene.

Wetziella simplex (Bujak 1979) Lentin & Vozzhennikova 1989

Holotype: Bujak 1979, p. 312–313, pl. 3, figs. 7-12; Bujak & al. 1980, pl. 15, fig. 5; Fensome & al. 1995, p. 1793, figs. 1-5.

Gochtodium simplex Bujak 1979.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

Wetziella spinula (Bujak 1979) Lentin & Vozzhennikova 1989

Holotype: Bujak 1979, p. 313, pl. 2, figs. 3-5; Bujak & al. 1980, pl. 15, fig. 6.

Gochtodium spinulum Bujak 1979.

Hungarian Age: Eocene, NP 16 zone: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Middle Eocene.

***Wetziella symmetrica* subsp. *symmetrica* Weiler 1956**

Holotype: Weiler 1956, p. 132–135, pl. 11, fig. 1.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 16 zone: Rákosi 1993.

Williams & al. 1998 Age: Middle Oligocene; Williams & al. 1993: as *W. symmetrica* complex Middle Eocene Bartonian–Late Oligocene Chattian (41–27 Ma).

***Wetziella symmetrica* Weiler 1956 subsp. *incisa* Gerlach 1961**

Holotype: Gerlach 1961, p. 156–158, pl. 25, fig. 9.

Hungarian Age: Eocene, Middle Eocene: Rákosi in Michoux & al. 1985.

Williams & al. 1998 Age: Middle–Late Oligocene.

***Wetziella* sp.**

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Eocene: Kedves 1992; Eocene, NP 16 zone: Rákosi 1993; Late Eocene: Kedves 1986; Early Miocene, Szászvár Formation: Nagyné Bodor in Chikán 1991; Pannonian: Sütőné Szentai in Kovács 1992 (redeposited).

***Wrevittia* Helenes & Lucas-Clark 1997**

Type: *Gonyaulax helicoidea* Eisenack & Cookson 1960, p. 2–3, pl. 1, fig. 4.

***Wrevittia cassidata* (Eisenack & Cookson 1960) Helenes & Lucas-Clark 1997**

Holotype: Eisenack & Cookson 1960, p. 3, pl. 1, fig. 5; Jan du Chêne & al. 1986a, pl. 40, figs. 6–7.

Gonyaulax cassidata Eisenack & Cookson 1960,

Gonyaulacysta cassidata (Eisenack & Cookson 1960) Sarjeant 1966.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian: Siegl-Farkas 1999a.

Williams & al. 1998 Age: Aptian–Cenomanian.

***Xenascus* Cookson & Eisenack 1969**

Type: *Xenascus australensis* Cookson & Eisenack 1969, p. 7, figs. 1. I–J.

***Xenascus sarjeantii* (Corradini 1973) Stover & Evitt 1978**

Holotype: Corradini 1973, p. 29, pl. 29, figs. 2a–b.

Phoberocysta sarjeantii Corradini 1973.

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a as cf. *Xenascus sarjeantii*.

Williams & al. 1998 Age: Senonian; Williams & al. 1993: Cretaceous Barremian–Early Maastrichtian (114–72 Ma).

***Xenikoon* Cookson & Eisenack 1960a**

Type: *Xenikoon australis* Cookson & Eisenack 1960a, p. 16, pl. 3, fig. 17.

***Xenikoon australis* Cookson & Eisenack 1960a**

Holotype: Cookson & Eisenack 1960a, p. 16, pl. 3, fig. 17.
Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1995.
Williams & al. 1998 Age: Turonian–Campanian.

Chlorophyta Pascher 1914

Botryococcus Kützing 1849

Botryococcus braunii Kützing 1849

Hungarian Age: Late Triassic Upper Norian–Rhaetian (Kösszen–Formation): Venkatachala & Góczán 1964; Triassic, Carnian: Góczán & al. 1996; Cretaceous, Late Santonian, *Trilobosporites* Opper-zone: Siegl-Farkas 1988; Cretaceous, Late Campanian, *Krutzschipollis spatiosus*–*Suemegipollis triangularis* Opper-zone: Siegl-Farkas 1986, 1987; Eocene: Kedves 1992; Oligocene, Egerian: Nagy 1992; Miocene, Szászvár Formation: Nagyné Bodor in Chikán 1991; Miocene Eggenburgian: Nagy 1992; Miocene, Ottnangian: Góczán in Radócz 1981; Nagy 1992; Miocene, Karpatian: Bodor 1983, Nagyné Bodor in Chikán 1991; Nagy & Bodor 1982, p. 118, Table 1; Nagy 1969, 1992; Miocene, schlier sequence: Nagy 1969, p. 312, pl. 3, fig. 6; Miocene, Badenian: Nagy 1969, 1992; Nagy & Bodor 1982; Nagy in Solti 1981; Nagy-Kókay 1990, 1991; Sütőné Szentai in Chikán 1991; Miocene, Sarmatian: Nagy 1992; Late Miocene, Pannonian, *Mecsekia ultima* zone, *S. bentorii pannonicus* zone, *S. bentorii oblongus* zone, *Pontiadinium pecsvaradensis* zone, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* (or *S. paradoxus*) zone, *S. validus* zone, *Galeacysta etrusca* zone *Mougeotia laetevirens* zone: Sütőné Szentai 1982a, 1982b, 1983a, 1984, 1986, 1987, 1989, 1995a, 1998, 1999, 2000, 2002, 2003, 2011; Sütő-Szentai 1988, 1994c; Sütő 1994a, 1995b; Sütőné Szentai in Jámor & al. 1987; Sütőné Szentai & Selmeczi 2003; *Mougeotia laetevirens* zone: Lőrincz in Kretzoi & al. 1976; Sütő-Szentai in Katona & al. 2013; Kókay & al. 1991; Sütő-Szentai in Lennert & al. 1999; Late Miocene, Pannonian: Bodor 1983; Kedves 1991; Miháltzné Faragó 1982; Nagy & Planderova 1985; Nagy 1957, 1969, 1988; Nagyné Bodor in Chikán 1991; Late Pannonian: Góczán & Nagy in Jámor & Solti 1976; Hajós in Bence & al. 1979; Hajós 1976, 1989; Kedves & al. 1995, 1998, 2001; Miháltzné Faragó 1973, 1976, 1977, 1979, 1982; Nagy 1976; Nagyné Bodor 1986, 1988; Nagyné Bodor in Franyó 1991; Nagyné Bodor & Szuromi-Korecz 1989; Vér 1994; Late Pannonian, Pontusi: Nagy 1992 (Pula 3, Pápa 2, Várkesző 1, Gérce 1, Debréte 1, Kőbánya outcrop, Petőfibánya III outcrop); Pliocene, Pulai Alginit Formation: Csirik 2004; Pleistocene: Miháltzné Faragó 1973; Early and Late Pleistocene: Miháltzné Faragó 1982; latest Pleistocene: Miháltzné Faragó 1982; Late Pleistocene: Siegl-Farkas & Cserny 1996; latest Pleistocene Dryas I between 14 000–12 600 years: Nagyné Bodor 1998; latest Pleistocene, Dryas II, between 12 600–12 000 years: Nagyné Bodor 1998; latest Pleistocene, Dryas III, between 10 800–10 000 years (10 980 ± 300 B.P.): Nagyné Bodor 1998; Pleistocene, Early or Late Glaciale: Nagyné Bodor & Szuromi-Korecz 2001a; Pleistocene: Nagyné Bodor & Szuromi-Korecz 2001; Holocene, Middle Borealis: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene: 7 and 9 pollenzone: Miháltzné Faragó 1981, 1983; Early and Late Holocene: Nagyné Bodor 1986; Nagyné Bodor & al. 1996; Holocene, Subboreale, Subatlantian between 5 100–700 years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene, Subatlantian, between 2 500–1 500 B.P. years, the *B.*

braunii are abundant: Nagyné Bodor 1998; Holocene, Subatlantian, between 2 500–0 years: Nagyné Bodor & Szuromi-Korecz 2001; Holocene, Subatlantian, between 700–0,0 years, the *B. braunii* are abundant: Nagyné Bodor 1998; Nagyné Bodor & al. 1996; Siegl-Farkas & Cserny 1996;

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Miocene, Pannonian: Sütő & Szegő 2008.

Botryococcus luteus Traverse 1955

Hungarian Age: Paleogene (Eocene, Oligocene): Rákosi 1973 pl. 6, figs. 18-21; Early Eocene Cuisien: Rákosi in Gidai 1971; Middle Eocene–Oligocene, Rupelian: Krivánné Hutter 1963 pl. 1, figs. 1-13; Eocene Lutetien–Priabonien: Rákosi in Gidai 1971; Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. *A* forma Együttes zóna (Assemblage zone): Rákosi 1979, 1983; Eocene, NP 18, 19 zones: Rákosi 1993; Oligocene, NP 22 zone Rákosi 1993; Oligocene ("Rupelian") Kiscellian: Krivánné Hutter 1963.

Botryococcus sp.

Hungarian Age: Late Cretaceous: Kedves 2000a, p. 26, pl. 2.4, figs. 8-9.; Eocene: Kedves 1992.

Closterium Brébisson

Closterium kützingi Brébisson, in Van Geel & Van Der Hammen 1978

Hungarian Age: Late Pannonian: Sütő-Szentai 1985; *Mougeotia laetevirens* zone: Sütőné Szentai: 1983, 1984, 1986, 1987; Sütő-Szentai 1988; Sütő 1995b; Sütőné Szentai & Bóna in Hámor T. 1992; Sütőné Szentai in Jámbor & al. 1987; as *Mikroplankton* sp. Plate II. fig. 27. Rákosi 1963.

Cooksonella Nagy 1965a

Genotypus: *Cooksonella circularis* Nagy 1965a, p. 206–208, pl. 4, figs. 16-17.
Stratum typicum: Neogene strata.

Cooksonella circularis Nagy 1965a

Holotype: Nagy 1965a, p. 206–208, pl. 4, figs. 16-17.

Zengővárkony 59 bh. sample No. 27, 67,5–70,5 m, Middle Miocene.

Hungarian Age: Miocene, Szászvár Formation: Nagyné Bodor in Chikán 1991; Miocene, Otnangian: Nagy 1992; Middle Miocene: Nagy 1965a, 1969, 1992; Bodor 1983; Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagyné Bodor in Chikán 1991; Nagy 1992; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus*–*Lingulodinium machaerophorum* zone, *Mecsekia incrassata* paleoasszociacion: Sütőné Szentai 2002; Late Miocene Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2002; Late Miocene, *Pontadinium pecsvaradensis* zone: Sütőné Szentai 1983a, 1995a (Öcs 28); Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982b, 1995a (Zalaszentlászló 1, Zszt 3), 1989; Late Miocene, Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone over *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* (*S. paradoxus*) zone: Sütőné Szentai 1995a (Zalaszentlászló 1, Zszt 3); Late Miocene, Pannonian, *Spiniferites validus* zone: Sütőné

Szentai 1982a, 1989, 2002; Sütőné Szentai & Bóna in Hámor T. 1992; Sütőné Szentai in Jámor & al. 1987; Late Miocene, Pannonian, *S. tihanyensis* zone: Sütő 1994a; Sütő-Szentai 1994c; Sütőné Szentai 1995a (Hm. 78/18, Ócs 28); Sütőné Szentai 2002; Sütő-Szentai in Lennert & al. 1999; Late Miocene, Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *S. tihanyensis* zone: Sütő 1994a; Sütő-Szentai 1994c; Late Miocene, Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Villány 7), 1998, 1994c; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7); Sütőné Szentai 1989 as *Nematosphaeropsis bicorporis* zone; Late Miocene, Pannonian, *Galeacysta etrusca* zone, *S. cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1); in Algyó Formation: Kovács 1992; Late Miocene Pannonian, *Mougeotia laetevirens* zone: Sütőné Szentai 1982b pl. VIII. fig. 2.; Late Miocene, Pannonian: Nagy: 1958, 1969; Nagy & Planderova 1985; Nagyné Bodor 1983, 1986, 1988, Nagyné Bodor in Chikán 1991; Nagyné Bodor in Franyó 1991; Rákosi in Brokés 1978, p. 512: Mesterberek-113 bh; Sütő-Szentai 1988; Late Pannonian, Pontusi: Nagy 1992 (Várkesző-1 bh, Gérce-1 bh, Kőbánya outcrop).

Cooksonella sp.

Hungarian Age: Miocene, Eggenburgian: Nagy 1992; Miocene, Karpatian: Nagyné Bodor in Chikán 1991; Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 123. Miocene, Pannonian: Nagy 1992; Late Pannonian, Pontian: Nagy 1992.

Order: *Desmidiiales* Jost Casper 1982

Desmidiaceasporites cosmariformis Hunger 1953

Hungarian Age: Early Badenian: Nagy & Rákosi 1966.

Mougeotia Agardh 1824

Mougeotia laetevirens (A. Braun) Wittrock 1877

Sütő-Szentai 1982b, p. 339, Pl. VIII, fig. 1 as *Mougeotia* cf. *laetevirens*; Miháltzné Faragó 1976, p. 227, pl. I. figs. 6-7, as Freshwater plankton.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* (*S. paradoxus*) zone: Sütőné Szentai 1989, 1995a (Zalaszentlászló 1); Late Miocene, Pannonian, Upper Part of the *Spiniferites validus* zone: Sütőné Szentai 1982a, 1989; Late Miocene, Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1982a, 2000, 2002; Sütő 1994a; Late Miocene, Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over *Spiniferites tihanyensis* zone: Sütőné Szentai 2000; Late Miocene, Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Töttös 1, Villány 7); *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7); Sütőné Szentai 1989 as *Nematosphaeropsis bicorporis* zone; Late Miocene, Pannonian, *Dinoflagellata–Zygnemataceae* zone over *S. virgulaeformis* subzone: Sütőné Szentai 2011 (Egerág 7); Late Miocene, Pannonian, *Galeacysta etrusca* zone, *S. cruciformis* subzone: Sütőné Szentai 2011 (Bosta 1); Late Pannonian, *Galeacysta etrusca* zone: Sütő-Szentai in Katona & al. 2013; Pannonian, *Mougeotia laetevirens* zone: Sütőné Szentai 1982a, 1982b, 1983a, 1983b, 1984, 1986, 1987, 1995a, 2000, 2012, 2016; Sütő-Szentai 1985, 1988, 1994c; Sütő 1995b; Sütőné Szentai in Chikán 1991; Sütőné Szentai

& Bóna in Hámor T. 1992; Sütő-Szentai in Jámbor 1985; Sütőné Szentai in Jámbor & al. 1987; Kovács 1992; Late Pannonian: Miháltzné Faragó 1976.

Mougeotia 3. typ. Van Geel & Van Der Hammen 1978

Hungarian Age: Late Miocene, Pannonian: *Mougeotia laetevirens* zone: Sütőné Szentai: 1982b; Sütő-Szentai 1988, 1994c.

Mougeotia sp.

Hungarian Age: Miocene, Karpatian: Nagy 1992; Miocene, Badenian: Nagy 1992; Late Miocene, Pannonian: Nagy & Planderova 1985; Sütőné Szentai in Chikán 1991; Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 2003; Late Miocene, Pannonian, *Dinoflagellata-Zygnemataceae* interval zone, over *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* (or *S. paradoxus*) zone: Sütőné Szentai 1995a (Zalaszentlászló 1); Late Pannonian, *Galeacysta etrusca* zone: Sütő 1994a; Late Pannonian, Pontian: Nagy 1992 (Gérce 1 bh.); Latest Pleistocene, Alleröd, between 12 000–10 800 years: Nagyné Bodor 1998; Holocene, Subatlantian, between 2 500–1 500 B. P. years: Nagyné Bodor 1998.

Mougeotia 313E type Van Geel & al. 1981

Hungarian Age: Late Miocene, Pannonian *Galeacysta etrusca* zone Sütő 1994a.

Mougeotia 313 C type Van Geel & al. 1981

Hungarian Age: Late Miocene, Pannonian, *Galeacysta etrusca* zone Sütő 1994a.

Ovoidites (Potonie 1951) Krutzsch 1959

Ovoidites ligneolus (Potonie 1931) Potonie 1951 subsp. ***ligneolus*** Potonie 1951.

