GEOLOGICA
PANNONICA

36

GEOLOGICA PANNONICA

formerly *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös nominatae, Sectio Geologica*

AN INTERNATIONAL JOURNAL OF EARTH SCIENCES

36

Budapest
2008

Please, submit manuscripts to

M. KÁZMÉR
Department of Palaeontology
Eötvös University
P.O.Box 120
H-1518 Budapest
Hungary

The Hantken Press
Budapest, Hungary

ISSN 0365-0634 (Annales Univ. Sci. Budapest., Sect. Geol.)

Contents

Geologica Pannonica 36, 7—8 (2008) Budapest

Geologica Pannonica and the role of printed scientific information in the electronic age

Miklós KÁZMÉR[1]

Why to change a brand name?

Geologica Pannonica is a new name for an old journal. Formerly called *Annales Universitatis Scientiarum Budapestinensis de Rolando Eötvös nominatae, Sectio Geologica,* it has been an internationally-distributed publication outlet for the earth science community residing at Eötvös University, Budapest since 1957. During fifty-two years since its foundation by László EGYED, professor of geophysics, 35 volumes have been printed.

Creating the journal was sign of the melting political climate, a lessening of isolationism after the Hungarian revolution in 1956. The somewhat longish Latin name was evidently a compromise between languages of then-enemies America and Germany, and of unwanted friend Soviet Union. More than ten *Sectio*s started publishing at that time, *Sectio Geologica* being the most vigorous, still living today.

The new name, Geologica Pannonica, reflects a changing editorial policy. We want to attract authors irrespective of their location, who wish to publish about the Pannonian Basin, its basement and the surrounding mountain chains, their composition and history throughout all ages. Inspiration to create this name came from *Geologica Carpathica*, in the hope that a sister journal can capitalize on its success.

This change is in line with recent developments in the region: *Geologický zborník* → *Geologica Carpathica* in Bratislava, the five series of *Dări de seamă ale sedinţelor* → *Romanian Journal of Stratigraphy, Paleontology*, etc. in Bucharest, *Geološki vjesnik* → *Geologia Croatica* in Zagreb, *Mitteilungen der Österreichischen Geologischen Gesellchaft* → *Austrian Journal of Earth Sciences* in Vienna. While changing names is always for betterment of a journal, the success is not guaranteed.

Survival of regional journals

Existence of regional journals is fully justified for a science where principles are invariably described in a regional context. Most European and many other countries have their own journals, describing the national area.

These journals now live with major problems. Many of them are lagged behind their publication schedule, and some have sadly disappeared (*Memorie di Scienze Geologiche* of Padova, and *Beringeria* of Würzburg are two examples known for their

[1] Department of Palaeontology, Eötvös University, P.O.Box 120, H-1518 Budapest, Hungary.
E-mail: mkazmer@gmail.com

excellent quality). Lack of funding is the immediate case, but a shift in the international publishing market is the major reason.

The major threat to regional journals is globalization: the drawdown of manuscripts towards international (i.e. mostly commercial) journals, assisted by the impact factor system. However, excessive pricing makes many of these commercial journals unavailable to scientific institutions. There is a paradox that authors who publish their papers in these journals, more and more often cannot read them at their workplace.

True, global publishers cannot be beaten by distribution of information… or can be?

Open access journals (*Geologica Carpathica* and *Acta Palaeontologica Polonica* are two great examples) are available to anyone with an internet connection, while paper versions are being printed as permanent repositories of the data.

Electronic for searching, print for archiving

Why to print a journal anyway? When the American Geophysical Union officially announced termination of printing its journals in 2008, it is hard to argue against this global publisher. However, we feel that an over-enthusiasm for the practical advantages of electronic publishing makes their publications committe blind to the disadvantages.

The major motif to cessation of producing a printed version is to save money. When all pre-printing processes are made electronically, it is convenient to stop the production line just before the printing machines start to run and save money for the publisher. However, the printing costs are not saved, but charged to the reader.

From the user's viewpoint, the electronic version is best suited for easy search of information. The paper version – besides comfortable reading – is best for archiving.

In geology and palaeontology archiving information is a must. Exposures disappear, cores of expensive boreholes are mostly not kept, fossil localities are exhausted. Published information – multiplied by the hundreds at least – takes the place of them, preserved for future generations[2]. Therefore it is vital that printable information is being printed and distributed. Paper is a proven medium to serve permanent recording of information, if printed and distributed to at least 300 locations worldwide.

If you buy electronic subscription and give up buying paper version – you are bound to pay for access forever, without actually owning the journal issues. Rare is the publisher (Geological Society of America is an exception) who supplies you with a CD at the end of the year containing all the electronic stuff you have paid for. If you buy a printed journal, it remains on your shelf, ready for perusing in years, decades, even centuries later.

Geologica Pannonica provides the best of both worlds to its authors and readers – a printed version with offprints and an open-access electronic version at http://paleo.elte.hu.

---

[2] While some chemists claim that they never access information older than ten years, palaeontological information is valid and to be accounted for 250 years at least. The International Codex of Zoological Nomenclature impose the rule that every publication on certain species must be accounted for back to 1758!

Geologica Pannonica 36, 9–99 (2008) Budapest

Upper Oligocene (Egerian) ostracods in Hungary – systematic description

Miklós MONOSTORI[1]

(with 27 plates)

Abstract

This work is the second part of a monograph describing the ostracod fauna of the Oligocene sediments of Hungary. It contains the description of the forms of the Upper Oligocene (Egerian stage): *Cytherella compressa* (VON MÜNSTER, 1830); *Cytherella dentifera* MÉHES, 1941; *Cytherella* ex gr. *draco* PIETRZENIUK, 1969; *Cytherella gracilis* LIENENKLAUS, 1894; *Cytherella hyalina* MÉHES, 1941; *Cytherella mehesi* BRESTENSKÁ, 1975; *Cytherella transversa* SPEYER, 1863 s.l.; *Cardobairdia boldi* PIETRZENIUK, 1969; *Cardobairdia* sp.; *Bairdia brevis* LIENENKLAUS, sensu BRESTENSKÁ, 1975; *Bairdia* sp.; *Bythocypris arcuata* (VON MÜNSTER, 1830, sensu FAUPEL, 1975; *Microcytherura* ex gr. *lienenklausi* MOOS, 1971; *Cnestocythere* ex gr. *oligocaenica* MOOS, 1968; *Paijenborchella* (*Eopaijenborchella*) *sturovensis* BRESTENSKÁ, 1975; *Callistocythere majzoni* n. sp.; *Callistocythere*? sp.; *Cytheridea mülleri* (VON MÜNSTER, 1830) s. l.; *Cytheridea pernota* OERTLI et KEY, 1955 s.l.; *Cyamocytheridea punctatella* (BOSQUET, 1852); *Miocyprideis rara* (GOERLICH, 1953); *Hemicyprideis anterocostata* MONOSTORI, 1982; *Hemicyprideis dacica* (HÉJJAS, 1895); *Hemicyprideis helvetica* (LIENENKLAUS, 1895); *Schuleridea rauracica* OERTLI, 1956; *Schuleridea dorsoarcuata* (MÉHES, 1941); *Schuleridea* sp.; *Cuneocythere* (*Cuneocythere*) *marginata* (BOSQUET, 1852); *Pontocythere truncata* (LIENENKLAUS, 1894); *Pontocythere* ex gr. *denticulata* (LIENENKLAUS, 1894); *Krithe papillosa* (BOSQUET, 1852); *Krithe pernoides* (BORNEMANN, 1855); *Krithe* sp. 2 MONOSTORI, 2004; *Parakrithe costatomarginata* MONOSTORI, 1982; *Parakrithe* sp.1 MONOSTORI, 2004; *Costa hermi* WITT, 1967; *Pterygocythereis ceratoptera* (BOSQUET, 1852); *Pterygocythereis retinodosa* OERTLI, 1956; *Henryhowella asperrima* (REUSS, 1850); *Leguminocythereis scrobiculata* (VON MÜNSTER, 1830); *Leguminocythereis* ex gr. *sorneana* OERTLI, 1956; *Leguminocythereis subtiliclatrata* n. sp.; *Murrayina*? *gibberula* (REUSS, 1856); *Muellerina latimarginata* (SPEYER, 1863); *Aurila*? sp. 1; *Pokornyella*? sp. 1.; *Pokornyella*? sp. 2; *Hornibrookella confluens confluens* (REUSS, 1856); *Hornibrookella confluens xeniae* (MOOS, 1963); *Bosquetina zalanyii* BRESTENSKÁ, 1975; *Bosquetina kisegedense* MONOSTORI, 2004; *Bosquetina macroreticulata* n. sp.; *Occultocythereis rupelica* MONOSTORI, 1982; *Cytheretta* (*Flexus*) *plicata* (VON MÜNSTER, 1830); *Cytheretta posticalis* (TRIEBEL, 1952); *Cytheretta sagri* DELTEL, 1964; *Cytheretta tenuistriata* (REUSS, 1853 s.l.); *Cytheretta* ex gr. *tenuistriata* (REUSS, 1853); *Cytheretta variabilis* OERTLI, 1956 s.l.; *Cytheretta*? sp. 1.; *Loxoconcha carinata* LIENENKLAUS, 1894; *Loxoconcha favata* KUIPER, 1918; *Loxoconcha subovata* (MÜNSTER, 1830); *Loxoconcha* (*Loxocorniculum*) sp. 1; *Paracytheridea* cf. *gradata* (BOSQUET, 1852); *Eucytherura dentata* LIENENKLAUS, 1905; *Eucytherura* ex gr. *macropora* LIENENKLAUS, 1894; *Cytheropteron* sp.; *Kangarina* sp.; *Xestoleberis obtusa* LIENENKLAUS, 1900; *Xestoleberis* sp.; *Protoargilloecia* ex gr. *angulata* DELTEL, 1961; *Phlyctenophora* ex gr. *grosdidieri* STHÉPINSKY, 1963.