Hungarian Age: Late Cretaceous, Late Santonian, *Trilobosporites* Oppel–Zone: Siegl-Farkas 1988; Late Cretaceous, Gyepükaján Section: Góczán & Siegl-Farkas 1990; Eocene Sparnacien: Rákosi in Gidai 1971; Eocene primer vegetation, as *Ovoidites ligneolus* subsp. *ligneolus* Subasszociacion: Rákosi 1973; Eocene: Rákosi 1973, 1977, 1979, 1991; Eocene, NP 15 Zone: Rákosi 1993; Rákosi & Snopkova 1993; Early Eocene: Kedves 1960, 1963, 1965, 1969; Middle Eocene: Kedves 1969; Oligocene: Rákosi 1966, 1973; Oligocene, NP 21 zone: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1969, 1992; Miocene, Ottnangian: Nagy 1969, 1992; Miocene, Karpatian: Bodor 1983; Nagyné Bodor in Chikán 1991; Nagy 1969, 1992; Miocene, Badenian: Nagyné Bodor in Chikán 1991; Nagy 1966, 1969, 1992; Miocene, Sarmatian: Nagy 1992; Simoncsics 1963; Pannonian: Nagy 1958, 1969, 1992; Bodor 1983, Nagyné Bodor in Chikán 1991; Late Pannonian: Miháltzné Faragó 1976; Nagy 1958, 1959, 1969, 1976, 1992; Nagyné Bodor 1986, 1988; Nagyné Bodor in Cserny & al. 1991; Rákosi 1963, 1983; Pálfalvy & Rákosi 1979; Late Pannonian, Pontian: Nagy 1992; Late Pannonian I. III. IV. biozones: Miháltzné Faragó 1973, 1977, 1979, 1982; Late Pannonian: Pálfalvi & Rákosi 1979; Late Pannonian, Pontusi: Nagy 1992 (Petőfibánya III outcr. Kőbánya outcr. Gérce-1 bh. Várkesző-1 bh); Pleisztocene, Middle Pleisztocene: Miháltzné Faragó 1973, pl. 3, fig. 4; Early and Late Pleistocene: Miháltzné Faragó 1982; Holocene, young Holocene: Nagyné Bodor 1986.

cf. *Ovoidites ligneolus* Pot. *smooth form* Nagy 1969
Hungarian Age: Pannonian: Nagy 1969. p. 310.

***Ovoidites microligneolus* Krutzsch 1959**

Hungarian Age: Eocene: NP 15 zone: Rákosi 1973, 1977, 1991, 1993; Rákosi & Snopkova 1993; Early Oligocene Tard Clay Formation, NP 21 zone: Rákosi 1985, 1993; Rákosi & Snopkova 1993.

Pediastrum Meyen 1829

***Pediastrum boryanum* (Turp.) Meneghini 1840**

Hungarian Age: Late Miocene, Pannonian, *Spiniferites tihanyensis* zone: Sütő-Szentai in Lennert & al. 1999; *Pediastrum* dominance zone, over the *S. tihanyensis* zone: Sütő-Szentai 1994c; *Galeacysta etrusca* zone, *Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011; *Galeacysta etrusca* zone: Sütő 1994a; Late Pannonian, *Mougeotia laetevirens* zone: Sütő-Szentai 1988, 1994c; Sütőné Szentai 1995a; Late Pleistocene, Bölling, between 13 000–12 600 years: Nagyné Bodor 1998; Latest Pleistocene, Dryas III, between 10 800–10 000 years: Nagyné Bodor 1998; Pleistocene–Holocene, between 10 000–9 000 years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene: Nagyné Bodor & al. 1996; Boreale, between 9 000–7 500 B.P. years: Nagyné Bodor 1998; Holocene, Atlantikum, between 7 500–5 100 years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene, Late Subboreale, between 5 100–2 500 B.P. years the *P. boryanum* are frequent: Nagyné Bodor 1998; Holocene, Subatlantian, between 2 500–0 years: Nagyné Bodor & Szuromi-Korecz 2001; Subatlantic 1, Migration Age, *P. boryanum* dominant: Siegl–Farkas & Cserny 1996; Holocene, Subatlantian, between 700–0 B.P. years of this day the *P. boryanum* are abundant: Nagyné Bodor 1998; Nagyné Bodor & al. 1996; Pleistocene–Holocene until ± 8000 year and between ± 8000 –1000 years: Sebestyén 1968a, 1968b.

***Pediastrum clathratum* Schoeter**

Hungarian Age: Holocene: Zólyomi 1952; Holocene, Boreale, between 9 000–7 500 B.P. years: Nagyné Bodor 1998; Pleistocene–Holocene: until ± 8000 year and between ± 8000 –1000 years: Sebestyén 1968a (*P. simplex* or *P. clathratum*); Sebestyén 1968b.

***Pediastrum duplex* Meneghini**

Hungarian Age: Latest Pleistocene, Dryas III, between 10 800–10 000 years: Nagyné Bodor 1998; Pleistocene–Holocene: until ± 8000 years and between ± 8000 –1000 years: Sebestyén 1968a.

***Pediastrum kawraiskyi* Schmidle 1897**

Hungarian Age: Late Pleistocene, Bölling, between 13 000–12 600 years: Nagyné Bodor 1998; Late Pleistocene, Alleröd, between 12 000–10 800 years: Nagyné Bodor 1998; Pleistocene–Holocene, between 15 000–9 000 years: Szurominé Korecz & Nagyné Bodor 1998; Holocene, Praeboreal PB, between 10 000–9 000 years (rare): Nagyné Bodor,

Szuromi-Korecz, Cserny 2000; Holocene: between i. e. 8 000 – i. e. 1 000 years, Zólyomi in Sebestyén 1968a p. 3, Balaton 28 bh. 123–290,0 cm; Sebestyén 1968b: p. 205, text-figs. 2a-d, and photos p. 210-211, figs. 1-7.

***Pediastrum simplex* Meyen 1829**

Hungarian Age: Miocene, Badenian: Sütőné Szentai in Chikán 1991; Late Miocene, Pannonian: *Spiniferites bentorii oblongus* zone, *Spiniferites paradoxus*, *Spiniferites validus*, *Galeacysta etrusca*, *Mougeotia laetevirens* zones: Sütőné Szentai: 1982a, 1982b, 1986, 1987, 1989, 1995a (Nagyörbő 1, Hm. 78/18, Öcs 28), 2002; Sütő 1994a, 1995b; Sütő-Szentai 1985, 1988, 1994c; Sütő-Szentai in Lennert & al. 1999; Migration Age, *Pediastrum* dominance: Sütőné Szentai 1995a Zalaszentlászló 1: Upper part of the Nagylengyel Formation; Sütőné Szentai 1982a Tengelice 2 in Tihany F. Dinoflagellata–Zygnemataceae interval zone, over *Spiniferites validus* zone; Sütő 1995b Detk 1 bh. in Törtel Formation; Dinoflagellata–Zygnemataceae interval zone, over *Spiniferites tihanyensis* zone: Sütő Szentai 1994c Kaskantyú 2, Paks 3 bh. in Zagyva Formation. Holocene, Boreale, between 9 000–7 500 B.P. years: Nagyné Bodor 1998; Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Migration Age: Holocene, Atlanticum, between 7 500–5 100 B.P. years, *P. simplex* are abundant: Nagyné Bodor 1998; Holocene, Early Subboreale, between 5 100–2 500 B.P. years, the *P. simplex* frequent: Nagyné Bodor 1998; Holocene, Late Subboreale, between 5 100–2 500 B.P. years, the *P. simplex* rare: Nagyné Bodor 1998; Holocene, Subatlantian, between 1 500–700 B.P. years, the *P. simplex* are frequent: Nagyné Bodor 1998; Holocene, Subatlantian (2 500 years): Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene: Balaton 28 bh. between 0,0–170,0 cm frequent: Sebestyén 1968a, p. 3. Table 1.

***Pediastrum* sp.**

Hungarian Age: Miocene, Szászvár Formation: Nagyné Bodor in Chikán 1991; Miocene, Karpatian: Nagy 1992; Late Miocene, Badenian: Nagy 1966; Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* (or *S. paradoxus*) zone: Sütőné Szentai 1995a (Zszt 3); Late Miocene, Pannonian: Nagy 1976; Nagyné Bodor 1988; Late Pannonian, Pontian: Nagy 1992 (Pula 3 bh); Bodor 1983; Pleistocene, latest Pleistocene: Miháltzné Faragó 1982; Siegl-Farkas & Cserny 1996; Holocene, early and late Holocene: Nagyné Bodor 1986; Migration Age: Holocene, between 9 000–7 500 B.P. years, *Pediastrum* abundant Nagyné Bodor 1998a; Holocene, between 10 000–7 000 years Bodor 1987; Migration Age: Holocene, Subatlantic II (cc. 1000–1800) and Present Time: *Pediastrum* frequent: Siegl-Farkas & Cserny 1996; Holocene, IX. (Subatlantic) pollenzone: Miháltzné Faragó 1981, 1983.

Roumanian Age: Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

cf. *Pediastrum* sp.

Hungarian Age: Miocene, Karpatian, fish scale bearing sequence: Nagy 1969, p. 313.

Schizosporis Cookson & Dettmann 1959

Schizosporis deaki Bóna 1969

Holotype: Bóna 1969, pl. 19, fig. 11.

Hungarian Age: Early Jurassic, Hettangian–Early Sinemurian: Bóna 1969, 1995.

Schizosporis reticulatus Cookson & Dettmann 1959

Hungarian Age: Late Cretaceous: Rákosi 1989.

Schizosporis parvus Cookson & Dettmann 1959

Hungarian Age: Late Triassic Carnian, Norian, Rhaetian: Bóna 1995; Early Jurassic, Hettangian–Early Sinemurian: Bóna 1969, 1995.

Schizosporis sp.

Hungarian Age: Eocene primer vegetation: Rákosi 1977.

Spirogyra Link 1820

Spirogyra sp.

Hungarian Age: Late Eocene: Bóna in Wéber 1985; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Ottnangian: Nagy 1992; Karpatian: Nagy 1969, 1992; Bodor 1983; Nagyné Bodor in Chikán 1991; Badenian: Nagy & Kókay 1990, 1991; Nagy 1969, 1992; Nagyné Bodor in Chikán 1991; Middle Badenian: Nagy 1992; Late Sarmatian: Nagy 1992; Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2011; *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (*S. paradoxus* zone): Sütőné Szentai 2011; *Spiniferites validus* zone: Sütőné Szentai 2011; Pannonian: Nagy & Planderova 1985; Nagy 1969, 1992; Sütőné Szentai in Chikán 1991; Sütő–Szentai in Katona & al. 2013; Late Pannonian: Nagyné Bodor 1988; Cserny & al. 1991; Nagyné Bodor in Franyó 1991; Nagy 1992; Late Pannonian, Pontusi: Nagy 1992 (Várkesző 1 bh.); Latest Pleistocene, Alleröd, between 12 000–10 800 years: Nagyné Bodor 1998; Pleistocene: Nagyné Bodor & Szuromi-Korecz 2001; Latest Pleistocene, Dryas III, between 10 800–10 000 years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Pleistocene–Holocene, (between 10 000–0 years): Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene: Nagyné Bodor 1986, 1996; Holocene, Subatlantian, between 2 500–0 years: Nagyné Bodor & Szuromi-Korecz 2001.

Roumanian Age: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acritarcha–Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Spirogyra sp. 1. typ B. Van Geel & T. Van Der Hammen 1978

Sütőné Szentai 1982b pl. VIII, figs. 3-4.

Hungarian Age: Late Miocene, Pannonian: Sütőné Szentai: 1982a, 1982b, 1983, 1984, 1986, 1987, 1995a (Zszt 3, Hm. 78/18), 1998, 1999, 2000, 2002; 2003, 2012, 2016; Sütő–Szentai 1985, 1988, 1994c; Sütő 1994a, 1995b; Sütőné Szentai in Chikán 1991.

Spirogyra sp. 1. type, big form

Type: *Spirogyra longus* Sütőné Szentai 2016, pl. 6, figs. 1, 7.) nomina nuda as *Spirogyra* sp. 1. type *maior*: Sütőné Szentai 1983.

Hungarian Age: Late Miocene below *Mecsekia ultima* zone: Sütőné Szentai 2000; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütőné Szentai 1995a, 2012, 2016; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* primary assemblage zone: Sütőné Szentai 2012, 2016; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2012, 2016; Late Miocene, Pannonian, *S. bentorii oblongus* zone: Sütőné Szentai 1987, plate II. fig. 1; Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zalaszentlászló 1, Hm. 78/18, Öcs 28), 2000, 2003, 2016; Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai & Selmeczi 2003, plate 1. fig. 1, no plate 2. fig. 1; Sütő-Szentai 1994c; Sütőné Szentai 1995a (abundant Zalaszentlászló 1 bh. Hegymagas 78/18, Öcs 28); Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1982b, 1989, 1995a (Hegymagas 78/18 borehole, Zalaszentlászló-1 bh), 2003; Late Miocene, Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 1995a (Zalaszentlászló 1, rare); Late Miocene, Pannonian, *Spiniferites validus* zone: Sütő 1994a; Sütőné Szentai 2000; Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 2000.

Spirogyra sp. 2 typ Van Geel & Van der Hammen 1978

Hungarian Age: Late Miocene, Pannonian: Sütő-Szentai 1988; Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai & Selmeczi 2003, plate 1, fig. 2, no plate 2. fig. 2; Late Miocene, Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1995a (Öcs 28); *Galeacysta etrusca* zone: Sütő 1994a (Villány 7).

Spirogyra sp. 3b type Van Geel & T. Van Der Hammen 1978

Hungarian Age: Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai & Selmeczi 2003, pl. 1. figs. 3, 5, not pl. 2. figs. 3, 5.

Spirogyra 3c typ B. Van Geel & T. Van der Hammen 1978

Sütőné Szentai 1982b, pl. VIII, fig. 5.

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii* main zone, *Spiniferites balcanicus* main zone, *Mougeotia laetevirens* zone: Sütőné Szentai 1982a, 1982b, 1984, 1986, 1987, 1995a (Zszt 3, Hm. 78/18, Öcs 28), 1998, 2000, 2002, 2003, 2011; Sütő 1994a, 1995b; Sütő-Szentai 1985 1988, 1994c; Sütő-Szentai in Lennert & al. 1999; Sütőné Szentai & Selmeczi 2003, pl. 1, fig. 4, not pl. 2. fig. 4.

Spirogyra* cf. *scrobiculata (Stockmayer 1894) Czurda 1932

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* (or *S. paradoxus*) zone: Sütőné Szentai 1995a (Zszt 3); Late Miocene, Pannonian, *Dinoflagellata–Zygnemataceae* interval zone, over the *Spiniferites tihanyensis* zone: Sütő: 1994a.

Tetraedron Braun

Tetraedron minimum (Braun) Hansgirg (in Van Geel, Bohncke and Dee 1981)

Hungarian Age: Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* (or *Spiniferites paradoxus*), *S. validus* zone, *Dinoflagellata*–*Zygnemataceae* interval zone over the *S. validus* zone: Sütő-Szentai 1988.

Tetraporina Naumova 1937

Tetraporina quadrata Bolchovitina 1953

Holotype: Bolchovitina 1953, p. 102, pl. 16, fig. 43.

Russian Age: Lower Carboniferous: Naumova 1937. Cretaceous: Bolchovitina 1953.

Hungarian Age: Eocene NP 15 zone: Rákosi 1973, 1977, 1991, 1993; Rákosi & Snopkova 1993; Miocene, Badenian: Nagy 1966, pl. 2, fig. 9; Nagy 1969, pl. II, fig. 5; Late Miocene, Sarmatian: Nagy 1992; Late Pannonian: Nagy: 1957 (cf. *Harmandia* sp.); Nagy 1958, p. 102, and p. 230, pl. 2, fig. 2.

Tetraporina sp.

Hungarian Age: Late Miocene, Late Pannonian: Rákosi 1963; Pálfalvi & Rákosi 1979.

Zygnemataceae Kützing 1898

Hungarian Age: Pleistocene, Dryas II between 12 600–12 000 Years: Nagyné Bodor 1998; Pleistocene, Alleröd between 12 000–10 800 Years: Nagyné Bodor 1998; Pleistocene, Dryas III between 10 800–10 000 Years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene, Preboreale between 10 000–9 000 Years: Nagyné Bodor, Szuromi-Korecz, Cserny 2000; Holocene, Subatlantian between 2 500–1 500 B.P. Years: Nagyné Bodor 1998; Holocene, Subatlantian between 2 500–0,0 Years: Nagyné Bodor and Szuromi-Korecz 2001; Holocene, Subatlantian between 700–0,0 Years: Nagyné Bodor 1998; Nagyné Bodor & al. 1996.

Zygnemataceae 341 A type Van Geel, Bohncke & Dee 1981

Hungarian Age: Late Miocene, Pannonian, *Dinoflagellata*–*Zygnemataceae* interval zone, over *Spiniferites tihanyensis* zone: Sütő-Szentai 1994c.