---

[1] Department of Palaeontology, Eötvös University, P.O. Box 120, H–1518 Budapest, Hungary.
E–mail: monost@ludens.elte.hu

Introduction

This work is the second part of a monograph describing the ostracod fauna of the Oligocene sediments of Hungary. Part I has been published as MONOSTORI (2004). It contains the description of the forms of the Upper Oligocene (Egerian stage).

Systematic palaeontology

Subclass Ostracoda LATREILLE, 1806
Order Podocopida G.W. MÜLLER, 1894
Suborder Platycopa SARS, 1866
Familia Cytherellidae SARS, 1866
Genus *Cytherella* JONES, 1849

Cytherella compressa (VON MÜNSTER, 1830)
Pl. 1, figs 1–4.

1830. *Cythere compressa* n. sp. – MÜNSTER, p. 64
1981. *Cytherella (Cytherella) compressa* (VON MÜNSTER, 1830) – UFFENORDE, pp. 128–129, Pl. 1, Fig. 2.
1982. *Cytherella compressa* (VON MÜNSTER) – MONOSTORI, pp. 45–47, Pl. II, f. 6–9, (cum syn)
1985. *Cytherella (Cytherella) compressa* (VON MÜNSTER, 1830) – MONOSTORI, pp. 165–166.
2004. *Cytherella (Cytherella) compressa* (VON MÜNSTER, 1830) – MONOSTORI, pp. 28–29, Pl. 1, figs 1–4.

Remarks: The relation of *C. compressa/dentifera* is discussed in MONOSTORI, 2004.
Dimensions (carapace): L = 0.63–0.76 mm, H = 0.45–0.47 mm, L/H = 1.5–1.67.
Occurrence: Eger Wind brickyard borehole 4.0–34.3 m; Eger Wind brickyard section samples 18–23.
Material: 72 specimens.
Stratigraphical range without Hungary: Belgium: Upper Ypresian–Rupelian; The Netherlands: Bartonian, Rupelian?; Great Britain: Bartonian; Austria: Middle Eocene; Ukraina: Eocene; Slovakia: Lower Oligocene–Upper Oligocene
Stratigraphical range in Hungary: Priabonian–Upper Oligocene.

Cytherella dentifera MÉHES, 1941
Pl. 1. figs 5–8.

1941. *Cytherella dentifera* n. sp. – MÉHES, pp. 78–90, Pl. VII, figs 12–16, textfigs 20a, 94, 103.
1982. *Cytherella dentifera* Méhes, 1941 – MONOSTORI, pp. 47–48, Pl. III, figs 1–4 (cum syn.)
2004. *Cytherella dentifera* Méhes, 1941 – MONOSTORI, pp. 29–30, Pl. 1, figs 5–7.

Remarks: The relation of *C. compressa/dentifera* is discussed in MONOSTORI (2004).

Dimensions (carapace): L = 0.78–0.84 mm, H = 0.45–0.53 m, L/H = 1.58–1.73
Occurrence: Eger Wind brickyard borehole 4.0–34.9 mm; Eger Wind brickyard section 32; Esztergom 123 borehole 303.0 m; Ózd–Szentsimon section.
Material: 44 specimens.
Stratigraphical range without Hungary: Slovakia: Oligocene.
Stratigraphical range in Hungary. Priabonian–Upper Oligocene.

Cytherella ex gr. *draco* PIETRZENIUK, 1969
Pl. 2. figs 1–3.

1982. *Cytherella draco* PIETRZENIUK, 1969 – MONOSTORI, pp. 49–50, Pl. IV, figs 1–3.

Remarks: Most of the Oligocene specimens from Hungary have „more oval" form, than the type, their ventral outline is frequently well rounded. Part of the specimens have a height more moved forward and a less rounded posterior end. This form may be a new species.
Dimensions (carapace): L = 0.60–0.82 mm, H = 0.38–0.60 mm, L/H = 1.35–1.33,
Occurrence: Eger Wind brickyard borehole 7.8–48.0 m.
Material: 58 specimens.
Stratigraphical range in Hungary: Priabonian–Upper Oligocene.

Cytherella gracilis LIENENKLAUS, 1894
Pl. 2. figs 4–8.

1894. *Cytherella gracilis* n. sp. – LIENENKLAUS, p. 267, Pl. XVIII, fig. 11.
1956. *Cytherella gracilis* LIENENKLAUS – SUZIN, pp. 160–161, Pl. I, fig. 5.
1956. *Cytherella gracilis* LIENENKLAUS, 1894 – OERTLI, pp. 27–29, Pl. 1, figs 1–6.
?1961. *Cytherella gracilis* LIENENKLAUS, 1894 – DELTEL, pp. 14–15, Pl. 1, figs 14–16.
1962. *Cytherella gracilis* LIENENKLAUS, 1894 – BASSIOUNI, p. 13, Pl. 1, f. 1.
?1965. *Cytherella gracilis* LIENENKLAUS MOYES, 1965 – p. 9, Pl. I, fig. 7.
?1966. *Cytherella gracilis* LIENENKLAUS – MOUSSOU, 1966, pp. 16–17, Pl. 1, figs 1a–b, 2.
1969. *Cytherella gracilis* LIENENKLAUS, 1894 – PIETRZENIUK, p. 12, Pl. II, fig. 1, Pl. XV, fig. 3.
1969. *Cytherella gracilis* LIENENKLAUS – SCHEREMETA, p. 42, Pl. I, fig. 1.
1973. *Cytherella gracilis* (LIENENKLAUS, 1905) – SONNE, 1973, Abb. 9.
1975. *Cytherella gracilis* LIENENKLAUS, 1894 – BRESTENSKÁ, p. 380, Pl. 1, fig. 11.
1975. *Cytherella gracilis* LIENENKLAUS, 1894 – FAUPEL, pp. 62–63, Pl. 10, fig. 1.
1981. *Cytherella (Cytherella) gracilis* LIENENKLAUS, 1894 – UFFENORDE, p. 131, Pl. 10, fig. 1.

Description: Elongated form with nearly eqally rounded anterior and posterior ends. The dorsal and ventral outlines are approximately parallel. The dorsal outline of the left valve is slightly and asymmetrically arcuated, the ventral outline is nearly symmetrically hollowed. The dorsal outline of the right valve is straight or slightly hollowed, the ventral outline is more or less hollowed.

In the dorsal view of the carapace the posterior end is rounded, the anterior end is more pointed, the valves are slowly convergent from the rounded posterior end to the more pointed anterior end with a very weak depression in the middlethird of the lenght.

The carapaces have a flattened form, the ventral and dorsal overlaps are slight, the surface is usually smooth.
Remarks: There is some variation in elongation. A few well preserved specimens have a concentrical ornamentation of fine and dotted striae.
Dimensions: L = 0.64–0.73 mm, H = 0.33–0.35 mm, L/H = 1.83–2.15
Occurrence: Csákvár 34 borehole 201.5–254.8 m; Piliscsaba–2 borehole 373.8–374.8 m; Piliscsaba–3 borehole 127.0–207.0 m; Sárisáp 112 borehole 28.0 m; Szentendre–2 borehole 37.7–73 m; Eger Wind brickyard borehole 4.9–5.4 m.
Material: 24 speciemens.
Stratigraphical range without Hungary: Oligocene (Germany, France, Swiss, Ukraina).
Stratigraphical range in Hungary: Upper Oligocene.

Cytherella hyalina Méhes, 1941
Pl. 3. figs 1–5.

1941. *Cytherella hyalina* n. sp. – MÉHES, p. 78, Pl. VII, figs 7–9.
1975. *Cytherella hyalina* MÉHES, 1941 – BRESTENSKÁ, pp. 381–382, Pl. 1, figs 12–14, Pl. 2, figs 1–3.
1982. *Cytherella* aff. *mehesi* BRESTENSKÁ, 1975 – MONOSTORI, pp. 50–51, Pl. IV, figs 4–7 (Pars).
1985. *Cytherella* aff. *méhesi* BRESTENSKÁ, 1975 – MONOSTORI, p. 166, Pl. 1, figs 3–4 (Pars).
2004. *Cytherella hyalina* (MÉHES, 1941) – MONOSTORI, p. 91.

Remarks: The relation of the *hyalina/mehesi* is discussed in MONOSTORI (2004).
Occurrence. Csákvár–34 borehole 115.5–126–3 m; Esztergom–123 borehole 207.0 m, Eger Wind brickyard borehole 4.0–46.6 m.
Dimensions: L = 0.6–0.71 mm, H = 0.37–0.44 mm, L/H = 1.59–1.77
Material: 103 specimens.
Stratigraphical range without Hungary: Slovakia: Oligocene.
Stratigraphical range in Hungary: Priabonian–Upper Oligocene.

Cytherella mehesi BRESTENSKÁ, 1975
Pl. 3. fig 5.

1975. *Cytherella mehesi* n. sp. – BRESTENSKÁ, pp. 234–235, Pl. 2, figs 4–8.
1982. *Cytherella* aff. *mehesi* BRESTENSKÁ, 1975 – MONOSTORI, pp. 50–51, Pl. 4, Figs 3–4 (pars).
1985. *Cytherella* aff. *mehesi* BRESTENSKÁ, 1975 – MONOSTORI, p. 166, Pl. 1, figs 3–4. (pars).
2004. *Cytherella mehesi* BRESTENSKÁ, 1975 – MONOSTORI, pp. Pl. figs

Remarks: The relation of the *hyalina/mehesi* is discussed in MONOSTORI (2004).
Occurrence: Csákvár–34 borehole 115.5–128.3 m; Esztergom–123 borehole 488–500 m; Ózd–Szentsimon outcrop; Törökbálint brickyard, sample 717/13; Eger Wind brickyard borehole 4.4–34.1 m.
Dimensions: L = 0.66–0.70 mm, H = 0.44–0.49 mm, L/H = 1.43–1.67.
Material: 134 specimens.
Stratigraphical range without Hungary: Slovakia: Oligocene.

Stratigraphical range in Hungary: Priabonian–Upper Oligocene.

Cytherella transversa SPEYER, 1863 s.l.
Pl. 4. figs. 1–4.