Zygnemataceae 341B type Van Geel, Bohncke, Dee 1981

Hungarian Age: Late Miocene, Pannonian: *Dinoflagellata*–*Zygnemataceae* interval zone, over *Spiniferites tihanyensis* zone: Sütő-Szentai 1994c.

Zygnema type Van Geel & Van der Hammen 1978

Hungarian Age: Late Miocene, Pannonian: Sütőné Szentai 1982b, pl. III, fig. 3; Late Pannonian, *Mougeotia laetevirens* zone: Sütőné Szentai 1982b, 1984, 1986, 1987, 1989; Sütő-Szentai: 1985, 1988.

Plankton form „A” Nagy 1969

Type: Nagy 1969, p. 311, pl. 8, fig. 2.

Hungarian Age: Oligocene Tard Clay Formation: Rákosi 1985; Oligocene, Np 21 zone: Rákosi 1993; Miocene, Karpatian, Fish-scale bearing sequence: Nagy 1969, 1992;

Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy & Nagyné Bodor 1982, pl. 1, figs. 7-8. and pl. 2, fig. 3.

Plankton form „B” Nagy 1969

Type: Nagy 1969, p. 311, pl. 8, fig. 1.

Hungarian Age: Miocene, Karpatian, Fish scale bearing sequences: Nagy 1969.

Prasinophytae

Cymatiosphaera O. Wetzel 1933

Cymatiosphaera elliptica Nagy 1969

Holotype: Nagy 1969, p. 301, pl. 4, figs. 6, 9.

Hungarian Age: Eocene, NP 15, 16, 17, 18, 19, 20 zones: Rákosi & Snopkova 1993; Oligocene, NP 21, 22, 23, 24 zones: Rákosi & Snopkova 1993; Miocene, Karpatian: Bodor 1983; Nagy 1969.

Cymatiosphaera eupeplos (Valensi 1948) Deflandre 1954

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997; Eocene: Rákosi 1973, pl. 6, figs. 1-4.; Rákosi & Tóth 1980; Eocene, NP 15, 16, 17, 18, 19, 20 zones: Rákosi 1979, 1983, 1991, 1993; Rákosi & Snopkova 1993; Oligocene, NP 21-22-23-24 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Cymatiosphaera hungarica Nagy 1969

Holotype: Nagy 1969, p. 300, pl. 4, fig. 4, 7, 8.

Hungarian Age: Miocene, Karpatian: Bodor 1983, Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy 1969; Late Miocene, Late Pannonian: Nagy 1969.

Cymatiosphaera initiata Deflandre & Cookson 1955

Hungarian Age: Eocene: Kedves 1992.

Cymatiosphaera mendax (Deflandre 1945) Sarjeant & Stancliffe 1994

Micrhystridium mendax Deflandre 1945.

Hungarian Age: Silurian: Oravec 1964.

Cymatiosphaera microreticulata Nagy 1965a

Holotype: Nagy 1965a, p. 203–204, pl. 1, figs. 4-5, text-fig. 4. Hidas 53 bh. Sample No. 42. 686,6–688,0 m; Paratype: Nagy 1969, pl. 5, figs. 9-10, Hidas 53 bh. 686,6–688,0 m. Middle Miocene.

Hungarian Age: Middle Miocene: Nagy 1965a, 1969, 1992.

Cymatiosphaera miocaenica Hajós 1966

Holotype: Hajós 1966, p. 140–141, 153–154, pl. 1, figs. 4-6, text-fig. 3.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Cymatiosphaera nuda Hajós 1966

Holotype: Hajós 1966, p. 143–144, 156–157, pl. 3, figs. 7-8, text-figs. 11-15.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968; Late Miocene, Sarmatian, *Spiniferites bentorii budajenoensis–Mecsekia incrassata* zone: Sütő-Szentai 1988.

Cymatiosphaera pachythea Eisenack 1967

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 3: Baranyi & al. 2016.

Cymatiosphaera pseudoundulata Hajós 1966

Holotype: Hajós 1966, p. 141–142, 154, pl. 2, figs. 1-4, text-figs. 4-5.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Cymatiosphaera spinosa Hajós 1966

Holotype: Hajós 1966, p. 142–143, 155, pl. 2, figs. 6, 7, 8, text-fig. 6.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Nagy 1992; Sarmatian: Koreczné Laky 1968; Sarmatian, *Spiniferites bentorii budajenoensis–Mecsekia incrassata* zone: Sütő-Szentai 1988.

Cymatiosphaera spinosa Hajós 1966 f. ***magna*** Hajós 1966

Holotype: Hajós 1966, p. 143, 155–156, pl. 3, figs. 1-3, text-fig. 10.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Cymatiosphaera undulata Hajós 1966

Holotype: Hajós 1966, p. 140, 153, pl. 1, figs. 1-3, text-fig. 2.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Miocene, Karpatian: Nagy 1992; Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968; Sarmatian, *Spiniferites bentorii budajenoensis–Mecsekia incrassata* zone: Sütő-Szentai M. 1988.

Roumanian Age: Late Miocene, Sarmatian: Sütő & Szegő 2008.

Cymatiosphaera sp.

Hungarian Age: Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Late Campanian: Góczán & Sieglné Farkas 1989; Oligocene: Rákosi 1966; Oligocene, Tard Clay Formation: Rákosi 1985; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Ottnangian: Nagy 1992; Karpatian: Nagy 1992; Badenian: Nagy & Kókay 1990, 1991; Nagy 1992; Late Badenian: Nagy & Bodor 1982; Sarmatian: Nagy & Bodor 1982; Nagy 1992; Upper part of the Sarmatian: Sütőné Szentai 1983, 2012, 2016; Sütő-Szentai 1985, 1988; Sütőné Szentai in Jámber & al. 1987; *Mecsekia ultima* zone: Sütőné Szentai in Jámber & al. 1987; Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai: 1983, 2016; Sütő-Szentai 1985, 1988; Pannonian, *Spiniferites bentorii coniunctus–Spiniferites paradoxus* zone (or *S. paradoxus* zone): Sütőné Szentai 2003; Pannonian: Nagy 1992; Late Pannonian, Pontian: Nagy 1992.

Roumanian Age: Sarmatian: Sütő & Szegő 2008; Pannonian, *Acritarcha–Prasinophyte* Assemblage zone: Sütő & Szegő 2008; Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Dictyotidium Jiabo 1978

Dictyotidium pachydermum Jiabo 1978

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Dictyotidium reticulatum Schulz 1965

Hungarian Age: Triassic, Carnian: Góczán & al. 1991, pl. 11, fig. 10; Góczán & al. 1996.

Dictyotidium tenuiornatum Eisenack 1955

Hungarian Age: Triassic, Carnian: Góczán & al. 1996.

Halosphaeropsis Mädlér 1963

Halosphaeropsis liassica Mädlér 1963

Hungarian Age: Early Jurassic, Early Toarcian: Baranyi & al. 2016.

Mecsekia Hajós 1966

Genotypus: *Mecsekia heteropunctata* Hajós 1966, p. 148–149, 161, pl. 4, fig. 11, text-fig. 24.

Mecsekia heteropunctata Hajós 1966

Holotype: Hajós 1966, 148–149, 161, pl. 4, fig. 11, text-fig. 24.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Mecsekia incrassata Sütőné Szentai 1986

Holotype: Sütő–Szentai 1986, p. 37–38, pl. 1, fig. 3.

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997. p. 277.

Hungarian Age: Miocene; Upper part of the Sarmatian: as *Micrhystridium* cf. *deflandrei*: Sütőné Szentai 1983a, Sütő–Szentai 1985; Sütőné Szentai in Jámor & al 1987; Sütőné Szentai 1986 as *Mecsekia incrassata*; Sütő–Szentai 1988 as *M. incrassata*; Fuchs & Sütő–Szentai as *Mecsekia incrassata–Spiniferites bentorii budajenoensis* zone; Miocene, Sarmatian, *Spiniferites bentorii budajenoensis–Mecsekia incrassata* zone Sütőné Szentai 2002, 2010, 2012; 2016; Baranyi & al. 2013; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütőné Szentai: 2000, 2002, 2016; Pannonian, *Spiniferites bentorii oblongus* zone: Kókay & al. 1991.

Roumanian Age: Miocene, Sarmatian, *Mecsekia incrassata–Botryococcus braunii* dominance: Sütő & Szegő 2008.

Mecsekia orientalis Sütő-Szentai 1988, nomina nuda

Type: Sütő-Szentai 1988, p. 355, 357, pl. 1, fig. 4. No description.

Hungarian Age: Miocene, Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1988.

Mecsekia spinosa Hajós 1966

Holotype: Hajós 1966, p. 150, 162. Pl. 4, fig. 13, text-fig. 26.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968; Miocene, Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1988, 2012; Baranyi & al. 2013.

Mecsekia spinulosa Hajós 1966

Holotype: Hajós, 1966, p. 149–150, 161–162, pl. 4, fig. 12, text-fig. 25.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968; Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1988, 2012; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus*–*Lingulodinium machaerophorum* zone: Sütő-Szentai 2002.

Mecsekia ultima (Sütőné Szentai 1982a) Sütőné Szentai 1994c

Holotype: Sütőné Szentai 1982a, p. 217, pl. 1, fig. 1, (two illustration);

Sütőné Szentai 1997: Micropaleontological type material of Natural collection at Komló 1997. p. 277.

Pleurozonaria ultima Sütőné Szentai 1982a.

Hungarian Age: Miocene, Sarmatian, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone Sütő-Szentai 2012; Baranyi & al. 2013; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütőné Szentai 1982a, 1983a, 1983b, 1987, 1995a (Nagygyörbő 1), 1995c, 1997, 2000, 2002; Sütő-Szentai 1985; Geary, & al. 2000; Sütőné Szentai & Bóna in Hámor T. 1992; Sütő-Szentai in Jámbor 1985; Sütőné Szentai in Jámbor & al. 1987; Sütő-Szentai in Magyar & al. 1999a; Magyar & al. 1999b, 2007; Magyar 2009, 2010; Müller 1999; Nagy 1992 p. 237; Bakrač 2012; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* primary assemblage zone and *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2012, 2016; Baranyi & al. 2013; Late Miocene, Pannonian, *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone) (rare): Sütőné Szentai 2003.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acritarcha*–*Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Mecsekia sp.

Hungarian Age: Miocene, Sarmatian, *Leyeunecysta*–*Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000; Late Miocene Pannonian, *Spiniferites bentorii pannonicus* zone: Sütőné Szentai 2012; Baranyi & al. 2013; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Kókay & al. 1991.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Microfoveolatodiscus Kedves 1965b

Genotype: *Microfoveolatodiscus dorogensis* Kedves 1965b, p. 338, pl.3, figs. 8-9.

Microfoveolatodiscus dorogensis Kedves 1965b

Holotype: Kedves 1965b, p. 338, pl. 3, figs. 8-9, Eocene, Basin Lignitifère Dorog, territoire de Mogyorósbánya.

Hungarian Age: Eocene: Kedves 1965b.

Noremia Kedves 1962

Genotype: *Noremia major* Kedves 1962, pl.1, figs. 1-3.

Noremia maior Kedves 1962

Holotype: Kedves 1962, pl. 1, figs. 1-3.

Hungarian Age: Early Eocene, Sparnacian: Kedves 1962; Middle Eocene: Kedves 1969, p. 42. Eocene: Rákosi 1973, pl. 7, figs. 1-2; Eocene Priabonien: Rákosi in Gidai 1971; Eocene, NP 15, 16, 17, 18, 19, 20 zones: Rákosi 1979, 1983, 1991, 1993; Rákosi & Snopkova 1993.

Noremia sp.

Hungarian Age: Eocene: Kedves 1992.

Oraveczia Góczán 1997

Generotypus: *Oraveczia hungarica* Góczán 1997, p. 199–200, pl. 1, figs. 1-8; text-fig. 1.

Oraveczia calatha Góczán 1997

Hungarian Age: Triassic, Carnian: Góczán in Haas & al. 1997. No diagnose.

Oraveczia campanella Góczán 1997

Hungarian Age: Triassic, Carnian: Góczán in Haas & al. 1997. No diagnose.

Oraveczia doliola Góczán 1997

Holotype: Góczán 1997, p. 200–201, pl. 6, figs. 1-7.; text-fig. 2.

Hungarian Age: Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997.

Oraveczia faveola (Morbey 1975) Góczán 1997

Holotype: Morbey 1975, p. 45–46, pl. 18, figs. 1a-c. More paratype: Morbey 1975, pl. 19, figs. 1a-b; Góczán 1997, p. 203–204; text-fig. 4.

Tythyodiscus faveolatus Morbey 1975.

Hungarian Age: Triassic, Early Rhaetian, Csővár Limestone Formation: Góczán 1997;
Triassic, Carnian: Góczán in Haas & al. 1997.

Oraveczia galeata Góczán 1997

Holotype: Góczán 1997, p. 202–203, pl. 9, figs. 1-9; text-fig. 3.

Hungarian Age: Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997.

Oraveczia* cf. *galeata Góczán 1997

Type: Góczán 1997, pl. 10, figs. 1-5.

Hungarian Age: Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997.

Oraveczia hungarica Góczán 1997

Holotype: Góczán 1997, p. 199–200, pl. 1, figs. 1-8; text-fig. 1.

Hungarian Age: Triassic, Carnian: Góczán in Haas & al. 1997; Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997.

Oraveczia* cf. *hungarica Góczán 1997

Hungarian Age: Triassic: Góczán 1997, pl. 4, figs. 1-6; Pl. 5, figs. 1-3.

Oraveczia infraverrucata Góczán 1997

Holotype: Góczán in Haas & al. 1997, pl. 11, fig. C.

Hungarian Age: Triassic, Carnian: Góczán in Haas & al. 1997.

Oraveczia pannonica Góczán 1997

Hungarian Age: Triassic, Norian, Rhaetian: Góczán in Haas & al. 2000. No diagnose.

Pachysphaera Ostenfeld 1899

Pachysphaera pelagica Ostenfeld 1899

Hungarian Age: Miocene, Karpatian: Sütőné Szentai 1994b; Miocene, Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incrassata* zone: Sütő-Szentai 1988; Late Miocene, Pannonian: *Mecsekia ultima* zone: Sütő-Szentai 1988.

Pachysphaera marshalliae Parke 1966

Hungarian Age: Miocene, Karpatian: Sütőné Szentai 1994b.

Pleurozonaria O. Wetzel 1933

Pleurozonaria concinna (Cookson & Manum 1960) Mädlér 1968

Holotype: Cookson & Manum 1960, p. 6, pl. 1, fig. 1.

Crassosphaera concinna Cookson & Manum 1960.

Hungarian Age: Jurassic: Kedves 1968; Early Jurassic, Late Liassic: Simoncsics & Kedves 1961, pl. 2, figs. 1-6; Early Jurassic Pliensbachian: Bóna in Némedi Varga & Bóna

1972; Bóna in Lachkar, Bóna, Pavillon 1984; Cretaceous, Campanian: Siegl-Farkas 1995; Paleogene: Rákosi 1973; Eocene Cuisien: Rákosi in Gidai 1971; Eocene: Darvastó F. – Szóc Formation: Rákosi 1991; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage zone: Rákosi 1979, 1983; Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983; Eocene, Lutetien: Rákosi in Gidai 1971; Oligocene: Rákosi 1966; Oligocene, Tard Clay Formation: Rákosi 1985; Oligocene, Rupélian/Kiscellian: Krivánné Hutter 1963, pl. 4, figs. 1 and 5; Rákosi in Gidai 1992; Oligocene: Nagy 1992, p. 15. Eger, Téglagyár bh; Early Miocene: Nagyné Bodor in Rálishné Felgenhauer 1991; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagy 1969, p. 304, pl. 7, fig. 1; Nagy 1992; Miocene, Badenian: Chikán 1991; Nagy 1969, 1992; Nagy & Kókay 1990, 1991; Miocene, Late Badenian: Nagy & Bodor 1982, Table 1, p. 122; Miocene, Sarmatian: Nagy 1992; Late Miocene, Pannonian: Nagy 1969, 1992; Late Pannonian: Rákosi in Pálfalvi & Rákosi 1979; Late Pannonian, Pontian: Nagy 1992; Pliocene: Nagy 1992.

Cookson & Manum 1960 Age: Neocomian (old. Lower Cretaceous, Valanginian, Hauterivian, Barremian).

Pleurozonaria cooksoni (Krivánné Hutter 1963) Snopkova 1981

Holotype: Krivánné Hutter 1963, pl. 3, figs. 8-11. Oligocene, Rupelian.