1863. *Cytherella transversa* n. sp. – SPEYER, p. 56, Pl. I, fig. 2.
1941. *Cytherelloidea pestiensis* n. sp. – MÉHES, pp. 81–82, Pl. VII, figs 21–22, text figs 18, 95, 105.
1957. *Cytherella transversa* SPEYER, 1863 – KEIJ, p. 47, Pl. I, fig. 2.
1961. *Cytherella transversa* SPEYER, 1863 – DELTEL, p. 17, Pl. II, figs 22–23.
1963. *Cytherella transversa* SPEYER, 1863 – STCHÉPINSKY, p. Pl. I, figs 1–3.
1969. *Cytherella transversa* SPEYER, 1863 – PIETRZENIUK, p. 13, Pl. I, figs 11–12.
1969. *Cytherella transversa* SPEYER, 1863 – SCHEREMETA, 1969, p. 45, Pl. I, figs 8–9.
1969. *Cytherella transversa* SPEYER, 1863 – DUCASSE, p. 12, Pl. I, fig. 11.
1975. *Cytherella pestiensis* (MÉHES) – BRESTENSKÁ, pp. 382–383, Pl. 1, figs 1–9.
1975. *Cytherella transversa* SPEYER, 1863 – FAUPEL, p. 64, Pl. 10, figs 5–6.
1981. *Cytherella transversa* SPEYER, 1863 – DUCASSE, pp. 175–176, Pl. II, figs 4–9, (forme „ovoide"), figs 10–11, (forme „pentagonale"), figs 12–14, (forme „infléchie"), fig 15, (forme „hastée").
1981. *Cytherella (Cytherella) transversa* SPEYER, 1863 – UFFENORDE, p. 131, Pl. 1, fig. 3.
1982. *Cytherella pestiensis* (MÉHES, 1941) – MONOSTORI, pp. 48–49, Pl. III, figs 5–8.
1985. *Cytherella (Cytherella) pestiensis* (MÉHES, 1941) – MONOSTORI, p. 166–167, Pl. 1, figs 5–7.
1985. *Cytherella transversa* SPEYER, 1863 – DUCASSE et al., Pl. 71, fig. 16.
1988. *Cytherella* gr. *transversa* SPEYER, 1863 – BARBIN et GUERNET, pp. 215–216, Pl. 1, figs 4–5.
1989. *Cytherella transversa* SPEYER, 1863 – KEEN, Pl. 2, fig. 7.

Remarks: The relation of *C. pestiensis/transversa* is discussed in Monostori (2004).
Dimensions: L = 0.66–0.80 mm, H = 0.37–0.44 mm, L/H = 1.15–1.78
Occurrence: Csákvár–34 borehole 123.6–128.3 m; Esztergom–123 borehole 199.0 m; Törökbálint brickyard 717/3 sample; Eger Wind brickyard borehole 4.0–18.3 m; Eger Wind brickyard section, samples 21, 23.
Material: 112 specimens.
Stratigraphical range without Hungary: Slovakia: Oligocene.
Stratigraphical range in Hungary: Bartonian–Upper Oligocene.

Suborder Metacopa SYLVESTER–BRADLEY, 1967
Superfamila Healdiacea HARLTON, 1933
Familia Saipanettidae MCKENZIE, 1968
Genus *Cardobairdia* VAN DEN BOLD, 1960

Cardobairdia boldi PIETRZENIUK, 1969
Pl. 4. figs 3–4.

1969. *Cardobairdia boldi* n. sp. – PIETRZENIUK, p. 16, Pl. VII, figs 1–3, Pl. XVII, figs 7– 8.
2004. *Cardobairdia boldi* PIETRZENIUK, 1969 – MONOSTORI, pp. 34–35,(cum syn.).

Remarks: In the Upper Oligocene Eger Formation the L/H ratio and the overlap is rather variable.

Dimensions: L = 0.42–0,50 mm, H = 0.26–0.27 mm, L/H = 1.62–1.85
Occurrence: Eger Wind brickyard borehole 8.3–9.2 m.
Material: 3 specimens.
Stratigraphical range without Hungary: Germany, Rumania: Eocene.
Stratigraphical range in Hungary: Priabonian–Oligocene.

Cardobairdia sp.

Remarks: a single and badly preserved specimen perhaps according to *C. boldi* group.
Dimensions: L = 0.90 mm, H = 0.44 mm, L/H = 2.05

Suborder Podocopa SARS, 1866
Superfamilia Bairdiacea SARS, 1866
Familia Bairdidae SARS, 1888
Genus *Bairdia* MCCOY, 1844

Bairdia brevis LIENENKLAUS, 1900 sensu BRESTENSKÁ, 1875
Pl. 5, fig. 1.

1975. *Bairdia brevis* LIENENKLAUS, 1900 – BRESTENSKÁ, pp. 383–386, Pl. 4, figs 7–8, 10–11.
?1985. *Bairdia* cf. *brevis* LIENENKLAUS, 1900 – MONOSTORI, pp. 169–170, Pl. 2, f. 4.

Remarks: All specimens are more acute posteriorly as the type figures of LIENENKLAUS, 1900 and most of the specimens figured later after name *brevis* except of some ones having outlines very different from the type figures. Our specimens originate from BRESTENSKÁ's main quarry (Eger).
Occurrence: Eger Wind brickyard borehole 6.1–34.1 m.
Material: 25 specimens.
Stratigraphical range without Hungary. Slovakia, Upper Oligocene.
Stratigraphical range in Hungary: Upper Oligocene. (There are some similar but very badly preserved specimens in the Uppermost Eocene of Hungary).
Dimensions: L = 0.54–0.91 mm, H = 0.45–0.64 mm, L/H = 1.42–1.58

Bairdia sp.
Pl. 5. fig. 2.

Remarks: A single right valve having no depression on the ventral outline, the form is more elongate and less angular then the brevis.
Dimensions: L = 0.98 mm, H = 0.7 mm, L/H = 1.4.
Occurrence: Eger, Wind brickyard borehole 34,3–34,6 m.

? *Bythocypris arcuata* (VON MÜNSTER, 1830) sensu FAUPEL, 1975
Pl. 5. figs 3–4.

Remarks: The form is similar to specimen figured in FAUPEL, 1975 as *B. arcuata*. Forms, described as *B. arcuata* in the literature are very different. All the investigated

specimens are carapaces, without any inner characters.
Dimensions: L = 0.55–0.90 mm, H = 0.25–0.37 mm, L/H = 2.20–2.77
Occurrence: Piliscsaba–2 borehole 224.9–372.9 m; Szentendre–2 borehole 19.5–20.5 m.
Material: 3 carapaces.
Stratigraphical range in Hungary: Upper Oligocene.

Familia Cytheridae BAIRD, 1850
Subfamilia Cytherinae BAIRD, 1850
Genus *Microcytherura* G.W. MÜLLER, 1894

Microcytherura ex gr. *lienenklausi* MOOS, 1971
Pl. 5. fig. 5.

Remarks: The trapezoid form, very fine and dense punctation of the valve and the polygonal nest of weak ribs is characteristic for this group. According to UFFENORDE (1981) this form is a subspecies of *M. broeckiana*. Our speciemen is much more high and more stubby as forms figured from Oligocene of Germany.
Dimensions: L = 0.51 mm, H = 0.31 mm, L/H = 1.65
Occurrence: Eger Wind brickyard borehole, 33.9–341.1 m.
Material: 2 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Genus *Cnestocythere* TRIEBEL, 1950

Cnestocythere ex gr. *oligocaenica* MOOS, 1968
Pl. 5. figs 6–7, Pl. 6. figs 1–2.

Remarks: The form figured by BRESTENSKÁ, 1975 as *Schizocythere* sp. obviously belongs to the genus *Cnestocythere* according to its hinge (Pl. 12, fig. 15). The large irregular polygonal reticulation and strong ventral ridge is similar to this species, but also similar to ornamentation of *C. lamellicosta* TRIEBEL, 1950 (a species from the Neogene). The rare and damaged material hinder the correct species determination. There are also some instars in the material.
Dimensions: L = 0.43–0.55 mm, H = 0.27–0.45 mm, L/H = 1.48–1.70
Occurrence: Eger Wind brickyard borehole 33.9–34.9 m; Esztergom–123 borehole 174 m.
Material: 11 specimens.

Genus *Paijenborchella* KINGMA, 1948

Paijenborchella (Eopaijenborchella) sturovensis BRESTENSKÁ, 1975
Pl. 6 fig. 3.

1975. *Paijenborchella (Eopaijenborchella) sturovensis* n. sp. – BRESTENSKÁ, pp. 401–403, Pl. 9, fi. 1–9.
1985. *Paijenborchella (Eopaijenborchella) sturovensis* BRESTENSKÁ, 1975 – MONOSTORI, pp.

173–174, Pl. 2, f. 9.
2004. *Paijenborchella* (*Eopaijenborchella) sturovensis* BRESTENSKÁ, 1975 – MONOSTORI, p. 39, Pl. 4, fig. 6–7.

Remarks: Very rare form.
Dimensions: L = 0.50 mm, H = 0.30 mm, L/H = 1.66
Occurrence: Eger Wind brickyard borehole 33.4–33.9 m.
Material: 1 specimen.
Stratigraphical range without Hungary: Slovakia: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Family Leptocytheridae HANAI, 1957
Genus *Callistocythere* RUGGIERI, 1953

Callistocythere majzoni n. sp.
Pl. 6. figs 4–6.

1941. *Cythere egregia* MÉHES, 1907 – MÉHES, pp. 31–32, Pl. VI, figs 20–22.

Derivatio nominis: After micropaleontologist L. MAJZON
Locus typicus: Szentendre–2 borehole.
Stratum typicum: 68.0–71.0 m, Törökbálint Sand Formation.
Diagnosis: Posterior part of the valves has a dense and strong reticular ornamentation consisting of nearly equal elements. The anterior network is more irregular with a distinct inclined anterior costa starting from the eye-knot.
Description. Anterior outline of the right valve is broadly and somewhat asymmetrically rounded. The dorsal outline is nearly straight, with a slight break at 2/3 of the length. The posterior outline is nearly straight with a 110–120^{o} break at the dorsal/posterior transition. The lower part of the posterior outline is rounded. There is a broad and asymmetrical shallow embayment on the ventral outline. Max width at ~¼ of the length.