Crassosphaera cooksoni Krivánné Hutter 1963.

Hungarian Age: Oligocene, NP 22, 23, 24, 25 zones: Rákosi 1993; Oligocene Rupélian/Kiscellian: Krivánné Hutter 1963; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagy 1992.

Pleurozonaria digitata (Cookson & Manum 1960) Mädlér 1968

Holotype: Cookson & Manum 1960, p. 7, pl. 1, figs. 4-5.

Crassosphaera digitata Cookson & Manum 1960.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Badenian: Nagy 1992; Miocene, Sarmatian: Nagy 1992; Pannonian: Nagy 1992.

Cookson & Manum 1960 Age: Neocomian (old: Lower Cretaceous, Valanginian, Hauterivian, Barremian).

Pleurozonaria manumi (Krivánné Hutter 1963) Rákosi 1973

Holotype: Krivánné Hutter 1963, pl. 2, figs. 15-17. Oligocene, Rupelian.

Crassosphaera manumi Krivánné Hutter 1963.

Hungarian Age: Early Eocene, Sparnacumian: Krivánné Hutter 1963, pl. 3, figs. 3-4; Oligocene: Rákosi 1966, 1973; Oligocene, Kiscellian/Rupelian: Krivánné Hutter 1963; Oligocene, NP 22, 23 zones: Rákosi 1993; Oligocene, Egerian: Nagy 1992 p. 15. Eger, Téglagyár bh; Miocene, Eggenburgian: Nagy 1992; Miocene, Karpatian: Nagy 1992; Miocene, Early Badenian: Nagy 1992.

Pleurozonaria* cf. *manumi (Krivánné Hutter 1963) Rákosi 1973

Holotype: Krivánné Hutter 1963, pl.3, figs. 1-2. Oligocene, Lattorfian

Hungarian Age: Oligocene, Lattorfian: Krivánné Hutter 1963.

Pleurozonaria minor (Krivánné Hutter 1963) Rákosi 1973

Holotype: Krivánné Hutter 1963, pl. 2, figs. 1-3. Oligocene, Lattorfian.

Crassosphaera minor Krivánné Hutter 1963.

Hungarian Age: Paleogene: Rákosi 1973; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, NP 19, 20 Zones: Rákosi 1993; Eocene, Buda Marl Formation: Rákosi 1985; Oligocene, NP 22, 23, 24, 25 Zones: Rákosi 1993; Oligocene, (Lattorfian) Kiscellian: Krivánné Hutter 1963; Oligocene, (Rupélian) Kiscellian: Krivánné Hutter 1963, pl. 2, fig. 6; Oligocene Egerian: Nagy 1992 p. 15. Eger Téglagyár bh; Miocene, Eggenburgian: Nagy 1992; Miocene, Karpatian: Nagy 1992.

Pleurozonaria polyporosa Mädlér 1963

Hungarian Age: Early Jurassic, Early Toarcian, Assemblage 3: Baranyi & al. 2016.

Pleurozonaria stellulata (Cookson & Manum 1960) Mädlér 1968

Holotype: Cookson & Manum 1960, p. 7-8, pl. 2, figs. 1-4; text-fig. 2.

Crassosphaera stellulata Cookson & Manum 1960.

Hungarian Age: Early Eocene Sparnacumian: Kedves 1962; Early Eocene, Sparnacumian: Krivánné Hutter 1963, pl. 4, figs. 2-4; Early Eocene: Darvastó Formation, Middle Eocene: Luteti: Szóc Formation: Rákosi 1991; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage Zone: Rákosi 1979, 1983; Eocene, NP 18, 19, 20 zones: Rákosi 1993; Eocene: Kedves 1969; Oligocene, NP 22, 23, 24 zones: Rákosi 1993; Oligocene: Rákosi 1966; Paleogene: Rákosi 1973; Oligocene, Kiscellian: Nagy 1992; Oligocene, Egerian: Nagy 1992 p. 15. Eger, Téglagyár bh.

Cookson & Manum 1960 Age: Eocene.

Pleurozonaria stellulata (Cookson & Manum 1960) Mädlér 1968 var. ***minor*** Kedves 1962

Holotype: Kedves 1962, pl. 2, figs. 1-6. Lower Eocene, Sparnacian.

Hungarian Age: Early Eocene, Sparnacian: Kedves 1962, 1963, pl. 8, figs. 6-7; Middle Eocene: Kedves 1969, pl. 22, figs. 28-29.

Pleurozonaria triadica Orłowska–Zwolinska 1979

Hungarian Age: Triassic, Anisian: Góczán & al. 1993. No diagnose.

Pleurozonaria triassica Orłowska–Zwolinska 1979

Hungarian Age: Triassic, Anisian, (Middle Anisian=Pelsonian, in Hungary), Felsőőrs Limestone Formation: Góczán & al. 1993.

Pleurozonaria sp. form *A*. Krivánné Hutter 1963

Type: Krivánné Hutter 1963, pl. 3, figs. 5-6.

Hungarian Age: Oligocene, Rupelian/Kiscellian: Krivánné Hutter 1963.

Pleurozonaria (Crassosphaera) sp.

Hungarian Age: Jurassic: Kedves 1993; Early Jurassic, Late Sinemurian: Bóna 1983, 1984a, 1984b (1984b: Cikó-XV borehole 52–58 m); Némedi Varga & Bóna 1972; Late Jurassic B zone "*Crassosphaeridae*": Kedves 1968; Simoncsics & Kedves 1969; Early Cretaceous: Rákosi 1971; Early Eocene: Kedves 1963; Middle Eocene: Kedves 1969; Late Eocene: Kedves 1986; Oligocene: Krivánné Hutter 1964; Miocene, Karpatian: Sütőné Szentai in Püspöki 2001; Badenian: Nagy & Bodor 1982; Sütőné Szentai in Chikán 1991; Sarmatian: Sütőné Szentai 1983; Sütő-Szentai 1985; Pannonian as redeposited: Nagy & Planderova 1985; Sütőné Szentai 1983, 1998; Sütő-Szentai 1985; Nagyné Bodor 1988.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Early Pannonian: Sütő & Szegő 2008.

Prasinophytes

Hungarian Age: Jurassic, Early Toarcian: Assemblage 1, Assemblage 4, Assemblage 5: Baranyi & al. 2016.

Pterosperma Pouchet 1893

Pterosperma moebii (Jorg.) Ostenfeld

Hungarian Age: Miocene, Karpatian: Sütőné Szentai 1994b.

Pterospermella Eisenack 1972

Pterospermella sp.

Hungarian Age: Oligocene Tard Clay Formation: Rákosi 1985.

Pterospermella australiensis (Deflandre & Cookson 1955) Eisenack 1972

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1997.

Pterospermella helios Sarjeant 1959

Hungarian Age: Eocene: Rákosi 1973, pl. 6, figs. 7-8; Eocene, NP 16, 17, 18, 19 zones: Rákosi 1993; Eocene, NP 17 zone, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Miocene, Sarmatian: Sütő-Szentai as *Pterospermopsis* cf. *helios*: 1985; Sütőné Szentai 1988; Sütőné Szentai Jámor & al. 1987.

Pterospermella microptera Deflandre & Cookson 1955

Hungarian Age: Eocene: Rákosi 1973, pl. 6, figs. 5-6; Eocene, NP 16 zone: Rákosi 1993; Eocene, NP 17 zone, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, NP 18-19 zones, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage Zone: Rákosi 1979, 1983.

Pterospermopsis W. Wetzel 1952

Pterospermopsis sp.

Hungarian Age: Oligocene: Rákosi 1966; Miocene, Eggenburgian: Nagy 1992; Ottnangian: Nagy 1992; Karpatian: Nagy 1992; Sütőné Szentai 1994b; Sütőné Szentai in Püspöki 2001; Early Badenian: Nagy & Rákosi 1966 (as redeposited); Badenian: Nagy 1992; Sarmatian: Nagy & Bodor 1982, Table 1, p. 124; Nagy 1992; Late Miocene, Pannonian: Rákosi 1963.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acritarcha–Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Pterospermopsis cf. *ginginensis* Deflandre & Cookson 1955

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962; Late Miocene, Pannonian: Rákosi 1963.

Pterospermopsis I. type Sütő & Szegő 2008 (nomina nuda)

Type: Sütő-Szegő, 2008, p. 295, pl. 7, fig. 1.

Roumanian Age: Late Miocene, Pannonian, *Acritarcha–Prasinophyte* assemblage zone: Sütő & Szegő 2008.

Sulcodiscus Góczán 1997

Genotypus: *Sulcodiscus trisulcus* Góczán 1997

Sulcodiscus trisulcatus Góczán 1997

Holotype: Góczán 1997, p. 206–207, pl. 22, figs. 1–3.

Hungarian Age: Triassic, lowermost Rhaetian: Góczán 1997.

Tarsisphaeridium Riegel 1974

Tarsisphaeridium geminiporatum Riegel 1974

Holotype: Riegel 1974, p. 347–366.

Hungarian Age: Cretaceous, Lower–Middle Campanian, *Odontochitina operculata* Assemblage Zone, *Tarsisphaeridium geminiporatum* Subzone: Siegl-Farkas 1997, 1999a.

Tasmanites Newton 1875

Tasmanites sp.

Hungarian Age: Triassic, Norian–Rhaetian: *Tasmanites* types: Góczán in Haas & al. 2000; Jurassic, Liassic: Kedves 1993 as *Tasmanites/Tytthodiscus* sp. Pl. 1. 2. figs. 21–22; Early Jurassic, Early Toarcian, Assemblage 3: Baranyi & al. 2016; Early Cretaceous: Rákosi 1971; Middle Eocene: Kedves 1969, p. 41; Kedves 1986; Late Eocene: Kedves 1986 Eocene: Kedves 1992; Miocene, Karpatian: Sütőné Szentai 1994b; Sütőné Szentai in Püspöki 2001; Sütőné Szentai in Radócz 1983; Miocene, Badenian: Sütőné Szentai in Chikán 1991; Miocene Sarmatian: Sütőné Szentai in Jámbor & al. 1987; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő-Szentai in Jámbor & al. 1985; Late Miocene, Pannonian, *Pontiadinium pecsvaradensis* zone: Sütőné Szentai 2011; Late Miocene,

Pannonian, *Galeacysta etrusca* zone, *G. etrusca*–*Spiniferites virgulaeformis* subzone: Sütőné Szentai 2011.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acritarcha*–*Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Tythodiscus Norem 1955

Tythodiscus mecsekensis Nagy 1965a

Holotype: Nagy 1965a, p. 206, pl. 3, figs. 12–14. and Nagy 1969, pl. 8, fig. 3.
Zengővárkony 59 bh. sample 14, 34–37,5 m;

Hungarian Age: Middle Miocene: Nagy: 1965a, 1969, 1992.

Tythodiscus miocaenicus Nagy & Bodor 1982

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, Table 1. p. 123. No diagnose.

Tythodiscus tubulatus Góczán 1997

Holotype: Góczán 1997, p. 207–208, pl. 23, figs. 1–5.

Hungarian Age: Triassic, Carnian: Góczán in Haas & al. 1997; Triassic, Norian, Rhaetian: Góczán in Haas & al. 2000; Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997; Triassic, Carnian, Norian Rhaetian: Góczán 1997.

Tythodiscus sp.

Hungarian Age: Triassic, Carnian–Rhaetian: Góczán in Haas & al. 1997, 2000; Cretaceous, Early Albian, *Bicolisporites torosus* zone: Juhász in Császár & al. 1983; Cretaceous, Campanian: Siegl-Farkas 1995; Eocene: Rákosi 1973; Eocene, Szóc Limestone Formation, NP 15 zone: Rákosi 1993; Eocene, NP 16 zone, Tokod Formation: Rákosi in Gidai 1992; Eocene, NP 17 zone; *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983, 1993; Eocene, NP 18, 19 zones, *Retisphaera microreticulata*–*Tythodiscus* sp. A. Assemblage Zone: Rákosi 1979, 1983, 1993; Eocene, Buda Marl Formation, NP 20 zone: Rákosi 1993; Eocene, NP 15, 16, 17, 18, 19, 20 zone Rákosi & Snopkova 1993; Middle Oligocene: Rákosi in Gidai 1992; Oligocene: Krivánné Hutter 1964; Nagy 1992; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Sütőné Szentai in Chikán 1991; Nagy 1969, 1992; Sütőné Szentai 1994b; Sütőné Szentai in Püspöki 2001; Miocene, Badenian: Nagy & Bodor 1982; Sütőné Szentai in Chikán 1991; Nagy 1992; Miocene, Sarmatian: Nagy 1992; Late Miocene, Pannonian: Miháltzné Faragó 1977, 1982; Nagy 1992.

Vadászia Góczán 1997

Genotypus: *Vadászia cavernosa* Góczán 1997

Vadászia cavernosa Góczán 1997

Holotype: Góczán 1997, p. 204–205, pl. 16, figs. 3-5; pl. 17-18.

Hungarian Age: Triassic, lowermost Rhaetian, Csővár Limestone Formation: Góczán 1997.

Vadászia cf. cavernosa Góczán 1997

Type: Góczán 1997, pl. 21, figs. 1-2.

Hungarian Age: Triassic: Góczán 1997.

***Vadászia* sp.**

Hungarian Age: Triassic Norian, Rhaetian: Góczán in Haas & al. 2000.

Phaeophyceae

Hungarian Age: Jurassic, Oxfordian, Kimmeridgian, Pálihálási Mészkö Formáció: *Eotix alpina* „fonalas alga” Bence & al. 1990; Eocene Lutetien: *Algues* filiformes: Rákosi in Gidai 1971; Rákosi 1979.

Acritarcha Evitt 1963

Annulodiscus Hajós 1966

Genotypus: *Annulodiscus granulatus* Hajós 1966, p. 147–148, 159–160.

Annulodiscus granulatus Hajós 1966

Holotype: Hajós 1966, p. 147–148, 159–160, pl. 4, fig. 6, text-fig. 22.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Ascostomocystis Drugg & Loeblich Jr. 1967

Type: *Ascostomocystis hydria* Drugg and Loeblich Jr. 1967, p. 187, pl. 3, fig. 15.

Ascostomocystis hydria Drugg and Loeblich Jr. 1967

Holotype: Drugg and Loeblich Jr. 1967, p. 187, pl. 3, fig. 15.

Hungarian Age: Eocene: Kedves 1992.

Williams & al. 1998 Age: Early Eocene.

Baltisphaeridium Eisenack 1958

Type: *Ovum hispidum* subsp. *longispinosum* Eisenack 1931, 110–111, pl. 5. fig. 10.

Baltisphaeridium brevispinosum (Eisenack 1931 ex Eisenack 1938) Eisenack 1959

Holotype: Eisenack 1931, p. 111, pl. 5, fig. 3.

Ovum hispidum subsp. *brevispinosum* Eisenack 1931,

Hystrichosphaeridium brevispinosum Eisenack 1931 ex Eisenack 1938 subsp. *brevispinosum* Eisenack 1959.

Hungarian Age: Silurian: Oravec 1964 as *Baltisphaeridium cf. brevispinosum* (Eisenack 1931 ex Eisenack 1938) Eisenack 1959; Miocene, Karpatian: Nagy 1969, pl. 1, fig. 9; Nagy 1992.

Williams & al. 1998 Age: Silurian.

Baltisphaeridium ciliatum Nagy 1969

Holotype: Nagy 1969, p. 299, pl. 4, figs. 2-3.

Hungarian Age: Miocene, Badenian: Nagy 1969; Nagyné Bodor in Chikán 1991.

Baltisphaeridium longispinosoides (Sannemann 1955) Downie and Sarjeant 1965

Holotype: Sannemann 1955, p. 329–330, pl. 6, fig. 1.

Hystriochosphaeridium longispinosoides Sannemann 1955.

Hungarian Age: Silurian: Oravec 1964.

Williams & al. 1998 Age: Devonian (Late Givetian).

Baltisphaeridium longispinosum (Eisenack 1931) Eisenack 1959

Holotype: Eisenack 1931, p. 110–111, pl. 5, fig. 10.

Ovum hispidum subsp. *longispinosum* Eisenack 1931,

Hystriochosphaera longispinosa (Eisenack 1931) O. Wetzel 1932,

Hystriochosphaeridium longispinosum Eisenack 1931,

Micrhystriidium longispinosum (Eisenack 1931) Cramer & al. 1979.

Hungarian Age: Silurian: Oravec 1964,

Williams & al. 1998 Age: Ordovician.

Baltisphaeridium microspinosum (Eisenack 1954) Downie 1959

Holotype: Eisenack 1954, p. 209–210, pl. 1, fig. 8.