The ornamentation consists of strong and dense reticulation. This reticulation has nearly equal elements on the posterior half of the valve; in the mid-length there is a small triangular dorsal depression with strengthening of the ornamentation. From the elongated eye–knot starts an inclined costa, the anterior reticulation is more irregular.

In the dorsal view of the carapaces the anterior part of the valves rise ~30^{o} up to 0.25 of the length, than the valves are parallel up to the 0.9 of the length, the caudal end is depressed after a ~120^{o} break. In inner lateral view of the right valve the broad anterior and posteroventral parts of the inner lamella are visible. The hinge has a simple elongated anterior tooth and a short incurved posterior tooth with a narrow bar among that.
Dimensions: L = 0.5–0.57 mm, H = 0.25–0.27 mm, L/H = 2.0–2.13
Comparison: Some Neogene forms are similar with their ornamentation (*Callistocythere antoniettae* RUGGIERI, 1967; *Callistocythere cryptoploca* (EGGER, 1858); *C. maculata* (PIETRZENIUK, 1973); *C. perfossa* CIAMPO, 1984; *C. propecornuta* OERTLI, 1956; *C. rastrifera* (RUGGIERI, 1953), but different with their outlines and details of the ornamentation. There is no similarity with *C. egregia* (MÉHES, 1907), having very different ornamentation.

Occurrence: Szentendre–2 borehole 38– 72 m.
Material: 21 specimens.
Stratigraphical range in Hungary: Upper Oligocene.
Holotype: right valve, deposited in the collection of the Natural History Museum of the Eötvös University, Budapest.

Callistocythere ? sp.
Pl. 6. fig. 7.

Remarks: Damaged specimen with reticulation from undulating costae, characteristic of *Callistocythere*.
Dimensions: L = 0.48 mm, H = 0.24 mm, L/H = 2.0
Occurrence: Ózd, Szentsimon outcrop.
Material: 1 carapace.

Genus *Cytheridea* BOSQUET, 1852

Cytheridea mülleri (VON MÜNSTER, 1830) s. l.
Pl. 6. fig. 8., Pl. 7. figs 1–3.

1830. *Cythere mülleri* n. sp. – VON MÜNSTER, p. 63.
1852. *Cytheridea mülleri* VON MÜNSTER – (BOSQUET), Pl. II, fig. 4.
1863. *Cytheridea mülleri* (BOSQUET) – SPEYER, p. 48, Pl. I, fig. 8.
1896. *Cytheridea mülleri* (MÜNSTER) – LIENENKLAUS, Pl. II, fig. 5.
1918. *Cytheridea mülleri* (VON MÜNSTER) – KUIPER, pp. 28–31, Pl. I, fig. 9.
1952. *Cytheridea mülleri* (MÜNSTER, 1830) – GOERLICH, pp. 188–191, figs 5–12.
1952. *Cytheridea mülleri* (MÜNSTER, 1830) – STRAUB, pp. 500–501, Pl. C, figs 63–65.
1953. *Cytheridea mülleri truncatula* n. sp. – GOERLICH, pp. 131–132, Pl. 1, fig. 6.
1956. *Cytheridea mülleri* (MÜNSTER, 1830) – OERTLI, 1956, p. 36, Pl. 2, figs 39–41.
1975. *Cytheridea mülleri* (VON MÜNSTER, 1830) – FAUPEL, pp. 23–24, Pl. 8, fig. 2.
1975. *Cytheridea mülleri* truncatula GOERLICH, 1953 – BRESTENSKÁ, pp. 396–397, Pl. 5, figs 7–11.
1981. *Cytheridea (Cytheridea) mülleri* (VON MÜNSTER, 1830) – UFFENORDE, 1981, p. 137, Pl. 1, figs 5–8.
1983. *Cytheridea (Cytheridea) mülleri mülleri* (VON MÜNSTER, 1830) – WEISS, pp. 89–94, Pl. 19, figs 1–2, 4–5, Pl. 20, figs 1–8, Pl. 21, figs 1–6.
1985. *Cytheridea mülleri* (VON MÜNSTER, 1830), sensu FAUPEL, 1975 – MONOSTORI, pp. 175–177, Pl. 3, figs 1–3.
1985. *Cytheridea mülleri truncatula* GOERLICH, 1953 – MONOSTORI, pp. 177–178, Pl. 3, fig. 4.
1985. *Cytheridea mülleri truncatula* GOERLICH, 1953 – MÜLLER, p. 17, Pl. 2, figs 5–7.

Remarks: This group is very variable in the material. Several forms have the characteristics of *C. mülleri truncatula*, others are close to characteristics of nominate subspecies and there are many transitional forms. A typical feature is the ordered reticulation on the anterior part of the valves.
Dimensions: L = 0.66–0.80 mm, H = 0.31–0.37 mm, L/H = 1.87–2.19
Occurrence: Alcsútdoboz–3 borehole 120.0 m, 246.0 m; Csákvár–34 borehole 123.6–

308.9 m; Piliscsaba–2 borehole 191.7–395.5 m; Piliscsaba–3 borehole 98.0–165.0 m; Sárisáp–112 borehole 19.6–28.0 m; Sárisáp–115 borehole 9.0 m; Sárisáp–117 borehole 27.0–54.0 m; Sárisáp–121 borehole 27.8 m; Sárisáp–128 borehole 18.5 m; Solymár–72 borehole 188.9–198.6 m; Eger Wind brickyard 4.6–6.1 m; K clay above bed K; Varbó–50 borehole 142.4–209.0 m.
Material: 638 pieces.
Stratigraphical range without Hungary: Oligocene
Stratigraphical range in Hungary: Oligocene.
Cytheridea mülleri/pernota transitional forms also are frequent.
Their occurrence: Csákvár–34 borehole 133.6–324.0 m; Esztergom–123 borehole 109.0–147.0 m; Szentendre–2 borehole 27.7–86.0 m.
Material: 363 specimens.

Cytheridea pernota OERTLI et KEY,1955
Pl. 7. figs 4–7.

1955. *Cytheridea pernota* n. sp. – OERTLI et KEY, pp. 19–25, Pl. 1, figs 1–15, textfig. 2.
1983. *Cytheridea (Cytheridea) pernota* OERTLI et KEY, 1955 – WEISS, pp. 96–100, Pl. 23–24.
1985. *Cytheridea pernota* OERTLI and KEIJ, 1955 – DUCASSE et al., Pl. 75, figs 8–10.
1985. *Cytheridea pernota* OERTLI et KEY, 1955 – MONOSTORI, pp. 178–179, Pl. 3, fig. 5. (cum syn.)
1989. *Cytheridea (Cytheridea) pernota* OERTLI et KEY, 1955 – UFFENORDE, Pl. 1, fig. 2.
1989. *Cytheridea pernota* OERTLI et KEY, 1955 – KEEN, 1989, Pl. 2, fig. 1.
1993. *Cytheridea pernota* OERTLI et KEY, 1955 – ZIEGLER et RÖDDER, Pl. 1, fig. 12.

Remarks: The size of the pits are very variable. Nearly concentrical anterior wrinkles are characteristic.
Occurrence: Alcsútdoboz–3 120–246 m; Solymár–72 188.9–198.6 m; Piliscsaba–2 191.7–395.5 m; Piliscsaba–3 98.0–165.0 m; Sárisáp 112 19.6–22.8–28.0 m; Sárisáp 115 9.0 m; Sárisáp 117 27.0–54.5 m; Sárisáp 121 27.8 m; Sárisáp 128 18.5 m; Csákvár 34 123.6–324.0 m; Szentendre 2 78.0–86.0 m.
Material: 354 specimens.
Dimensions: L = 0.67–0.89 mm, H = 0.35–0.44 mm, L/H = 1.72–1.84
Material: 202 specimens.
Stratigraphical range without Hungary: Germany: Oligocene, Switzerland: Oligocene, France: Oligocene, Belgium: Oligocene, Ukraina: Oligocene, Slovakia: Oligocene, Great Britain: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Family Cytheridae SARS, 1925
Subfamily Cytherideinae SARS, 1924
Genus *Cyamocytheridea* OERTLI, 1956

Cyamocytheridea punctatella (BOSQUET, 1852)
Pl. 8. figs 1–4.

1852. *Bairdia punctatella* n. sp. – BOSQUET, p. 26, Pl. 1, fig. 10.

1985. *Cyamocytheridea punctatella* (BOSQUET, 1852) – MONOSTORI, pp. 180–181, Pl. 3, fig. 6 (cum syn.).
2004. *Cyamocytheridea punctatella* (BOSQUET, 1852) – MONOSTORI, pp. 41–42.

Remarks: Description see in MONOSTORI (1985). The density of pits are rather variable.
Dimensions: L = 0.63–0.84 mm, H = 0.32–0.43 mm, L/H = 1.91–2.23
Occurrence: Csákvár–34 borehole 142.3–308.5 m; Piliscsaba–2 borehole 178.3–179.3 m; Piliscsaba–3 borehole 127.0–128.0 m; Sárisáp–115 borehole 9.0 m; Sárisáp–117 borehole 49.5 m; Sárisáp–122 borehole 47.5 m; Úny outcrop; Alcsútdoboz–3 borehole 199.3 m.
Material: 22 specimens.
Stratigraphical range without Hungary: France: Stampian–Aquitanian; Switzerland: Rupelian–Chattian; Belgium: Rupelian; Germany: Rupelian; Slovakia: Egerian.
Stratigraphical range in Hungary: Oligocene.

Genus *Miocyprideis* KOLLMANN, 1960

Miocyprideis rara (GOERLICH, 1953)
Pl. 8. figs 5–8., Pl. 9. figs 1–2.