Hystriochosphaeridium microspinosum Eisenack 1954,

Lophosphaeridium microspinosum (Eisenack 1954) Downie 1963,

Visbysphaera microspinosum (Eisenack 1954) Lister 1970,

Buedingiisphaeridium microspinosum (Eisenack 1954) Gardiner & Vanguetaine 1971.

Hungarian Age: Silurian: Oravec 1964.

Williams & al. 1998 Age: Silurian (Late Llandovery).

Baltisphaeridium trifurcatum (Eisenack 1931) Eisenack 1959

Holotype: Eisenack 1931, p. 112, pl. 4, fig. 21.

Ovum hispidum subsp. *trifurcatum* Eisenack 1931.

Hungarian Age: Miocene, Schlier sequence, Karpatian? (redeposited): Nagy 1969, p. 298, as *Baltisphaeridium* cf. *trifurcatum*, pl. 3, fig. 1.

Williams & al. 1998 Age: Ordovician.

***Baltisphaeridium* sp.**

Hungarian Age: Silurian: Góczán 1971; Oligocene, Kiscellian: Nagy 1992; Oligocene, Egerian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Bodor 1983; Nagy 1992; Miocene, Badenian: Nagyné Bodor in Chikán 1991; Nagy 1992; Miocene Sarmatian: Nagy 1992; Late Miocene, Pannonian: Nagy & Planderova 1985; Nagy 1992.

***Baltisphaeridium* sp. 1. type** Nagy 1969

Hungarian Age: Miocene, Badenian: Nagy 1969, p. 299–300, pl. 4, fig. 5.

***Baltisphaeridium* sp. 2. type** Nagy 1969

Hungarian Age: Miocene, Karpatian: Nagy 1969, p. 300, pl. 6, fig. 2.

Baltisphaeridium sp. form *A*, Góczán 1993

Hungarian Age: Triassic, Ladinian Góczán & al. 1993. No diagnose.

Baltisphaeridium sp. form *B* Góczán, 1993

Hungarian Age: Triassic, Ladinian: Góczán & al. 1993. No diagnose.

Campenia Jiabo 1978

Campenia circellata Jiabo 1978

Hungarian Age: Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23 zones: Rákosi 1993.

Cantharus ? Góczán 1962, no description

Cantharus cantharus ? Góczán 1962, no description

Hungarian Age: Early Cretaceous Góczán 1962.

Catillopsis Drugg 1970

Type: *Catillopsis abdita* Drugg 1970, p. 821, fig. 17 D.

Catillopsis abdita Drugg 1970

Holotype: Drugg 1970, fig. 17 D.

Hungarian Age: Eocene: Kedves 1992; Pannonian: Kedves 2000b, p. 69, pl. 5.4, figs. 3, 4, 5, 6, as *Catillopsis abdita* Drugg 1970; and pl. 5.4, fig. 1. as *Rhombodinium* cf. *draco* Gocht 1955, illustrate *Mougeotia laetevirens* (A. Braun) Wittrock, in different orientation. Remark: Sütőné Szentai in this paper.

Williams & al. 1998 Age: Early Eocene.

Ceratocystidiopsis Deflandre 1937

Type: *Ceratocystidiopsis simplex* Deflandre 1937, p. 89, pl. 17 (al. pl. 14) fig. 1.

Ceratocystidiopsis sp. Nagy 1969

Hungarian Age: Miocene, Karpatian: Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy 1969, p. 305, pl. 5, fig. 7.

Williams & al. 1998 Age: Cretaceous.

Conates/Conaletes sp.

Hungarian Age: Lower Triassic: Góczán in Haas & al. 1988; Góczán in Loriga & al. 1992.

Conaticystis Habib & Knapp 1982

Conaticystis operosus (Deflandre 1937) Sarjeant & Stancliffe 1994

Micrhystridium operosum Deflandre 1937.

Hungarian Age: Miocene, Karpatian: Nagy 1969 as *Micrhystridium* cf. *operosum* (redeposited); Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy 1969, 1992; Late Pannonian, Pontian: Nagy 1992.

Cyclopsiella Drugg & Loeblich 1967

Type: *Cyclopsiella elliptica* Drugg & Loeblich 1967, p. 188, 190, pl. 3. figs. 1-2.

Cyclopsiella elliptica Drugg & Loeblich 1967

Hungarian Age: Cretaceous, Campanian: Siegl-Farkas 1999a; Eocene, Rákosi 1973, pl. 7, figs. 3-4; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, Middle Eocene: Rákosi in Michoux & al. 1985; Eocene, NP 15-16-17-18-19-20 zones: Rákosi 1993; Rákosi & Snopkova 1993; Oligocene: NP 21-22-23-24 zones: Rákosi 1993; Rákosi & Snopkova 1993.

Williams & al. 1998 Age: Oligocene.

Cystidiopsis Nagy 1965a

Genotypus: *Cystidiopsis certus* Nagy 1965a, p. 209–210, pl. 5, figs. 27-30. text-fig. 8. and Nagy 1969, p. 305, pl. 3, figs. 4-5.

Cystidiopsis certus Nagy 1965a

Holotype: Nagy 1965a, p. 209–210, pl. 5, figs. 27-30. text-fig. 8. and Nagy 1969, p. 305, pl. 3, figs. 4-5.

Hungarian Age: Middle Miocene, Badenian: Nagy: 1965a, 1969, 1992; Miocene, Sarmatian: Nagy 1992.

Deflandridium Nagy 1969

Genotypus: *Deflandridium stellatum* Nagy 1969 p. 294, pl. 2, figs. 1, 3, 4, 6.

Deflandridium stellatum Nagy 1969

Holotype: Nagy 1969, p. 294, pl. 2, figs. 1, 3, 4, 6.

Hungarian Age: Miocene, Badenian: Nagy 1969, 1992.

Filisphaeridium Staplin & al. 1965

Type: *Micrhystridium setasessitante* Jansonius 1972, Pl. 16, fig. 50.

Filisphaeridium fimbriatum (White 1842) Sarjeant & Stancliffé 1994

Holotype: White 1842, p. 36, pl. 4, div. 3, fig. 3.

Xanthidium fimbriatum White 1842, p. 36, Pl. 4, div. 3, fig. 3,

Hystrichosphaeridium fimbriatum (White 1842) Deflandre 1946,

Baltisphaeridium fimbriatum (White 1842) Downie & Sarjeant 1965,

Comasphaeridium fimbriatum (White 1842) Sarjeant 1991.

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962, Góczán in Fülöp 1966.

Williams & al. 1998 Age: Late Cretaceous.

Filisphaeridium pivateaui (Valensi 1953) Pocock 1972

Micrhystridium pivateaui Valensi 1953

Hungarian Age: Eocene, redeposited: as *Micrhystridium pivateaui* Kedves 1992.

Filisphaeridium setasessitante (Jansonius 1962) Staplin, Jansonius & Pocock 1965
Micrhystridium setasessitante Jansonius 1962, pl. 16, fig. 50.

Hungarian Age: Late Permian: Góczán & al. 1987 (as *Micrhystridium* cf. *setasessitante* Plate 8. fig. 4.).

Fromea Cookson & Eisenack 1958

Type: *Fromea amphora* Cookson & Eisenack 1958, p. 56, pl. 5, fig. 10.

Fromea amphora Cookson & Eisenack 1958

Holotype: Cookson & Eisenack 1958, p. 56, pl. 5, fig. 10.

Hungarian Age: Cretaceous, Campanian *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Cretaceous, Campanian, *Odontochitina operculata* and *Pyxidinospis bakonyensis* Assemblage Zones: Siegl-Farkas & Wagreich 1996; Siegl-Farkas 1997; Cretaceous, Early Maastrichtian: Siegl-Farkas 1986.

Williams & al. 1998 Age: Cenomanian.

Fromea elongata Beju 1971

Holotype: Beju 1971, p. 289–290, pl. 3, fig. 7; text-fig. 6A.

Hungarian Age: Early Jurassic Pliensbachian: Bóna in Lachkar, Bóna, Pavillon 1984.

Williams & al. 1998 Age: Bajocian–Oxfordian.

Gorgonisphaeridium Staplin & al. 1965

Type: *Gorgonisphaeridium winslowiae* Staplin & al. 1965, p. 192–193, pl. 19, fig. 20.

Gorgonisphaeridium absitum Wicander 1974

Hungarian Age: Lower Triassic: Góczán in Haas & al. 1988.

Hidasia Nagy 1965a

Genotypus: *Hidasia duigana* Nagy 1965a, p. 212, pl. 5, fig. 26, pl. 6, fig. 32–33.

Hidasia duigana Nagy 1965a

Holotype: Nagy 1965a, p. 212, pl. 5, fig. 6, pl. 6, figs. 32–33.

Hungarian Age: Middle Miocene, Badenian, Lajta sequence: Nagy 1965, 1969: Hidas 53 bh. 686,5–688,0 m. Sample No. 231.

Hidasia duigana Nagy 1965a f. ***magna*** Nagy 1969

Holotype: Nagy 1969, p. 308, pl. 3, fig. 3.

Hungarian Age: Miocene, Karpatian: Nagyné Bodor in Chikán 1991; Miocene, Sarmatian: Nagy 1969.

Hidasia flexibilis Nagy 1969

Holotype: Nagy 1969, p. 308, pl. 5, figs. 2–3.

Hungarian Age: Miocene, Badenian, Nagyné Bodor in Chikán 1991; Miocene, Sarmatian: Nagy 1969; Late Miocene, Pannonian: Nagy 1992.
Roumanian Age: Miocene Sarmatian: Sütő & Szegő 2008.

Hidasia racemosa Hajós 1966

Holotype: Hajós 1966, p. 146, 158–159, pl. 4, fig. 3, text-fig. 19.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.
Roumanian Age: Miocene Sarmatian: Sütő & Szegő 2008.

Hidasia rugosa Hajós 1966

Holotype: Hajós, 1966, p. 145–146, 157–158, pl. 4, fig. 1, text-fig. 16.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Hidasia velata Nagy 1969

Holotype: Nagy 1969, p. 308, pl. 5, fig. 8.

Hungarian Age: Miocene, Sarmatian: Nagy 1969; Late Miocene, Pannonian: Nagy & Planderova 1985.

Hidasia sp.

Hungarian Age: Oligocene, Egerian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagy 1969, 1992; Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy 1969, 1992; Nagy & Bodor 1982, pl. 1, figs. 3-4; Nagy & Kókay 1991; Nagy in Solti 1981; Nagyné Bodor in Chikán 1991; Miocene Sarmatian: Nagy 1969, 1992; Nagy & Bodor 1982; Spiniferites bentorii budajenoensis–Mecsekia incrassata zone: Sütőné Szentai 1986, 2012; Sütő–Szentai 1988; Late Miocene, Pannonian: Nagy 1969, 1992; Nagy & Planderova 1985; Late Pannonian, Pontian: Nagy 1992 (Gérce 1 bh.).

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acriatarcha–Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian: *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Leiofusa Eisenack 1938

Type: *Ovum hispidum* subsp. *fusiforme* Eisenack 1934, pl. 4, fig. 19.

Leiofusa unispinosa Schön 1967

Hungarian Age: Late Permian: Góczán & al. 1987, plate 9, fig. 10.

Leiofusa sp.

Hungarian Age: Early Badenian: Nagy & Rákosi 1966 (as redeposited); Pannonian: Nagy 1969 as cf. *Leiofusa* sp. P. 302, pl. 7, fig. 2.

Leiosphaeridia Eisenack 1958

Type: *Leiosphaeridia baltica* Eisenack 1958, pl. 2, fig. 5.

Leiosphaeridia sp. form 1. Nagy 1969

Hungarian Age: Miocene, Badenian: Nagy 1969 p. 302, pl. 6, figs. 1, 5.

Leiosphaeridia sp. form 2. Nagy 1969

Hungarian Age: Miocene, Karpatian: Nagy 1969, p. 302, pl. 5, fig. 1.

Leiosphaeridia sp.

Hungarian Age: Early Jurassic, Late Sinemurian: Némedi Varga & Bóna 1972; Bóna 1983, 1984; Early Jurassic, Early Toarcian: Assemblage 3: Baranyi & al. 2016; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Oligocene, Tard Clay Formation: Rákosi 1985; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagyné Bodor in Chikán 1991; Nagy 1992; Sütőné Szentai 1994b; Miocene, Badenian: Nagy 1992; Miocene, Sarmatian: Nagy & Bodor 1982, p. 132–133, pl. 2, figs. 1, 5; Table 1, p. 124; Nagy 1992; Sütőné Szentai in Jámbor & al. 1987; Miocene Upper part of the Sarmatian, *Lejeunecysta–Hystrichosphaeropsis obscura* paleoassociation: Sütő-Szentai 2000; Baranyi & al. 2013; Miocene, Upper part of the Sarmatian, *Spiniferites bentorii budajenoensis–Mecsekia incrassata* zone: Sütőné Szentai 2012; Late Miocene, Early Pannonian: *Spiniferites bentorii pannonicus–Lingulodinium machaerophorum* zone: Sütőné Szentai 2002; Late Miocene, Late Pannonian: Nagyné Bodor in Chikán 1991; Bodor 1983.

Metaleiofusa Schön. 1967

Metaleiofusa compressa Schön. 1967

Hungarian Age: Lower and Middle Triassic, Góczán in Haas & al. 1988; Lower Triassic: Góczán in Loriga & al. 1990, 1992.

Metaleiofusa sp.

Hungarian Age: Early Triassic: *Scythiana–Veryhachium* oppel zone Góczán & al. 1986.

Micrhystridium Deflandre 1937

Type: *Micrhystridium inconspicuum* Deflandre 1937, p. 80, pl. 12 (al. pl. 9), fig. 11.

Micrhystridium arachnoides Valensi 1953

Hungarian Age: Jurassic: Kedves 1968; Early Jurassic, Late Liassic: Simoncsics & Kedves 1961 (as *Micrhystridium* cf. *arachnoides*): pl. 1, fig. 9.

Micrhystridium* (*Brachiprojectidium*) *costatum (Habib & Knapp 1982) Sarjeant & Stancliffe 1994

Micrhystridium costatum Valensi 1958,

Brachiprojectidium costatum Habib & Knapp 1982.

Hungarian Age: Eocene, NP 17, 18, 19, 20 zones: Rákosi 1993.

Micrhystridium deflandrei Valensi 1953

Holotype: Valensi 1953, p. 51, pl. 7, figs. 19, 21, 22.

Hungarian Age: Sarmatian: Nagy 1969, as *Micrhystridium* cf. *deflandrei*, p. 297, pl. 1, figs. 2-3.

Micrhystridium fragile Deflandre 1947

Hungarian Age: Lower Triassic: Góczán as *Micrhystridium* cf. *fragile*, in Haas & al. 1988; Miocene, Szászvár Formation: Nagy 1969, as *Micrhystridium* cf. *fragile* p. 297–298, pl. 1. fig. 11.

Micrhystridium gracile Deák & Combaz 1967

Holotype: Deák & Combaz 1967, Pl. 5, fig. 1.

Hungarian Age: Late Cretaceous: Kedves 2000a, p. 26, pl. 2.4, figs. 4-5. as cf. *Micrhystridium gracile* in Bácsalmás-1 borehole, Cretaceous, Bácsalmás Formation, Senonian.

Deák & Combaz 1967 Age: Albien–Cénomanien inferieur, in France.

Micrhystridium (Micrhystridium) inconspicuum var. *inconspicuum* (Deflandre 1937)

Sarjeant & Stancliffe 1994

Holotype: *Micrhystridium inconspicuum* Deflandre 1935, p. 233, pl. 9, fig. 11.

Hystriosphæra inconspicua Deflandre 1935,

Micrhystridium inconspicuum (Deflandre 1935) Deflandre 1937.

Hungarian Age: Miocene, Szászvár Formation (redeposited): as *Micrhystridium* cf. *inconspicuum* Nagy 1969, p. 296, pl. 1, fig. 4.

Williams & al. 1998 Age: Late Cretaceous.

Micrhystridium lymensis Wall 1965

Hungarian Age: Early Jurassic, Early Toarcian: Baranyi & al. 2016.

Micrhystridium nannacanthum Deflandre 1942

Hungarian Age: Silurian: Góczán 1971; Eocén, redeposited: Kedves 1992.

Micrhystridium operosum Deflandre 1937

Hungarian Age: Kárpátian–Badenian: Nagy 1969, pl. 5, figs. 4-5 as *Micrhystridium* cf. *operosum*.