1953. *Cyprideis*? *rara* n. sp. – GOERLICH, pp. 130– 131, T. 1, F. 1.
1985. *Miocyprideis rara* (GOERLICH, 1953) – MONOSTORI, pp. 182–183, Pl. 3, figs 9–10, Pl. 4, fig. 1 (cum syn.).
2004. *Miocyprideis rara* (GOERLICH, 1953) – MONOSTORI, pp. 41. Pl. 6. figs 5–8, Pl. 7. fig. 1.

Remarks: There is a very large variability in the ornamentation and valve forms of the specimens within the same samples. We have specimens with strong and weak ornamentation (up to smooth valves) with transitions. Also we have specimens with distinct knots and without those. All the variability has obviously phenotypical feature with intermediate forms. *M. corbleuensis* DUCASSE, 1995 is a very similar form also with a great variability.
Dimensions: L = 0.68–0.76 mm, H = 0.32–0.42 mm, L/H = 1.77–1.97
Occurrence: Alcsútdoboz–3 borehole 1.99–223.0 m; Csákvár–34 borehole 123.6–285.9 m; Piliscsaba–2 borehole 224–9–374.8 m; Piliscsaba–3 borehole 98.0–165.0 m; Sárisáp–112 borehole 19.6–28.0 m; Sárisáp–117 borehole 25.0–27 m; Sárisáp–122 borehole 41.9–49.5 m; Esztergom–123 borehole 93.0 m; Varbó–50 borehole 207.1–209.0 m; Eger E 77.
Material: 349 specimens.
Stratigraphical range without Hungary: Germany: Rupelian; Switzerland: Rupelian.
Stratigraphical range in Hungary: Oligocene.

Hemicyprideis anterocostata MONOSTORI, 1982
Pl. 9. figs 3–6.

1982. *Hemicyprideis anterocostata* n. sp. – MONOSTORI, pp. 32–34, Pl. I, fig. 2.
2004. *Hemicyprideis anterocostata* MONOSTORI, 1982 – MONOSTORI, pp. 42–43.

Dimensions: L = 0.81–0.91 mm, H = 0.39–0.52 mm.
Occurrence: Csákvár–34 borehole 18.5–380.0 m; Piliscsaba–2 borehole 224.9–374.8 m; Sárisáp–112 borehole 19.6–28.0 m; Sárisáp–115 borehole 9.0 m; Sárisáp–117 borehole 25.1–54.5 m; Sárisáp–121 borehole 27.8 m; Sárisáp–122 borehole 24.2–43.0 m; Sárisáp–128 borehole 18.5 m.
Material: 168 specimens.
Stratigraphical range in Hungary: Oligocene.

Hemicyprideis dacica (HÉJJAS, 1895)
Pl. 9. figs 7–8., Pl. 10. figs 1–4.

1895. *Cytheridea dacica* n. sp. – HÉJJAS, pp. 59–60, Pl. IV, figs 10 a–c.
1913. *Cytheridea dacica* HÉJJAS, 1894 – ZALÁNYI, pp. 97–99, fig. 15.
1929. *Cytheridea dacica* HÉJJAS, 1894 – ZALÁNYI, pp. 107–112, Pl. I, fig. 1, textfigs 47, 48.
1941. *Cytheridea dacica* HÉJJAS, 1894 – MÉHES, pp. 73– 74, Pl. III, figs 7–9, textfigs 91, 98, 138–139.
1975. *Hemicyprideis dacica dacica* (HÉJJAS, 1894) – BRESTENSKÁ, p. 397, Pl. 2, figs 15–16.
1979. *Hemicyprideis dacica dacica* HÉJJAS, 1894 – BASSIOUNI, pp. 58–59, Pl. 13, figs 11–12.
1983. *Hemicyprideis dacica* (HÉJJAS, 1894) – MÜLLER, pp. 22–24, Pl. 3, figs 10–17, Pl. 4, figs 1–4.
1985. *Hemicyprideis dacica* (HÉJJAS, 1894) – CARBONNEL et al, p. 224, Pl. II, figs 10–12.

Remarks: The elongation is variable. The surface may be smooth or differently pitted. There are specimens with concentrical wrinkles common on several species of *Cytheridea*. All these characters are figured on figs published as *H. dacica.*
Dimensions: L = 0.72–0.89 mm, H = 0.34–0.44 mm, L/H = 1.81–2.02
Occurrence: Csv–34 borehole 175.0–271.2 m; Me–78 borehole 322.0–353.0 m; Szentendre–2 borehole 17.8–73.0 m; Piliscsaba–2 borehole 373.0–380.0 m; Piliscsaba–3 borehole ; Esztergom–123 borehole 109.0 m; Sárisáp–111 borehole 25.0–25.5 m; Sárisáp–112 borehole 28.0 m; Sárisáp–117 borehole 27.0 m; Eger Wind brickyard, clay above bed K; Eger E–77 section, I/26.
Material: 742 specimens.
Stratigraphical range without Hungary: Germany: Oligocene, France: Oligocene, Slovakia: Oligocene.
Stratigraphical range in Hungary: Oligocene

Hemicyprideis helvetica (LIENENKLAUS, 1895)
Pl. 10. figs 5–8., Pl. 11. figs 1–3.

1895. *Cytheridea mulleri* var. helvetica n. var. – LIENENKLAUS, p. 26, Pl. II, fig. 6.
1970. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MALZ et TRIEBEL, p. 13, Pl. 13, figs 102–105.
1972. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – CARBONNEL, Pl. IV, f. 11–12.
1972. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DOEBL et SONNE, p. 72, Pl. 14, f. 12a, c.
1978. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MONOSTORI, pp. 34–35, Pl. I, figs 3–5. (cum syn.)
1983. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – JIŘIČEK, Pl. I, f. 1.

1985. *Hemicyprideis helvetica* (Lienenklaus, 1895) – MONOSTORI, pp. 181–182, Pl. 3, figs 7–8.
1985. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DUCASSE et al., Pl. 76, f. 15.
1992. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – APOSTOLESCU, GUERNET, p. 108, Pl. 2, f. 1, 4.
1993. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – OLLIVIER-PIERRE et al., Pl. IV, f. 3.
1995. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – DUCASSE, pp. 117–119, Pl. 3, f. 1– 7.
2004. *Hemicyprideis helvetica* (LIENENKLAUS, 1895) – MONOSTORI, pp. Pl. 7, fig. 8, Pl. 8, figs 1–4.

Dimensions: L = 0.58–0.68 mm, H = 0.30–0.45 mm, L/H = 1.54–1.85
Occurrences: Csákvár–34 borehole 167.7 m; Sárisáp–112 borehole 19.6–28.0 m; Sárisáp–111 borehole 25.0–63.6 m; Sárisáp–115 borehole 9.0 m; Sárisáp–117 borehole 27.0–49.5 m; Sárisáp–122 borehole 41.9–49.5 m; Alcsútdoboz–3 borehole 199.0–201.0 m; Me–78 borehole 322.0 m; Piliscsaba–3 borehole 98.0–165.0 m; Piliscsaba–2 borehole 372.0–373.8 m; Esztergom–123 borehole 109.0 m; Szentendre–2 borehole 17.5–19.5 m; Eger E–77 I/26.
Material: 1177 specimens.
Stratigraphical range without Hungary: Germany: Oligocene, France: Oligocene, Slovakia: Oligocene.

Hemicyprideis ex gr. *parvula* MALZ et TRIEBEL, 1970
Pl. 11. fig. 4.

1970. *Hemicyprideis parvula* n. sp. – MALZ et TRIEBEL, pp. 11–12, Pl. 6, figs 39–44.
1982. cf. *Hemicyprideis parvula* MALZ et TRIEBEL, 1970 – MONOSTORI, pp. 35–36, Pl. I, figs 6–8.
2004. *Hemicyprideis parvula* MALZ et TRIEBEL, 1970 – MONOSTORI, pp. 44, Pl. 8, figs 5–8.

Remarks: The Upper Oligocene forms are more elongated and less acute. The ventral and dorsal outlines are less converging.
Dimensions: L = 0.87–0.89 mm, H = 0.42 mm, L/H = 2.07–2.12
Occurrence: Csákvár–34 borehole 161.2–162.3 m.
Material: 2 specimens.
Stratigraphical range without Hungary: Germany: Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Subfamily Schulerideinae MANDELSTAM, 1960
Genus *Schuleridea* SWARTZ et SWAIN, 1946

Schuleridea rauracica OERTLI, 1956
Pl. 11. figs 7–8., Pl. 12. figs 1–2.

1956. *Schuleridea rauracica* n. sp. – OERTLI, pp. 47–50, Pl. 5, figs. 110–123.
1982. *Schuleridea rauracica* OERTLI, 1956 – MONOSTORI, pp. 37–38, Pl. I, figs 9– 13. (cum syn.)
2004. *Schuleridea rauracica* OERTLI, 1956 – MONOSTORI, pp. 44–45.

Remarks: Some specimens have phenotypical knots.
Dimensions: L = 0.75–0.85 mm, H = 0.50–0.53 mm, L/H = 1.6–2.2
Occurrence: Sárisáp–112 borehole 20.5–28.6 m; Sárisáp–117 borehole 27.0 m; Sárisáp–128 borehole 18.5 m; Sárisáp–128 borehole 18.5 m; Piliscsaba–2 borehole 372.9–377.0 m; Piliscsaba–3 borehole 98.0–165.0 m.
Material: 44 pieces.
Stratigraphical range without Hungary: France: Stampian; Germany: Rupelian; Switzerland: Rupelian.
Stratigraphical range in Hungary: Oligocene.

Schuleridea (Aequacytheridea) dorsoarcuata (MÉHES, 1941)
Pl. 11. figs 5–6.

1941. *Cytheridea dorsoarcuata* n. sp. – MÉHES, pp. 70–71, Pl. III, figs 5–6.
1970. *Schuleridea (Aequacytheridea) oculata* n. sp. – MOOS, pp. 296 –298, Pl. 29, figs 6–12.
1975. *Schuleridea (Aequacytheridea) dorsoarcuata* (MÉHES, 1941) – BRESTENSKÁ, pp. 398–399, Pl. 6, figs 13–14.
1975. *Schuleridea (Aequacytheridea) oculata* MOOS, 1970 – FAUPEL, pp. 27–28, Pl. 8, fig. 1.
1981. *Schuleridea (Aequacytheridea) oculata* MOOS, 1970 – UFFENORDE, pp. 142–143, Pl. 2, figs 1, 4. cf. *oculata*: Pl. 2, fig. 23.
1983. *Schuleridea (Aequacytheridea) oculata* MOOS, 1970 – WEISS, pp. 50–54, Pl. 1–3.
1985. *Schuleridea dorsoarcuata* (MÉHES, 1941) – MONOSTORI, 1985, pp. 183–184, Pl. 4, fig. 2.

Remarks: *Sch. oculata* of MOOS is probably conspecific with *Sch. dorsoarcuata* of MÉHES considering their ornamentation with very large pits and their protruding eye knobs. Some later figures of *Sch. oculata* have more elongated form (FAUPEL, 1975, UFFENORDE, 1981, WEISS, 1983 except of *Sch*. cf. *oculata* in UFFENORDE, 1981) which is more close in form to our material. The H/L ratio shows rather large variations in the *oculata* type material and also within our forms.
Dimensions: L = 0.87 mm, H = 0.60 mm, L/H = 1.45
Occurrence: Csákvár–34 borehole 308.5–308.9 m; Alcsútdoboz–3 borehole 24.6 m.
Material: 2 pieces.
Stratigraphical range without Hungary: Germany: Oligocene, Slowakia: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Schuleridea sp. 1.
Pl. 12. figs 3–4.

Remarks: Some valves with small and dense pits, more or less convex ventral outline, hardly visible eye knobs and form mainly somewhat more elongated as the typical form of *rauracica*.
Occurrence: Csákvár–34 borehole 201.5–201.7 m; Szentendre–2 borehole 355.5–363.5 m.
Material: 3 specimens.
Dimensions: L = 0.71–0.84 mm, H = 0.48–0.55 mm, L/H = 1.48–1.60

Genus *Cuneocythere* LIENENKLAUS, 1894
Subgenus *Cuneocythere* LIENENKLAUS, 1894

Cuneocythere (Cuneocythere) marginata (BOSQUET, 1852) s.l.
Pl. 12. figs 5–8, Pl. 13. figs 1–2.

1852. *Bairdia marginata* n. sp. – BOSQUET, pp. Pl. I, fig. 12.
1957. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) – KEIJ, p. 75, Pl. IX, figs 17–22.
1964. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) – SCHEREMETA, pp. 119 – 120, Pl. IV, figs 11–12.
1969. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) – SCHEREMETA, p. 86, Pl. VI, figs 13–15.
1973. *Cuneocythere marginata* (BOSQUET, 1852) – SÖNMEZ-GÖKÇEN, p. 53, PL. VI, figs 27–28.
1975. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) – BRESTENSKÁ, p. 399, Pl. 6, figs 10–12.
1981. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) s.l. – UFFENORDE, p. 143, Pl. 2, figs 2, 5.
1983. *Cuneocythere (Cuneocythere) marginata* (BOSQUET, 1852) – WEISS, pp. 74–78, Pl. 14–15.
1985. *Cuneocythere (Cuneocythere) marginata marginata* (BOSQUET, 1852) – MONOSTORI, p. 186.
1993. *Cuneocythere marginata* (BOSQUET, 1852) – ZIEGLER et RÖDDER, Pl. 1, figs 7–8.
1894. *Cuneocythere truncata* n. sp. – LIENENKLAUS, p. Pl. XVIII, fig. 6.
1973. *Cuneocythere (Cuneocythere) truncata* LIENENKLAUS, 1894 – MOOS, p. 48, Pl. 6, figs 6a–b.
1975. *Cuneocythere (Cuneocythere) truncata* LIENENKLAUS, 1894 – FAUPEL, pp. 28–29, Pl. 13, figs 2,7.
1983. *Cuneocythere (Cuneocythere) truncata* LIENENKLAUS, 1894 – WEISS, p. 68–74, Pl. 12–13.
1985. *Cuneocythere truncata* LIENENKLAUS, 1894 – MONOSTORI, pp. 186–187, Pl. 4, fig. 7.

Remarks: KEIJ (1957) belive the species *truncata* to be only a variation of the species *marginata*. After other ostracodologists (UFFENORDE, 1981; WEISS, 1983) they are distinct species, but in the Upper Oligocene materials of Hungary there are transitional forms. I think it is a rather variable species with some ecological forms.
Dimensions: L = 0.51–0.66 mm, H = 0.31–0.36 mm, L/H = 1.55–1.83
Occurrences: Alcsútdoboz–3 borehole 170.0–373.0 m; Szentendre–2 borehole 68.0–71.0 m; Sárisáp–112 borehole 18.5–28.0 m; Csákvár–34 borehole 115.5–308.9 m; Sárisáp–128 borehole 18,5 m; Eger–77 section I/26.
Material: 15 specimens.
Stratigraphical range without Hungary: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Family Cushmanideidae PURI, 1973
Genus *Pontocythere* DUBOWSKI, 1939

Pontocythere truncata (LIENENKLAUS, 1894)
Pl. 13. figs 4–5.

1894. *Cytherideis denticulata* var. truncata n. var. – LIENENKLAUS, p. 258.
1985. *Pontocythere truncata* (LIENENKLAUS, 1894) – MONOSTORI, pp. 188–189, Pl. 4, fig. 8. (cum syn.).

Description: See in Monostori, 1985.
Dimensions: L = 0.66 mm, H = 0.27 mm, L/H = 2.44
Occurrence: Alcsútdoboz–3 borehole 126.0 m; Szalavár–34 borehole 133.6–143.2 m.
Material: 2 specimens.
Stratigraphical range without Hungary: Germany: Upper Oligocene, Slovakia: Upper Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Pontocythere ex gr. *denticulata* (LIENENKLAUS, 1894)

Remarks: See in MONOSTORI, 1985.
Occurrences: Alcsútdoboz–3 borehole 126.0 m; Csákvár–34 borehole 133.6–143.2 m.
Material: 3 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Family Krithidae MANDELSTAM, 1960
Genus *Krithe* BRADY, CROSSKEY ET ROBERTSON, 1874

Krithe papillosa (BOSQUET, 1852)
Pl. 13. figs 6–8., Pl. 14. figs 1–3.

1852. *Cytheridea papillosa* n. sp. – BOSQUET, p. 42, Pl. III, fig. 5.
1975. *Krithe papillosa* (BOSQUET, 1852) – DOEBL, SONNE, p. 143, Pl. 2, fig. 12.
1982. *Krithe papillosa* (BOSQUET, 1852) – MONOSTORI, pp. 38– 40, Pl, I, fig. 14. (cum syn.)
1985. *Krithe papillosa* (BOSQUET, 1852) – CARBONEL, 1985, Pl. 94, figs 1–3.
2004. *Krithe papillosa* (BOSQUET, 1852) – MONOSTORI, pp. 47–48.

Remarks: After KEIJ's revision all the BOSQUEt's specimens from the Eocene belong to *Kr. rutoti*. Another references to the *papillosa* from the Eocene are also questionable (BLONDEAU, 1971).

The form of the Eger Formation have a less ventral sinus than the forms collected from the Mány Formation (ecological difference?). There are also some differences in the elongation and the running of the dorsal arc.
Dimensions: L = 0.52–0.79 mm, H = 0.27–0.36 mm, L/H = 1.66–2.20
Occurrence: Csákvár–34 borehole 123.6–364.3 m; Piliscsaba–2 borehole 372.0–380.0 m; Sárisáp–128 borehole 18.5 m; Sárisáp–121 borehole 27.8 m; Úny outcrop; Esztergom–123 borehole 313.5–500.0 m; Sárisáp–117 borehole 27.0 m; Alcsútdoboz–3 borehole 120.0 m; Szentendre–2 borehole 38.8–363.5 m; Sárisáp–11.2–28.0 m; Piliscsaba–3 borehole 164.0–165.0 m; Eger Wind brickyard borehole 10.3–34.9 m.

Stratigraphical range without Hungary: Germany: Burdigalian; France: Eocene? Stampian–Burdigalian; Slovakia: Egerian; Ukraina: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Krithe pernoides (BORNEMANN, 1855)
Pl. 14. Figs 4–7.

1855. *Bairdia pernoides* n. sp. – BORNEMANN, Pl. XX, figs 7–8.
1982. *Krithe pernoides* (BORNEMANN, 1855) – MONOSTORI, pp. 55–56, Pl. V, figs 4–10. (cum syn.)
1985. *Krithe pernoides* (BORNEMANN, 1855) – MONOSTORI, pp. 189–190, Pl. 4, fig. 9.
2004. *Krithe pernoides* (BORNEMANN, 1855) – MONOSTORI, pp. 48–49.

Remarks: L/H is variable.
Dimensions: L = 0.35–0.39 mm, H = 0.63–0.85 mm, L/H = 1.98–2.33
Occurrences: Eger Wind brickyard borehole 4.4–18.3 m; Eger H 5/1 borehole 16.5–54.0 m; Varbó–50 borehole 309.6–315.7 m.
Material: 52 specimens.
Stratigraphical range without Hungary: Great Britain, Germany, The Netherlands, Belgium, Italy, Ukraina: Paleogene.
Stratigraphical range in Hungary: Middle Eocene–Upper Oligocene.

Krithe sp. 2 MONOSTORI, 2004
Pl. 14. fig. 8., Pl. 15. fig. 1.

2004. *Krithe* sp. 2 – MONOSTORI, pp. 49–50.

Remarks: The ventral outline of the left valves is convex, the blunt posterior end is at about the third of the height. The dorsal outline is convex, height is at about 1/3 of the length. Perhaps it is a new species.
Dimensions: L = 0.5–0.54 mm, H = 0.24–0.28 mm, L/H = 1.93–2.08
Occurrences: Eger Wind brickyard borehole 5.4–34.3 m.
Material: 31 specimens.
Stratigraphical range in Hungary: Oligocene.