Micrhystridium parinconspicuum Deflandre 1945

Hungarian Age: Silurian: Oravecz 1964.

Micrhystridium rarispinosum Sarjeant 1960

Hungarian Age: Jurassic, Liassic: Kedves 1993, pl. 1. 2. figs. 23-24.

Micrhystridium recurvatum Valensi 1953 form *brevispinosum* Valensi 1953

Hungarian Age: Early Jurassic, Late Liassic: Simoncsics & Kedves 1961, pl. 1, figs. 10-11, figs. 14-15; Eocene, redeposited: Kedves 1992.

Micrhystridium recurvatum Valensi 1953 form *spinosa* Kedves 1968

Hungarian Age: Jurassic: Kedves 1968.

***Micrhystridium spinuliferum* Takahashi 1964**

Hungarian Age: Eocene, NP 17, 18, 19, 20 zones: Rákosi 1993.

***Micrhystridium stellatum* Deflandre 1942**

Hungarian Age: Late Carboniferous, Pennsylvanian, „old” Westfalian, Zones B–C: Góczán 1971; Cretaceous, Santonian–Campanian, *Odontochitina operculata* Assemblage Zone, *Isabelidinium microarmum* Subzone: Siegl-Farkas 1999a; Eocene: Rákosi 1973, pl. 5, figs. 10–11; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993.

***Micrhystridium* div. sp.**

Hungarian Age: Silurian: Góczán 1971; Early Triassic: *Scythiana–Veryhachium* oppel zone Góczán & al. 1986; Góczán in Loriga & al. 1990, 1992; Late Triassic, Kantavár Formation, Upper Norian–Rhaetian: "koessen": Venkatachala & Góczán 1964; Bóna 1983; Late Triassic Carnian, Norian, Rhaetian, Karolinavölgy Sandstone Formation: Bóna 1983, 1984, 1995a; Late Triassic, Carnian: Góczán in Haas & al. 1997; Early Jurassic, Sinemurian, over coal-bed X: Bóna 1983, 1984, 1995; Early Jurassic, Upper Sinemurian and Pliensbachian: Némedi Varga & Bóna 1972; Bóna in Lachkar, Bóna, Pavillon 1984 (in Pliensbachian dominance); Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Coniacian: Siegl-Farkas & Wagreich 1996; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 2002; Cretaceous, Early Maastrichtian, *Pseudopapillopollis–Semioculopollis minimus* Opperl-zone: Siegl-Farkas 1987; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagy 1969 p. 297, Nagy 1992; Miocene, Badenian: Nagy 1969, 1992; Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribopteridinium tenuitubulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006; Miocene, Sarmatian PD5 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cleistosphaeridium placacanthum* Assemblage Biozone (Cpl) Jiménez-Moreno & al. 2006; Miocene, Sarmatian: Nagy 1969, 1992; Late Miocene, Pannonian, *Spiniferites validus* and *Galeacysta etrusca* zones: Sütő-Szentai 1988; Sütő 1994a; Late Miocene, Pannonian: Nagy 1992; Late Pannonian, Pontian: Nagy 1992.

Roumanian Age: Sütő & Szegő 2008; Late Miocene, Pannonian, *Mecsekia ultima* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

***Micrhystridium* sp. form A. Rákosi L. 1979**

Hungarian Age: Middle Eocene, *Pleurozonaria concinna–Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983.

***Nannobarbophora* (Habib & Knapp 1982) Head 2003**

Nannobarbophora gedlii Head 2003

Hungarian Age: Miocene, Badenian PD2 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cribooperidinium tenuitabulatum* Assemblage Biozone (Cte) Jiménez-Moreno & al. 2006; Miocene, Badenian PD3 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Unipontidinium aquaeductus* Interval Biozone (Uaq) Jiménez-Moreno & al. 2006; Miocene, Badenian PD4 zone: Jiménez-Moreno 2005 (Tengelic 2 bh.); *Cerebrocysta poulsenii* Assemblage Biozone (Cpo) Jiménez-Moreno & al. 2006.

Odontomorpha Hajós 1966

Genotypus: *Odontomorpha hungarica* Hajós 1966, p. 147, 159.

Odontomorpha hungarica Hajós 1966

Holotype: Hajós 1966, p. 147, 159. Pl. 4, figs. 4-5, text-figs. 20-21.

Hungarian Age: Miocene, as Badenian: Hajós 1966; Sarmatian: Koreczné Laky 1968.

Ollula Góczán 1962

Generotypus: *Ollula ollula* Góczán 1962 p. 194, 200–201.

Ollula ollula Góczán 1962

Holotype: Góczán 1962, p. 195, 201, pl. 3, figs. 11-16.

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962.

Palaeostomocystis Deflandre 1937

Type: *Palaeostomocystis reticulata* Deflandre, 1937, p. 53–54, pl. 12, (al. pl. 9), fig. 4.

***Palaeostomocystis* sp. I.** Balteş 1971

Type: Balteş 1971, pl. 5, figs. 3-6.

Hungarian Age: Oligocene, Lower Oligocene: Rákosi 1985.

Roumanian Age: Balteş 1971: Lower Pliocene, (Pontian).

***Palaeostomocystis* sp.**

Hungarian Age: Oligocene: Krivánné Hutter 1964.

Paralecaniella Cookson & Eisenack, 1970

Type: *Epicephalopyxis identata* Deflandre & Cookson 1955, p. 292, pl. 9, fig. 6.

Paralecaniella identata (Deflandre & Cookson 1955) Cookson & Eisenack 1970

Holotype: Deflandre & Cookson, 1955, p. 292, pl. 9, fig. 6.

Epicephalopyxis identata Deflandre & Cookson 1955.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas 1995; Eocene: Rákosi 1973, pl. 4, figs. 1-3; Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata* Assemblage Zone: Rákosi 1979, 1983; Eocene, NP 16, 17, 18, 19, 20 zones: Rákosi 1993; Oligocene, NP 21, 22, 23, 24, 25 zones: Rákosi 1993.

Williams & al. 1998 Age: Paleocene–Miocene.

Polygonium Vavrdová 1966

Type: *Polygonium gracile* Vavrdová, 1966, pl.1, fig. 3; text-fig. 3b (not pl. 2, fig. 3.).

Polygonium nanus (Deflandre 1945) Jakobson 1978

Holotype: Deflandre 1945, p. 62–63, pl. 1, figs. 5-6.

Hystriosphæridium brevispinosum Eisenack 1931 var. *nanus* Deflandre 1945,

Baltisphaeridium nanus (Deflandre 1945) Stockmanns & Williére 1962,

Micrhystridium nanum (Deflandre 1945) Deflandre & Deflandre & Rigaud 1965,

Solisphaeridium nanus (Deflandre 1945) Turner 1984.

Hungarian Age: Middle Eocene, *Pleurozonaria concinna*–*Pleurozonaria stellulata*
Assemblage Zone: Rákosi 1979, 1983.

Williams & al. 1998 Age: Silurian.

Polygonium polygonale (Eisenack 1931 ex Eisenack 1938) Le Hérisse 1989

Holotype: Eisenack 1931, p. 113, pl. 4, fig. 19.

Ovum hispidum subsp. *polygonale* Eisenack 1931,

Hystriosphæridium polygonale Eisenack 1931 ex Eisenack 1938,

Baltisphaeridium polygonale (Eisenack 1931 ex Eisenack 1938) Eisenack 1959 subsp. *polyacanthum* Eisenack 1965,

Veryhachium polygonale (Eisenack 1931 ex Eisenack 1938) Eisenack 1963,

Goniosphaeridium polygonale subsp. *polygonale* (Eisenack 1931 ex Eisenack 1938) Eisenack 1969.

Hungarian Age: Silurian: Góczán 1971.

Williams & al. 1998 Age: Silurian.

Savitrinia Nagy 1966

Genotypus: *Savitrinia miocenica* Nagy 1966, p. 40, pl. 2, figs. 1-8; text-fig. 2.

Savitrinia miocenica Nagy 1966

Holotype: Nagy 1966, p. 40, pl. 2, figs. 1-8. text-fig. 2.

Hungarian Age: Miocene, Badenian: Nagy 1966, 1969, 1992.

Savitrinia magna Nagy 1966

Holotype: Nagy 1966, p. 40, pl. 1, figs. 4-5; text-fig. 3.

Hungarian Age: Miocene, Badenian: Nagy 1966, 1969, 1992.

Scythiana Góczán 1986

Genotypus: *Scythiana ultraverrucata* Góczán 1988, pl. LXVII, figs. 1-5. Paratypes: pl. LXVII, figs. 6-15.

Scythiana spinulissima Góczán 1988

Holotype: Góczán 1988, pl. LXV, figs. 10-14. Köveskál, Kk 9 bh. 336,5 m

Hungarian Age: Triassic, Lower Triassic *Scythiana*–*Veryhachium* Opper Zone:
Góczán in Haas & al. 1988; Góczán in Loriga & al. 1990, 1992.

Scythiana spinulosa Góczán 1988

Holotype: Góczán 1988, pl. LXIV, figs. 9-14. Alcsútdoboz Ad 2 bh. 304,0–305 m.

Hungarian Age: Lower Triassic *Scythiana–Veryhachium* Opper zone: Góczán in Haas & al. 1988; Góczán in Loriga & al. 1990, 1992.

***Scythiana ultraverrucata* Góczán 1988**

Genotype: Góczán 1988, pl. LXVII, figs. 1-5. Paratypes: pl. LXVII, figs. 6-15.

Hungarian Age: Lower Triassic *Scythiana–Veryhachium* Opper zone: Góczán in Haas & al. 1988; Góczán in Loriga & al. 1990, 1992.

Scythiana sp.

Hungarian Age: Lower Triassic, *Scythiana–Veryhachium* Opper zone: Góczán & al. 1986; Barabásné Stuhl 1993.

Veryhachium Deunff 1954

Type: *Veryhachium trisulcum* Deunff 1959, p. 27–28, pl. 1, fig. 4. Middle Ordovician.

***Veryhachium irregulare* Jekhowsky 1961**

Hungarian Age: Triassic, Lower Triassic, *Scythiana–Veryhachium* Opper zone: Góczán in Haas & al. 1988; Góczán in Loriga & al. 1990, 1992; Middle Triassic, Ladinian: Góczán & al. 1993.

***Veryhachium reductum* (Deunff 1958) Jekhowsky 1961**

Hungarian Age: Lower Triassic: Góczán in Haas & al. 1988; Góczán in Loriga & al. 1991; Triassic, Ladinian: Góczán & al. 1993; Late Cretaceous, Early Campanian, redeposited from Triassic: Siegl-Farkas 1984; Late Cretaceous, Late Campanian, *Pyxidinospis bakonyensis* Assemblage Zone, *Manumiella* div. sp. Subzone: Siegl-Farkas & Wagnreich 1996; Siegl-Farkas 1997.

Veryhachium sp.

Hungarian Age: Early Triassic, *Scythiana–Veryhachium* Opper zone: Góczán & al. 1986; Late Triassic, Cordevolian and Julian, Veszprém Marl Formation: Góczán & al. 1989; Early Jurassic, Late Sinemurian: Bóna 1983, 1995; Early Jurassic Pliensbachian: Bóna in Némedi Varga & Bóna 1972; Cretaceous, Late Turonian: Siegl-Farkas & Wagnreich 1996; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas in Lantos & al. 1996.

Zooplankton (with organic walled)

Foraminifera/Microforaminifera–Testaceae–Arcellacea–Chytinozoa

***Foraminifera* Forma 1. Góczán 1962**

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962. p. 195.

***Foraminifera* Forma 2. Góczán 1962**

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962. p. 196.

Foraminifera Forma 3. Góczán 1962

Hungarian Age: Cretaceous, Late Aptian: Góczán 1962. p. 196.

Foraminifera Forma 4. Góczán 1962

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962. p. 196.

Foraminifera Forma 5. Góczán 1962

Hungarian Age: Cretaceous, Late Campanian: Góczán 1962. p. 196.

Foraminifera/Microforaminifera

Hungarian Age: Late Triassic Carnian: Bóna 1984b (Váralja 20 bh. 704,0 m); Late Triassic Carnian, Rhaetian, Karolinavölgy Sandstone Formation: Bóna 1995; Jurassic, Liassic, *Sphaeripollenites* zone: Kedves 1993; Early Jurassic, Late Sinemurian: Bóna 1983, 1984; Early Jurassic Pliensbachian: Némedi Varga & Bóna 1972; Early Cretaceous: Rákosi 1971; Cretaceous, Aptian: Góczán in Fülöp 1966; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Late Turonian: Siegl-Farkas & Wagreich 1996; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas in Lantos & al. 1996; Siegl-Farkas 2002; Cretaceous, Late Campanian, *Krutzschippollis spatiosus*–*Suemegipollis triangularis* Opper Zone: Siegl-Farkas 1987; Góczán & Siegl-Farkas 1989; Cretaceous, Early Maastrichtian, *Pseudopapillopollis*–*Semioculopollis minimus* Opper Zone: Siegl-Farkas 1986, 1987; Early Eocene: Kedves 1963, 1964, 1965, 1969; Krivánné Hutter 1964; Middle Eocene: Kedves 1964, 1969; Late Eocene, Buda Marl Formation: Kedves 1968; Eocene: Kedves 1992; Late Eocene: Bóna in Wéber 1985; Oligocene: Rákosi 1966; Krivánné Hutter 1964; Oligocene, Egerian: Nagy 1992; Miocene, Eggenburgian: Nagy 1992; Miocene, Szászvár Formation: Bodor in Chikán 1991; Miocene, Ottományian: Nagy 1992; Miocene, Karpatian: Nagy 1969, 1992; Miocene, Budafa Formation: Nagyné Bodor in Chikán 1991; Miocene, Badenian: Nagy 1969, 1992; Nagy & Bodor 1982; Nagy & Kókay 1990, 1991; Late Miocene Sarmatian: Nagy & Bodor 1982; Nagy 1992; Sütő-Szentai 1985; Sütőné Szentai 1987, 2000; Late Miocene, Pannonian: Sütő-Szentai 1985, 1988; Sütőné Szentai 1987, 2000, 2002; Late Pannonian, Pontian: Nagy 1992.

Roumanian Age: Miocene, Sarmatian: Sütő & Szegő 2008; Late Miocene, Pannonian, *Acrıtarcha*–*Prasinophyte* assemblage zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii pannonicus* zone: Sütő & Szegő 2008; Late Miocene, Pannonian, *Spiniferites bentorii oblongus* zone: Sütő & Szegő 2008.

Scytinascia Deák 1964

Ormathascia Deák 1964

Genotypus: *Ormathascia vadászi* Deák 1964, p. 98–99; 104, pl. VIII, fig. 9.

Ormathascia vadászi Deák 1964

Holotype: Deák 1964, p. 98–99, 104, pl. VIII, fig. 9.

Hungarian Age: Cretaceous, Albian: Deák 1964.

Trochiliascia Deák 1964

Genotypus: *Trochiliascia cuvillieri* Deák 1964, p. 99; 104, pl.VIII, fig. 7.

Trochiliascia cuvillieri Deák 1964

Holotype: Deák 1964, p. 99, 104, pl. VIII, fig. 7.

Hungarian Age: Cretaceous, Albian: Deák 1964; Late Cretaceous: Kedves 2000a, p. 20, pl. 2.1, fig. 11.

Trochiliascia ehrenbergi Deák 1964

Holotype: Deák 1964, p. 99–100, 104–105, pl. 10, figs. 17–18.

Hungarian Age: Cretaceous, Aptian: Deák 1964.

Rhodonascia Deák 1964

Genotypus: *Rhodonascia majzoni* Deák 1964, p. 100, 105, pl. IX, figs. 13–15.

Rhodonascia majzoni Deák 1964

Holotype: Deák 1964, p. 100, 105, pl. IX, figs. 13–15. text-figs. pl. 7. fig. 2. 5. 6.

Hungarian Age: Cretaceous, Aptian: Deák 1964.

Rhodonascia bontei Deák 1964

Holotype: Deák 1964, p. 100–101, 105, pl. X, figs. 16, 19.

Hungarian Age: Cretaceous, Albian: Deák 1964.

Thecamoebian/Testaceae (Organic walled)

Order Arcellinida Kent 1880

Superfamily Arcellacea Ehrenberg 1832

Arcellacea/cf. Testaceae/ cf. Thecamoebian

Type: Sütő-Szentai 1988, Sarmatian, *Spiniferites bentorii budajenoensis*–*Mecsekia incassata* zone Sütő-Szentai 1988, pl. I. fig. 8. Lajoskomárom 1 bh. 675,0–676m, (as *Chytroeisphaeridia* sp.).