Parakrithe costatomarginata MONOSTORI, 1982
Pl. 15. fig. 2.

1982. *Parakrithe costatomarginata* n. sp. – MONOSTORI, pp. 54–55, Pl. V, fig. 3.
2004. *Parakrithe costatomarginata* MONOSTORI – MONOSTORI, Pl. 12, fig. 3.

Occurrence: Eger Wind brickyard 31.9–32.5 m.
Material: 1 specimen.
Stratigraphical range in Hungary: Oligocene.

Parakrithe sp. 1 MONOSTORI, 2004
Pl. 15. fig. 3.

2004. *Parakrithe* sp. 1 – MONOSTORI, pp. Pl. 12, figs 4–5.

Remarks: The specimen has somewhat more blunt posterior end.
Dimensions: L = 0.59 mm, H = 0.26 mm, L/H = 2.27
Occurrence: Eger Wind brickyard 4.6–4.9 m; Eger Wind brickyard sample 24.
Material: 2 specimens.
Stratigraphical range in Hungary: Oligocene.

Family Trachyleberididae SYLVESTER-BRADLEY, 1948
Subfamily Trachyleberidinae SYLVESTER-BRADLEY, 1948

Costa hermi WITT, 1967
Pl. 15. figs 4–8., Pl. 16. fig. 1.

1967. *Costa hermi* n. sp. – WITT, p. 31, Pl. 1, figs 21–26.
1982. *Costa hermi* WITT, 1967 – MONOSTORI, pp. 57–58, Pl. V, figs 11–12, Pl. VI, fig. 1. (cum syn.).
1982. *Costa* cf. *hermi* WITT, 1967 – MONOSTORI, pp. 40–41, Pl. II, fig. 1.
1985. *Costa* cf. *hermi* WITT, 1967 – MONOSTORI, p. 192.
2004. *Costa hermi* WITT, 1967 – MONOSTORI, pp. 51– 52, Pl. 12. fig 7., Pl. 13. figs 1–7, Pl. 14. fig. 1.

Remarks: There is a large variation of ornamental elements even in the same section (strengthening of the main costae, dented elements). Some elongated specimens of the Mány Formation are similar to the forms of the Hárshegy Sandstone Formation (MONOSTORI, 2004).
Dimensions: L = 0.66–1.03 mm, H = 0.42–0.57 mm, L/H = 1.83–2.2
Occurrence: Csákvár–34 borehole 115.5–343.9 m; Esztergom–123 borehole 187.0–423.5 m; Solymár–72 borehole 258.7–298.0 m; Törökbálint brickyard 717/13; Piliscsaba–2 borehole 53.5–374.4 m; Úny outcrop; Sárisáp–112 borehole 28.0 m; Sárisáp–128 borehole 18.5 m; Serényfalva outcrop, Ózd–Szentsimon outcrop, Zádorfalva, Péterhegy 88 section sample 2, Varbó–50 borehole, Eger Wind brickyard borehole 0–50.3 m; Eger 5/1 borehole 28.0 m; 48.2 m; Eger section, samples 23, 24, 27, 28, 34.
Material: 260 examples.
Stratigraphical range without Hungary: Germany: Chattian, Aquitanian; Slovakia: Kiscellian–Egerian.
Stratigraphical range in Hungary: Priabonian–Upper Oligocene.

Pterygocythereis ceratoptera (BOSQUET, 1852)
Pl. 16. figs 2–7.

1852. *Cythere ceratoptera* n. sp. – BOSQUET, p. 114, Pl. VI, fig. 2.
1956. *Pterygocythereis ceratoptera* (BOSQUET, 1852) – OERTLI, pp. 86–87, Pl. 11,figs 299–301, 309; Pl. 16, figs 402–403.

1962. *Pterygocythereis* aff. *ceratoptera* (BOSQUET, 1850) – DOEBL et MALZ, 1962, p. 297, Pl. 59, figs 5–6.
1965. *Pterygocythereis ceratoptera* (BOSQUET) – MOYES, pp. 87–88, Pl. X, fig. 4.
1967. *Pterygocythereis ceratoptera* (BOSQUET) – WITT, p. 34, Pl. 2, fig. 5.
1975. *Pterygocythereis ceratoptera* (BOSQUET, 1852) – BRESTENSKÁ, pp. 393–394, Pl. 7, figs 12–14.
1975. *Pterygocythereis ceratoptera* (BOSQUET, 1852) – DOEBL et SONNE, pp. 141–142, Pl. 1, fig. 5.
1981. *Pterygocythereis ceratoptera* (BOSQUET, 1852) – UFFENORDE, pp. 176–177, Pl. 2, fig. 8.
1990. *Pterygocythereis ceratoptera* (BOSQUET, 1852) – GUERNET, Pl. 3, figs 8–10.
1996. *Pterygocythereis (Pterygocythereis) ceratoptera* (BOSQUET, 1852) s.l. sensu UFFENORDE, 1981 – ZIEGLER, pp. 24–26, Abb. 2, figs 1, 5.

Description: Anterior outline of the left valve is asymmetrically rounded, dorsal outline is somewhat concave due to the projecting anterior and posterior corners. After a ~120^{o} break the upper part of the posterior outline is gently concave, the lower part is convex and turns into the nearly straight ventral outline. There are some strong denticles on the dorsal outline. A sharp anterior edge runs on the anterior outline with strong spines and it continues in a straight row of spines terminating at about 0.7 of the length with a strong denticle. The posterior outline also has a distinct edge with some strong denticles on the lower part. The lateral surface is mainly smooth, the eye tubercle is very strong. The right valve is very similar, the dorsal outline is not depressed.
Variations: The ventral row of spines sometimes consist of well separated spines, on other forms they joint on their basis.
Dimensions: L = 0.83–1.05 mm, H = 0.42–0.47 mm, L/H = 1.82–2.02
Occurrence: Csákvár–34 borehole 144.4–308.5 m; Sárisáp–111 borehole 20.5 m; Sárisáp–112 borehole 24.2–28.0 m; Sárisáp–121 borehole 27.8 m; Sárisáp–122 borehole 49.5 m; Sárisáp–115 borehole 9.0 m; Piliscsaba–2 borehole 373.8–374.9 m; Piliscsaba–3 borehole 100.0–165.1 m; Esztergom–123 borehole 140.0 m; Zádorfalva; Eger Wind brickyard 5.4–46.0 m; Szentendre–2 borehole 71.0–72.0 m; Alcsútdoboz–3 borehole 170.3 m.
Material: 70 specimens.
Stratigraphical range without Hungary: Belgium, France, Switzerland, Germany, Slovakia, Ukraina: Oligocene.
Stratigraphical range in Hungary: Oligocene.

Pterygocythereis retinodosa Oertli, 1956
Pl. 16. fig. 8.

1956. *Pterygocythereis retinodosa* n. sp. – OERTLI, pp. 83–85, T. 11, figs 291–298, 307; T. 15, figs 397–398; T. 16, fig. 410.
1969. *Pterygocythereis retinodosa* OERTLI – SCHEREMETA, pp. 109–110, Pl. IX, fig. 7.
1985. *Pterygocythereis retinodosa* OERTLI – MONOSTORI, pp. 194–159, Pl. 5. fig. 4.

Description: See in MONOSTORI, 1985.
Occurrence: Alcsútdoboz–3 borehole
Material: 1 specimen.

Stratigraphical range without Hungary: Switzerland, France, Ukraina: Oligocene.
Stratigraphical range in Hungary: Oligocene

Henryhowella asperrima (REUSS, 1850)
Pl. 17. figs1–6.

1850. *Cypridina asperrima* n. sp. – REUSS, p. 74, Pl. X, fig. 5.
1982. *Henryhowella asperrima* (REUSS, 1850) – MONOSTORI, pp. 60–62, Pl. VI, figs 3–5. (cum syn.)
1985. *Henryhowella asperrima* (REUSS, 1856) – MONOSTORI, pp. 195–196, Pl. 5. figs 5–6, (cum syn.)
1986. *Henryhowella* gr. *asperrima* (REUSS, 1850) – LÁZARO et al. 1986, Pl. IV, fig. 1.
1987. *Henryhowella asperrima* (REUSS, 1850) – ARANKI, pp. 64–65, Pl. 5, figs 1–2.
1989. *Henryhowella asperrima* (REUSS, 1850) – KEEN, Pl. 2, fig. 10.
1993. *Henryhowella asperrima* (REUSS, 1850) – KEMPF et NINK, pp. 95–114, figs 1–27.
1993. *Henryhowella asperrima* (REUSS, 1850) – ZIEGLER et RÖDDER, 1993, Pl. 1, figs 9–10.
1994. *Henryhowella asperrima* (REUSS, 1850) – SZCZECHURA, p. 145, Pl. 1, figs 9–12.
2000. *Henryhowella asperrima* (REUSS, 1850) juv. – SZCZECHURA, Pl. VII. fig. 8.
2004. *Henryhowella asperrima* (REUSS, 1850) – MONOSTORI, pp. Pl. figs

Dimensions: L = 0.62–0.76 mm, H = 0.41–0.49 mm, L/H = 1.49–1.86
Occurrence: Eger, Wind brickyard outcrop, 4.4–34.1 m.
Material: 164 specimens.
Stratigraphical range without Hungary: Europa: Eocene–Pliocene?
Stratigraphical range in Hungary: Bartonian–Upper Oligocene

Subfamilia Campilocytherinae PURI, 1960
Genus *Leguminocythereis* HOWE et LAW, 1936
Leguminocythereis scrobiculata (VON MÜNSTER, 1830)
Pl. 17. figs 7–8., Pl. 18. figs 1–2.