Hungarian Age: Miocene, Upper part of the Sarmatian: Sütőné Szentai in Jámor & al. 1987 Lajoskomárom 1 bh. 670,4–671,0 m, 675,0–676,0 m as Microplankton indet.;

Lejeunecysta–*Hystrichosphaeropsis obscura* paleoassociation: Sütőné Szentai 2000 Somberek 2 bh. Sarmatian 504,6–505,5 m, abundant; Sütőné Szentai 2012, 2016.

Wiener Becken: Fuchs & Sütő-Szentai 1991.

Chytinozoa (organic walled)

Chytinozoa

Hungarian Age: Cretaceous, Coniacian: as *Chytinozoa* type Siegl-Farkas & Wagreich 1996; Cretaceous, Campanian, *Odontochitina operculata* Assemblage Zone: Siegl-Farkas in Lantos & al. 1996.

Polychaeta Grube 1850
Scolecodonta remnants

Anisocerasites Eller 1955

Anisocerasites weidmanni Jan Du Chêne & Gorin 1974

Type: Rákosi 1981, pl. 3, figs. 1-6, 9.

Hungarian Age: Middle and Late Eocene: Rákosi 1981.

Anisocerasites fillingensis Jan Du Chêne & Gorin 1974

Type: Rákosi 1981, pl. 3, figs. 7-8, 10-11.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage
Zone: Siegl-Farkas 1999a, 2002; Middle Eocene: Rákosi 1981.

Anisocerasites sp.

Hungarian Age: Cretaceous, Campanian, *Odontochitina operculata* Assemblage
Zone: Siegl-Farkas 1999a.

Arabellites Hinde 1879 emend. Janssonius & Craig 1971

Arabellites tridentatus Rákosi 1981

Holotype: Rákosi 1981, pl. 3, 12-13.

Hungarian Age: Middle Eocene: Rákosi 1981.

Arites Kozur 1967

Arites eocaenicus Rákosi 1981

Holotype: Rákosi 1981, pl. 1, fig. 1.

Hungarian Age: Middle Eocene: Rákosi 1981.

Arites minor Rákosi 1981

Holotype: Rákosi 1981, pl. 1, fig. 2.

Hungarian Age: Middle Eocene: Rákosi 1981.

Delosites Kozur 1967 emend. Zawadzka 1971

Delosites raridentatus reiflingensis Kozur 1972

Type: Rákosi 1981, pl. 6, fig. 5.

Hungarian Age: Triassic: Rákosi 1981.

Delosites hungaricus Kozur 1972

Hungarian Age: Triassic: Kozur 1972.

Eunicites Kozur 1972

Eunicites oertii Kozur 1972

Hungarian Age: Triassic: Kozur 1972.

Langeites Kielan–Jaworowska 1966

Langeites bidens Rákosi 1981

Holotype: Rákosi 1981, pl. 3, figs. 14-15.

Hungarian Age: Middle Eocene: Rákosi 1981.

Nereidavus Grinnell 1877

Nereidavus sp.

Type: Rákosi 1981, pl. 1, figs. 5-7.

Hungarian Age: Middle Eocene: Rákosi 1981.

Praelumbrinereis Kozur 1972

Praelumbrinereis zawidzkae Kozur 1972

Hungarian Age: Triassic: Kozur 1972.

Paraglycerites Kozur 1972

Paraglycerites triassicus Kozur 1972

Hungarian Age: Triassic: Kozur 1972.

Paranereites Eisenack 1939

Paranereites sp.

Type: Rákosi 1981, pl. 1, figs. 3-4.

Hungarian Age: Middle Eocene: Rákosi 1981.

Staurocephalites Hinde 1879

Staurocephalites bakonyensis Rákosi 1981

Holotype: Rákosi 1981, pl. 5, fig. 1.

Hungarian Age: Middle Eocene: Rákosi 1981.

Staurocephalites broennimanni Jan Du Chêne & Gorin 1974

Type: Rákosi 1981, pl. 1, figs. 8-9, pl. 2, figs. 1-3.

Hungarian Age: Early Eocene: Rákosi & Tóth 1980; Early & Middle Eocene: Rákosi 1981.

Staurocephalites minor Rákosi 1981

Holotype: Rákosi 1981, pl. 2, figs. 8-9.

Hungarian Age: Middle Eocene: Rákosi 1981.

Staurocephalites taugourdeausi Jan Du Chêne & Gorin 1974

Type: Rákosi 1981, l. 2, figs. 4-7.

Hungarian Age: Middle & Late Eocene: Rákosi 1981.

Staurocephalites sp.

Hungarian Age: Middle Eocene: Rákosi 1981.

Mandibula remnants

Serratula Szaniawski & Wrona 1973

Serratula hungarica Rákosi 1981

Holotype: Rákosi 1981, pl. 4, figs. 1-3.

Hungarian Age: Middle Eocene: Rákosi 1981.

Mandibula I. type Rákosi 1981

Holotype: Rákosi 1981, pl. 4, figs. 4-6.

Hungarian Age: Late Eocene: Rákosi 1981.

Mandibula II. type Rákosi 1981

Holotype: Rákosi 1981, pl. 5, figs. 2-3.

Hungarian Age: Middle Eocene: Rákosi 1981

Parapodium remnants

Pedivillus Rákosi 1981

Pedivillus budensis Rákosi 1981

Holotype: Rákosi 1981, pl. 6, figs. 1-4.

Hungarian Age: Late Eocene: Rákosi 1981.

Pedivillus pectidentatus Rákosi 1981

Holotype: Rákosi 1981, pl. 5, fig. 4, pl. 6, fig. 6.

Hungarian Age: Middle Eocene: Rákosi 1981.

Pedivillus sp.

Hungarian Age: Miocene, Late Badenian: Nagy & Bodor 1982, p. 122, table 1, pl. 2, fig. 4; Late Miocene, Sarmatian: Nagy & Bodor 1982.

Scolecodonta not identified:

Hungarian Age: Triassic, Anisian: Sieglné Farkas in Kókai & Sieglné Farkas 2003; Cretaceous, Early Albian: Juhász & Bóna in Fülöp 1975; Cretaceous, Campanian: Sieglné Farkas 1986, 1995, 1999a; Siegl-Farkas in Lantos & al. 1996; Eocene, Buda Marl

Formation: Rákosi 1985; Miocene, Ottnangian: Nagy 1992; Miocene, Karpatian: Nagy 1965a, 1969, 1992; Miocene, Badenian: Nagy 1969, p. 489, pl. 9, fig. 13; 1992; Sütőné Szentai in Chikán 1991; Miocene, Sarmatian: Nagy 1992; Miocene, Sarmatian: Sütő-Szentai 1985; Late Miocene, Pannonian, *Spiniferites bentorii* zone: Sütő-Szentai 1985; Sütőné Szentai 1987.

Incertae sedis

Concentricystes Rossignol 1962

Concentricystes rubinus Rossignol 1962

Holotype: Rossignol 1962, pl. 2, figs. 4-6. Pleistocene, Izrael.

Concentricystes sp.

Hungarian Age: Eocene: Rákosi 1973, pl. 6, figs. 9-10; Late Pannonian: Rákosi in Pálfalvy & Rákosi 1979; Pleistocene: Nagyné Bodor and Szuromi-Korecz 2001b; Holocene, Subboreale, between 5000-2500 Years: Nagyné Bodor 2001, plate 5. fig. 1; Sütőné Szentai 2001, text-fig. 3 (drawing: Sütőné Szentai, no Soós).

Fülöpia Nagy 1965a

Genotypus: *Fülöpia fimbriata* Nagy 1965a, p. 210–211, pl. 6. figs. 31, 34, 35, 36. text-fig. 9.

Fülöpia fimbriata Nagy 1965a

Holotype: Nagy 1965a, p. 210–211, pl. 6. figs. 31, 34, 35, 36. text-fig. 9.

Zengővárkony 45 bh. Sample No. 5. 17,2–17,8 m (no Zengővárkony 54 bh), Kárpátian (old: Helvetian).

Hungarian Age: Miocene, Kárpátian (old: Helvetian), Freshwater sequence: Nagy: 1965a, 1969, 1992.

Heliospermopsis Nagy 1965a

Genotypus: *Heliospermopsis hungaricus* Nagy 1965, p. 204–205, pl. 5. figs. 20-22. text figs. 5-6. Pusztakisfalu VI. bh. sample 7. 15,0–17,0 m, Kárpátian (old: Helvetian).

Heliospermopsis hungaricus Nagy 1965a

Holotype: Nagy 1965, p. 204–205, pl. 5. figs. 20-22. text figs. 5-6. Pusztakisfalu VI. bh. sample 7. 15,0–17,0 m, Kárpátian (old: Helvetian).

Hungarian Age: Miocene, Kárpátian (old: Helvetian): Nagy 1965.

Retisphaera Rákosi 1973

Genotypus: *Retisphaera microreticulata* Rákosi 1973, p. 505, 557, pl. 5, figs. 1-5.

Retisphaera microreticulata Rákosi 1973

Holotype: Rákosi 1973, p. 505, 557, pl. 5, figs. 1-5. Eocene.

Hungarian Age: Eocene: Rákosi 1973; Eocene, *Retisphaera microreticulata*–*Tytthodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24 zones: Rákosi 1993.

***Retisphaera perforata* Rákosi 1973**

Holotype: Rákosi 1973, p. 506, 557–558, pl. l. 5, figs. 7-9. Eocene.

Hungarian Age: Eocene: Rákosi 1973; Eocene, *Retisphaera microreticulata*–*Tytthodiscus* sp. A. Assemblage zone: Rákosi 1979, 1983; Eocene, NP 20 zone: Rákosi 1993; Oligocene, NP 22, 23, 24 zones: Rákosi 1993.

***Tympanicysta* Balme 1979**

Tympanicysta sp.

Hungarian Age: Late Permian: *Tympanicysta*–*Punctatisporites*–*Calamospora* assemblage zone: Góczán & al. 1986, 1987; Góczán in Loriga & al. 1990; Barabásné Stuhl 1993; Triassic, Early Triassic: Góczán & al. 1987.

On an original German language

Ordo *Muellerisphaerida* Kozur 1984

Familie *Aldridgeisphaeridae* Kozur 1984

Vorkommen: Wenlockian–Mitteldevon.

Zugewiesene Gattungen:

Aldridgeisphaera Kozur 1984

Oravecisphaera Kozur 1984

Gattung *Aldridgeisphaera* Kozur 1984

Typusart: *Aldridgeisphaera latispinosa* Kozur 1984

Vorkommen: Wenlockian–Oberes Mitteldevon

Zugewiesene Arten:

Aldridgeisphaera Kozur 1984

Hystrichosphaeridium astartes Sannemann 1955

Hystrichosphaeridium brevispinosum callosum Sannemann 1955: (pars)

Hystrichosphaeridium dignum Sannemann 1955

Hystrichosphaeridium mutabile Sannemann 1955

?*Hystrichosphaeridium robustum fissum* Sannemann 1955

?*Hystrichosphaeridium robustum robustum* Sannemann 1955

Aldridgeisphaera acuta Kozur 1984

Aldridgeisphaera annulata Kozur 1984

Aldridgeisphaera conispinosa Kozur 1984

Aldridgeisphaera longispinosa Kozur 1984

Aldridgeisphaera mecsekensis Kozur 1984.

***Aldridgeisphaera latispinosa* Kozur 1984**

Holotypus: Kozur 1984, Tafel 1, fig. 1. Szalatnak 4 Bohrung (nordliches Mecsek-Gebirge)
Hungarian Age/Vorkommen: Silurian aus dem basalen Wenlockian: Kozur 1984.

Aldridgeisphaera acuta Kozur 1984

Holotypus: Kozur 1984, Tafel 1, fig. 2. Szalatnak 4 Bohrung.
Hungarian Age/Vorkommen: Silurian, aus dem basalen Wenlockian: Kozur 1984.

Aldridgeisphaera annulata Kozur 1984

Holotypus: Kozur 1984, Tafel 2, fig. 2. Szalatnak 4 Bohrung.
Hungarian Age/Vorkommen: Silurian, aus dem basalen Wenlockian: Kozur 1984.

Aldridgeisphaera conispinosa Kozur 1984

Holotypus: Kozur 1984, Tafel 2, fig. 4. Szalatnak 4 Bohrung.
Hungarian Age/Vorkommen: Silurian, aus dem basalen Wenlockian: Kozur 1984.

Aldridgeisphaera gozani Kozur 1984

Holotypus: Kozur 1984, Tafel 3, fig. 1.
Hungarian Age/Vorkommen: Silurian, Basales Wenlockian der Bohrung Szalatnak 4
und Wenlockian vom Kányás-völgy (Velence Gebirge): Kozur 1984.

Aldridgeisphaera mecsekensis Kozur 1984

Holotypus: Kozur 1984, Tafel 4, fig. 1.
Hungarian Age/Vorkommen: Silurian, Basales Wenlockian der Bohrung Szalatnak 4:
Kozur 1984.

Oraveczisphaera Kozur 1984

Typusart: *Oraveczisphaera nodosa* Kozur 1984
Vorkommen: Wenlockian bis oberes Mitteldevon.

Oraveczisphaera nodosa Kozur 1984

Holotypus: Kozur 1984, Tafel 4, fig. 6
Hungarian Age/Vorkommen: Silurian, Basales Wenlockian der Bohrung Szalatnak 4:
Kozur 1984.

Familie *Armstrongisphaeridae* Kozur 1984

Vorkommen: Ordovizium?, Llandoveryan–Oberdevon.

Zugewiesene Arten:

Armstrongisphaera Kozur 1984

Sannemannisphaera Kozur 1984

Gattung *Armstrongisphaera* Kozur 1984

Typusart: *Armstrongisphaera upponyensis* Kozur 1984
Vorkommen: Ordovizium, Llandoveryan bis Oberdevon.

Zugewiesene Arten:

Armstrongisphaera upponyensis Kozur 1984
Hystrichosphaeridium franconicum Sannemann 1955
Hystrichosphaeridium cf. *hirsutoides* Sannemann 1955
Hystrichosphaeridium longispinoides Sannemann 1955
Hystrichosphaeridium multispinosum validum Sannemann 1955
Armstrongisphaera brevispina Kozur 1984
Armstrongisphaera hungarica Kozur 1984
Armstrongisphaera robustispinosa Kozur 1984

Armstrongisphaera upponyensis Kozur 1984
Holotypus: Kozur 1984, Tafel 5, fig. 1.
Hungarian Age/Vorkommen: Unterdevon (oberes Lochkovian) vom Strázsa-hegy bei Nekézseny (Uppony Gebirge): Kozur 1984.

Armstrongisphaera brevispina Kozur 1984
Holotypus: Kozur 1984, Tafel 4, fig. 5.
Hungarian Age/Vorkommen: Silurian, Basales Wenlockian der Bohrung Szalatnak 4 (nördliches Mecsek Gebirge). Wenlockian von Alsóörs (Balaton-Hochland): Kozur 1984.

Armstrongisphaera hungarica Kozur 1984
Holotypus: Kozur 1984, Tafel 5, fig. 2.
Hungarian Age/Vorkommen: Silurian, Llandoveryan von Grönland, basales Wenlockian der Bohrung Szalatnak 4: Kozur 1984.

Armstrongisphaera robustispinosa Kozur 1984
Holotypus: Kozur 1984, Tafel 5, fig. 4.
Hungarian Age/Vorkommen: Silurian, Basales Wenlockian bis Mitteldevon: Kozur 1984.

Sannemannisphaera Kozur 1984
Typusart: *Sannemannisphaera silurica* Kozur 1984
Vorkommen: Silurian Wenlockian–Mitteldevon

Zugewiesene Arten:
Sannemannisphaera silurica Kozur 1984
Hystrichosphaeridium brevispinosum callosum Sannemann 1955
Sannemannisphaera rarispinosa Kozur 1984.

Sannemannisphaera silurica Kozur 1984
Holotypus: Kozur 1984, Tafel 4, fig. 4.
Hungarian Age/Vorkommen: Vorkommen: Basales Wenlockian der Bohrung Szalatnak 4: Kozur 1984.

Sannemannisphaera rarispinosa Kozur 1984
Holotypus: Kozur 1984, Tafel 5, fig. 5.

Hungarian Age/Vorkommen: Vorkommen: Basales Wenlockian der Bohrung Szalatnak 4: Kozur 1984.

Graptolites remnants

Hungarian Age: Silurian: Oravecz 1964, pl. 1 figs 10-14. In Graptolite infusorial-slate lens. Sections with Graptolites in grinding Alsóörs (Hungary) p. 4. Abb. 1.
Silurian or Devonian: Bóna 1972, Szababattyán 9 bh. 930,5m, Graptolites (organic-walled) in the palynology samples, pl. 3 figs. 1-6. (Manuscript).

Indeterminate Organic-walled microplankton

Alga cyst

Hungarian Age: Late Triassic, Norian, Rhaetian: Góczán in Haas & al. 2000; Late Triassic, Veszprém Marl Formation: Góczán & al. 1991.

Algenreste or Zysten:

Hungarian Age: Jurassic, Liassic: Simoncsics & Kedves pl. 1, figs. 1-8.; pl. 8, figs. 21-22.

Acritarcha Evitt 1963

Hungarian Age: Cretaceous, Albion–Cenomanian: Juhász in Császár & al. 1987; Cretaceous, Campanian: Góczán & al. 1989; Cretaceous, Santonian, Campanian: Siegl-Farkas 1999a; Cretaceous, Early Maastrichtian, *Pseudopapillopollis-Semioculopollis minimus* Opper-zone: Siegl-Farkas 1986, 1987.

Dinoflagellates

Hungarian Age: cf. *Dinoflagellata* sp: Badenian: Nagy 1969, pl. 3, fig. 2
Dinoflagellata sp: Miocene, Badenian: Nagy & Rákosi 1966;
Dinoflagelados indeterminados: Miocene, Badenian and Sarmatian: Jiménez-Moreno 2005 (Tengelic 2 bh.);
Dinoflagellata indetermined forms: Sarmatian and Pannonian, Sütő & Szegő 2008;
Dinoflagellata: Late Miocene, Pannonian: Nagy & Planderova 1985;
Dinoflagellate more sp: Late Pannonian: (*Gonyaulax*, *Peridinium*) Kecskemét 3 bh: Miháltzné Faragó 1979, with *Mollusca: Dreissena auricularis–Congeria unguilacaprae, Paradacna abichi* assemblages (Mollusca: Széles);
Dinoflagellata: Bóna in Wéber 1985: Pannonian, Szigetvár III. bh. 620,0-623,0 m (with *Dreissena auricularis*);
Dinoflagellata sp: Late Miocene, Late Pannonian: Rákosi in Pálfalvi & Rákosi 1979; Rákosi 1996;

Hystrichosphaeridae:

Hungarian Age: Silurian: Oravecz 1964, as Hystrichosphaerida; Late Triassic: Venkatachala & Góczán 1964; Jurassic, Liassic, *Sphaeripollenites* Zone: Kedves 1993; Late Jurassic: Kedves 1968; Early Eocene: Kedves 1965, 1969; Rákosi in Gidai 1971;

Krivánné Hutter 1964; Middle Eocene: Kedves 1969; Rákosi in Gidai 1971; Late Eocene: Kedves 1968; Rákosi in Gidai 1971; Bóna in Wéber 1985; Eocene: Kedves 1992; Oligocene, Egerian: Nagy 1992; Miocene, Karpatian: Nagy 1969, 1992; Simoncsics 1970; Miocene, Badenian: Nagy & Kókay 1990; Nagy 1992; Chikán 1991; Miocene, Bádénian, Sarmatian, Pannonian: Nagy 1969, 1992, p. 84–127; Nagy & Planderova 1985; Nagy & Kókay 1991; Sütő-Szentai 1985; Sütőné Szentai in Chikán 1991; Miocene, Upper part of the Sarmatian: Jám bor & al. 1987; Sütő-Szentai 1985, 1988; Late Miocene, Pannonian: Bóna & Rumliné Szentai 1966; Sütőné Szentai & Selmeczi 2003; Sütő-Szentai 1994c; Sütőné Szentai 1995a (Zszt 3, Hm. 78/18, Öcs 28), 1995b, 2000, 2003, 2011; Baranyi in Varga & al. 2017 (in proximate cysts in *Spiniferites bentorii coniunctus*–*Spiniferites paradoxus* zone (or *S. paradoxus* zone); Late Miocene, Pannonian: Mihá l tzné Faragó 1982; Nagy 1969, 1992; Nagy & Planderova 1985; Late Miocene, Pannonian *Spiniferites bentorii* main zone: Sütő-Szentai 1985, 1988, Sütőné Szentai 1987, 2002, 2012, 2016; Late Miocene, Pannonian, Lower part of the *Spiniferites balcanicus* main zone: Sütő-Szentai 1988; Late Pannonian, Pliocene: Nagy 1992.

Roumanian Age: Sarmatian–Pannonian: Sütő & Szegő 2008.

cf. *Hystrichosphaeridium* sp.

Hungarian Age: Miocene, Badenian: Nagy 1969, pl. 1, fig. 5; Nagy & Rákosi 1966.

Microplankton indet.

Hungarian Age: Marine Microfosszils (*Dinoflagellata* and *Acritarcha* ssp.) Cretaceous, Albian–Cenoman: Juhász 1983; Juhász in Császár & al. 1987; *Mikroplankton*: Unter Eocen: Kedves 1961, pl. 8, figs. 15–16, as *Incertae sedis*; *Marine mikroplankton*: Middle Eocene, Lutetian: Rákosi in Gidai 1985; *Microplankton* 237. form (*no dinoflagellata*): Pannonian, *Galeacysta etrusca* zone: Sütő 1994a, (Villány 7); *Microplankton* 238 form (*no dinoflagellata*): Pannonian, *Galeacysta etrusca* zone: Sütő 1994a (Villány 7); *Microplankton* 240. form, (*no dinoflagellata*): Pannonian, *Spiniferites tihanyensis* zone: Sütőné Szentai 1995a (Hm. 78/18, Öcs 28);

Microplankton 279 type Sütő & Szegő 2008

Roumanian Age: Miocene, Sarmatian, Late Miocene, Pannonian, *Mecsekia ultima* zone, *Spiniferites bentorii oblongus* zone.

Plankton div. sp:

Hungarian Age: *Plankton with one appendage*: Late Triassic Carnian, Norian, Rhaetian, Karolinavölgy Sandston Formation: Bóna 1995; *Plankton* div. sp: Oligocene, Egerian: Nagy 1992, p. 15; *Plankton* div. sp: Miocene, Eggenburgian–Sarmatian: Nagy 1992 p. 30–120; *Plankton*: Miocene, Sarmatian, Tengelic 2 bh: Nagy & Nagyné Bodor 1982; *Plankton* div. sp: Pannonian, Nagy 1992, p. 120–127; Nagy & Planderova 1985; *Plankton* div. sp: Pontusi: Nagy 1992 p. 128–139; Nagy 1992 (Gérce 1 bh. Várkesző 1 bh. Pula 3 bh. Debréte 1 bh. Kőbánya outcr.); *Plankton*: Upper Part of the Csákvár Marl Formation (frequent): Hutter 1969 in Jám bor 1980. p. 80; *Plankton*: Late Pannonian Tótkomlós III. bh. 294,0 m: Hutter in Franyó 1992.

„*sphaeromorphs*” Baranyi in Baranyi & al. 2016

Hungarian Age: Early Jurassic, Early Toarcian: Assemblage 1, 2, 3, 4: Baranyi & al. 2016.

Organic-walled Microplankton/Phytoplankton zonations from Hungary
Szervesvázú Microplankton/Phytoplankton zonációk Magyarországról

Silurian–Devonian

Kozur, H. 1984: *Muellerisphaerida* eine neue von mikrofosilien unbekannter systematischer stellung aus dem Silur und Unterdevon von Ungarn–Geol. Paleont. Mitt. Innsbruck Bd. 13: 125–148. (Germany)

“Summary: *Microfossils* of uncertain systematic position were found in the Silurian and lower Devonian of Hungary. Until now this microfossil group was only known from the Silurian and Devonian of Western Germany as well as from the Silurian of Hungary and Greenland. These fossils were mostly placed into the *hystrichosphaerids* (*Acritarcha*). The now order *Muellerisphaerida* (*incertae sedis*) is introduced for this microfossil group and its systematic position is discussed. 2 families, 4 genera, and 13 species are established. The possible biostratigraphic value of the *Muellerisphaerida* is shown.”

Triassic

Table 2. Góczán F. in Góczán F., Oraveczné Schäffer A., Szabó I. 1986: Biostratigraphic zonation of the Early Triassic in the Transdanubian Central Range–Acta Geologica Hungarica 29. 3-4: p. 241. fig. 3.

Jurassic

Table 3. Baranyi V. in Baranyi V., Pálffy J., Görög Á., Riding, J. B. , Raucsik B. 2016: Multiphase response of palynomorphs to the Toarcian Oceanic Anoxic Event (Early Jurassic) in the Réka Valley section, Hungary–Review of Palaeobotany and Palynology 235 (2016), p. 66, fig. 9.

Late Cretaceous: Senonian

Fig. 1. Siegl-Farkas Á. & Wagnreich, M. 1996: Chronostratigraphic correlation of palynostratigraphic, *dinoflagellate* and *nannofossil* zones based on sections from the Gosau Group of Austria and Senonian of the Transdanubian Central Range of Hungary. *Ammonita* sign in TCR column marks the Santonian marker species *Placenticerias polyopsis*. – Siegl-Farkas Á. and M. Wagnreich 1996, p. 131, fig. 3.

Fig. 2. Siegl-Farkas Á. 1999b: Upper Cretaceous localities 1. Transdanubian Central Range (A-Ajka; C-Celldömölk; D-Devecser; Gy-Gyepükaján; M-Magyarpolány; V-Vinar); 2. Gozau (Nekézseny); 3. Flysh; 4. South Great Hungarian Plain (B-Bácsalmás; J-Jánoshalma; K-Komádi). – Siegl-Farkas Á. 1999b, p. 196, fig. 1.

Table 4. Siegl-Farkas Á. 1999b: Comparative palynology of the Senonian formations in the Pelso and Tisza Units (Hungary). – Siegl-Farkas Á. 1999b, p. 196, fig. 2.

Table 5. Siegl-Farkas Á. 1999a: Biozonation of the Upper Cretaceous formations in the Great Hungarian Plain. – Siegl-Farkas Á. 1999a, p. 176, fig. 5.

Paleogene: Eocene, Oligocene

Table 6. Rákosi L. 1979: Biozones de L'Eocene de la Montagne Centrale de Transdanubie basées sur les recherches palynologiques/A Dunántúli középhegység eocénjének biozónái palynológiai vizsgálatokkal. – Annual Report of the Hungarian Geological Institute of 1977. Rákosi L. 1979, p. 253, Table 2.

Fig. 3.. Rákosi L. 1993: The position of the model geological sections of the Paleogene formations concerned in this study as compared to the nannofloral (Nagymarosy A. – Báldi-Beke 1988) zonation. Key: 1. variegated clay, 2. browncoal, 3. carbonaceous clay, 4. clay, 5. claymarl, 6. marl, 7. limestone, 8. sand, 9. sandstone, 10. tuff bands. Rákosi L. 1993, p. 255, fig. 1.

Oligocene: Egerian

Deflandrea spinulosa–Dicolpopollenites calamoides Opper zone Nagy 1992, p. 233/362.
Palynological zone: PN1–PN2

Nagy Eszter 1992: Magyarország Neogén sporomorpháinak értékelése. – A Comprehensive Study of Neogene Sporomorphs in Hungary. – Geologica Hungarica Ser. Palaeontologica 53: 379 p.

Miocene Palynological zones Nagy Eszter 1992

Verrucingulatisporites grandis–Foveotriletes pessinensis Opper zones
Spore-pollen zone: PN3. Eggenburgian.

Gemmatosporis delicatus–G. decorus–Lusatisporis perinatus Opper zone
Spore-pollen zone: PN4. Ottnangian.

Mecsekisporites main zone, range zone
Spore-pollen zones: PN5, PN6, PN7.

1. *Rudolphisporis–Phaeocerosporites transversus–Ricciaesporites transdanubicus*
range zone
Spore-pollen zone: PN5. Karpatian.
2. *Bifacialisporites badenensis–Mecsekisporites* range zone
Spore-pollen zone: PN6. Early Badenian.
3. *Echinatisporis variabilis–Cupressacites insulipapillatus* Opper zone or
Taxodiaceapollenites–Myricipites acme zone
Spore-pollen zone: PN7. Middle Badenian.

Hydrosporis miocaenicus–Intratropollenites polonicus Opper zone

Spore-pollen zone: PN8. Late Badenian.

Tsugaepollenites helenensis–*Manikinipollis tetradoides* Opper zone

Spore-pollen zone: PN9. Sarmatian.

Mecsekia ultima zone Sütőné Szentai 1982; Sütő-Szentai 1988

Spiniferites bentorii main zone Sütőné Szentai 1982; Sütő-Szentai 1988

Spore-pollen zone: PN10. Pannonian.

Spiniferites balcanicus main zone Sütőné Szentai 1982; Sütő-Szentai 1988

Dinoflagellata–*Zygnemataceae* interval zone Sütőné Szentai 1982, Sütő-Szentai 1988 and

Mougeotia laetevirens zone Sütőné Szentai 1982; Sütő-Szentai 1988

Spore-pollen zone: PN11. Pannonian.

Miocene Badenian–Sarmatian

Table 7. Gonzalo Jiménez-Moreno, Martin J. Head & Mathias Harzhauser 2006, p. 115, fig.3: Chronostratigraphic framework used in this study. Based on Gradstein & al. (2004) and Steininger & al. (1990, 1996), showing the dinocyst zones of de Verteuil & Norris (1996) and temporal distribution of stratigraphically indicative species used in this study. The three standard stages are distinctly characterized by dinocysts, illustrating their biostratigraphic utility for the Central Paratethys.

Late Miocene Pannonian

Table 8. Sütő-Szentai 1988: Organic walled microplankton zones. – Sütő-Szentai 1988, p. 340, detail of the Table 1.

Table 9. Sütő-Szentai 1994: Positions of the microplankton zones in the investigated borehole sequences. – Sütő-Szentai 1994c, p. 157, fig. 2.

Table 10. Korpásné Hódi 1998: Magneto–Chrono and Biostratigraphic correlation of the Pannonian Stage. A Pannóniai emelet magneto-, krono- és biosztratigráfiai korrelációja. – In Barabás et al. 1998, p. 455. Table 1.

Pleistocene–Holocene

Table 11. Nagyné Bodor E. 1990: The chronological scale used for the palynological examination of the Lake Balaton. A Balaton fenékiszapjának palinológiai vizsgálatánál használt korbeosztás. – Nagyné Bodor E. 1990 in Barabás et al. 1998 p. 511, fig. 18.

Table 12-16. Correlations of International, Regional and Hungarian units. A nemzetközi, a regionális és a magyarországi rétegtani egységek korrelációja.

Table 17. Sütőné Szentai M.: Range of the Organic-walled microplankton in Phanerozoic. A Szervesvázú microplankton elterjedése a Fanerozoikumban.

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Összefoglalás

Szervesvázú microplankton fajok listája Magyarországról, a szilurtól a holocénig (1957–2017)

A taxon-lista a szerves anyagú microfossziliák, más szóval a szervesvázú microplankton (Dinoflagellata, Chlorophyta, Prasinophyta, Acritarcha, Foraminifera, Thecamoeba (szerves anyagú fallal), Polychaeta, és az incertae sedis magyarországi rétegtani előfordulásának gyakorlati kézikönyve a szilurtól a holocénig.

Szervesvázú microplankton gyűjtőnév alatt azok a szerves anyagú microfossziliák szerepelnek, melyek a palynológiai preparátumokban a spóra és pollen maradványokkal együtt találhatóak. A phytoplankton és a zooplankton maradványok megközelítően a 10–300 µm közöttiek. A phytoplanktonhoz tartoznak a Dinoflagellata, Chlorophyta, Prasinophyta, Acritarcha, míg a zooplanktonhoz a Foraminifera, Thecamoeba (szerves vázú) és a Polychaeta. Az incertae sedis az ismeretlen rendszertani helyzetű, szerves anyagú microfossziliákat jelenti.

A taxon-lista a szilur és a holocén közötti idő-intervallumban képződött, és a magyarországi üledékes kőzetekből följegyzett vagy diagnosztizált nemzetségeket és fajokat tartalmazza.

A dinoflagellaták esetében a fajok holotípusát Graham L. Williams & al. 1998 indexe alapján adtam meg.

A fajok magyarországi rétegtani elterjedésén kívül, nemzetközi rétegtani elterjedésüket Graham L. Williams & al. 1998 indexéből, és Graham L. Williams & al. 1993 munkájából vettem át. Ugyanezen adatokat a Chlorophyta, Prasinophyta, Acritarcha