1830. *Cythere scrobiculata* n. sp. – VON MÜNSTER, 1830.
1838. *Cythere scrobiculata* VON MÜNSTER, 1830 – ROEMER, p. 515, Pl. 6, fig. 1.
1941. *Cythereis*? *scrobiculata* (VON MÜNSTER, 1830) – TRIEBEL, Pl. 4, fig. 43.
1956. *Leguminocythereis scrobiculata* (MÜNSTER, 1830) – OERTLI, p. 92, Pl. 13, fig. 341.
1975. *Leguminocythereis scrobiculata* (MÜNSTER, 1830) – BRESTENSKÁ, p. 392, Pl. 8, figs 4–7.
1975. *Leguminocythereis scrobiculata* (VON MÜNSTER, 1830) – FAUPEL, pp. 46–48, Pl. 3, figs 4a, b.
1981. *Leguminocythereis scrobiculata* (VON MÜNSTER, 1830) – UFFENORDE, p. 175, Pl. 3, figs 1, 2, 4.
1988. *Leguminocythereis* aff. *scrobiculata* (VON MÜNSTER, 1830) – DUCASSE et ROUSSELLE, pp. 145–146, Pl. 4, figs 9–12.
1989. *Leguminocythereis scrobiculata* (VON MÜNSTER, 1830) – KEEN, Pl. 1, fig. 17.
1993. *Alteratrachyleberis scrobiculata* (VON MÜNSTER, 1830) – ZIEGLER et RÖDER, Pl. 1, f. 1–4.

Description: In lateral view of the left valves the anterior outline is somewhat asymmetrical, the dorsal outline nearly straight, slightly convex, the posterior outline is obliquely nipped with rounded lower part. The ventral outline is slightly convex. There is a rough and equal reticulation on the lateral surface with large elements. Some anteromarginal concentrical elements are more strong with the characteristic described in UFFENORDE, 1981. Also there is an anteromarginal thickening of the concentrical rib at the eye area. There are three spines on the posteroventral margin, the two lower ones are stronger.

On the right valve ventral outline is sometimes more convex, there is a distinct posterodorsal corner, causing slight concavity on the anterior part of the posterior outline.

The carapax is very inflated, only a very slightly depressed area is before the end of the valves.

Remarks: our forms are somewhat more convex both dorsally and ventrally. Such rectangular form as on Fig. 6 of FAUPEL are unknown (are they really conspecific?).

Dimensions: L = 0.86–1.16 mm, H = 0.54–0.68 mm, L/H = 1.75–2.06

Occurrence: Csákvár 34 borehole 184.5–324.0 m.

Material: 18 specimens.

Stratigraphical range without Hungary: France: Eocene, Oligocene, Belgium, Ukraina: Eocene, Germany, Switzerland, Great Britain, Slovakia: Oligocene.

Stratigraphical range in Hungary: Upper Oligocene.

Leguminocythereis ex gr. *sorneana* OERTLI, 1956
Pl. 18. figs 3–5.

Remarks: there is a somewhat stronger anterodorsal obligue fosse. *L. lienenklausi* OERTLI, 1956 is a very similar form, but the ornamentation is better-in-rows ordered.

Occurrence: Szentendre 2 borehole 27.7–86.0 m.

Material: 3 specimens.

Stratigraphical range in Hungary: Upper Oligocene.

Leguminocythereis subtiliclatrata n. sp.
Pl. 18. figs 6–8.

Derivatio nominis: after the very fine reticulation of the valves.

Holotypus: left valve.

Locus typicus: Szentendre–2 borehole.

Stratum typicum: 17.5–18.5 m, Törökbálint Formation, Egerian.

Diagnosis: posteriorly acute form with strong ventral swelling, the fine polygonal reticulation of the ventrolateral area is characteristic.

Description: the anterior outline of the left valve is asymmetrically rounded. The dorsal outline is broadly and nearly symmetrical except of the acute posterior end. Before the posterior end there is a bordering depression. The ventral swelling shows a symmetrical area in lateral view with a little concave part at the ventral/posterior transition. Near the anterior margine there is a small keel. Very characteristic is the fine polygonal reticulation of the lateral surface. This is more distinct on the ventrolateral parts and very week dorsally. Also there is a hardly visible elevation in the eye area.

In dorsal view the carapace is inflated, maximal width behind the half of the lengt,h the outline in this view is strongly convex throughout, except of the flat posterior end of the valves.

There is typical hinge with many similar, elongated tooth and sockets.

Comparison: *Leguminocythereis pertusa* (ROEMER, 1838) have similar outlines and his morpha „*erasa*" (= *L. erasa* DUCASSE, 1967) also has a reduced ornamentation (but different in his characteristic).

Dimensions: carapace: L = 0.77–0.84 mm, H = 0.46–0.50, L/H = 1.54–1.83

Occurrence: Szentendre 2 borehole 17.5–21.5 m; Csákvár 34 borehole 136.2–134.4 m.

Material: 16 specimens.

Stratigraphical range in Hungary: Egerian.

Holotype: left valve, deposited in the collection of the Natural History Museum of the Eötvös University, Budapest.

Genus *Murrayina* PURI, 1953
Murrayina? *gibberula* (Reuss, 1856)
Pl. 19, Figs 1–6.

1856. *Cythere gibberula* n. sp. – REUSS, p. 255, Pl. X, fig. 97.
1863. *Cythere gibberula* REUSS – SPEYER, p. 19, Pl. IV, fig. 11.
1975. *Hazelina* cf. *gibberula* (REUSS) – BRESTENSKÁ, pp. 388–389, Pl. 6, figs 7–9, Pl. 10, fig. 14.
1985. *Murrayina*? *gibberula* (REUSS, 1856) – MONOSTORI, pp. 197–198, Pl. 6, figs 1–2.

Dimensions: L = 0.70–0.75 mm, H = 0.38–0.43 mm, L/H = 1.71–1.88

Occurrence: Csákvár–34 borehole 133.6–308.5 m; Szentendre–2 borehole 19.5–87.0 m; Alcsútdoboz–3 borehole 126.0–336.0 m.

Material: 31 specimens.

Stratigraphical range without Hungary: Germany, Austria, Slovakia: Oligocene.

Stratigraphical range in Hungary: Upper Oligocene.

Genus *Muellerina* BASSIOUNI, 1965

Muellerina latimarginata (SPEYER, 1863)
Pl. 19. fig. 7.

1863. *Cythere latimaraginata* n. sp. – SPEYER, p. 22, Pl. 3, figs
1975. *Muellerina latimarginata* (SPEYER, 1863) – FAUPEL, p. 46, Pl. 11, figs 2a–c, 3a–e.
1981. *Muellerina latimarginata* (SPEYER, 1863) – UFFENORDE, pp. 161–162, pl. 3, figs 7, 10, Pl. 7, fig. 4.
1989. *Muellerina latimarginata* (SPEYER, 1863) – KEEN, 1989, Pl. 1, fig. 18.
1992. *Muellerina latimarginata latimarginata* (SPEYER, 1863) – RUSBÜLT, STRAUSS et HAUPT, 1992, Abb. 6/4.
1993. *Muellerina latimarginata latimarginata* (SPEYER, 1863) – ZIEGLER et RÖDDER, Pl. 1, fig. 11.
1997. *Muellerina latimarginata* (SPEYER, 1863) – WEISS, 1997, pp. 504–518, Pl. 1–4.

Remarks: a single damaged specimen, but the visible details all are characteristics of this species.

Occurrence: Eger 11 section.
Material: 1 specimen.
Stratigraphical range without Hungary: Germany, Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Aurila? sp. 1.
Pl. 19. fig. 8.

Remarks: damaged specimen. Moderately elongated form with curved dorsal outline. Lateral surface with fine and dense pits. There is a weak reticulation near the anterior margin with very fine pits in it. The remains of the fine reticulation is visible ventrally and posteriorly, too.

The form is similar to *A. laryeyensis* MOYES, 1961 from the Aquitanian of France.
Dimensions: L = 0.7 mm, H = 0.43 mm, L/H = 1.63
Occurrence: Eger Wind brickyard borehole 34.3–34.6 m.
Material: 1 specimen.

Pokornyella? sp. 1
Pl. 20. fig. 1.

Remarks: damaged specimen with large and rare pits. The distinct anteromarginal row of the reticulation is characteristic, the dorsal outline is strongly curvedd, the posterior end is acute.
Dimensions: L = 0.76 mm, H = 0.46 mm, L/H = 1.65.
Occurrence: Eger Wind brickyard borehole 33.4–33.9 m.
Material: 1 specimen.

Pokornyella ? sp. 2.
Pl. 20. fig. 2.

Remarks: very damaged stubby specimen with large and dense pits.
Dimensions: L = 0.51 mm, H = 0.36 mm, L/H = 1.4
Occurrence: Csákvár 34 borehole
Material: 1 specimen.

Subfamily Thaerocytherinae HAZEL, 1967

Hornibrookella confluens confluens (Reuss, 1856)
Pl. 20. figs 3–6.

1856. *Cythere confluens* n. sp. – REUSS, p. 257, Pl. X, fig. 102.
1863. *Cythere confluens* Rss. – SPEYER, p. 31, Pl. IV. fig. 3.
1963. *Quadracythere confluens confluens* (REUSS, 1856) – MOOS, pp. 24–27, Pl. 1, figs 3–9.
1967. *Quadracythere confluens confluens* (REUSS, 1856) – WITT, p. 44, pl. 3, figs 16–17.
1975. *Quadracythere confluens confluens* (REUSS, 1856) – FAUPEL, p. 60, pl. 13, figs 4–5.
?1975. *Quadracythere confluens* cf. *confluens* (REUSS, 1856) – DOEBL et SONNE,, p. 146, Pl. 3, fig. 25.

1985.*Quadracythere confluens confluens* (REUSS, 1856) – MÜLLER, pp. 14–15, Pl. 1, figs 13–14.

Description: The anterior outline of the left valve is nearly symmetrically rounded, its upper radius is somewhat larger. The cardinal angle is hardly projecting. The dorsal outline is straight, the posterior one is after a 120° break concave on his upper part and convex on his lower part. The ventral outline is gently convex.

There are aproximate parallel horizontal rows tendency in the ornamentation. Anteriorly and posteriorly there are depressive borders, the anterior one is narrow with the traces of nearly radial ribblets, the posterior one is large with a distinct ventral rib running from the end of the ventral ridge to the end of the valves.

The eye knot and the subcentral tubercle are distinct, the last is covered by strong reticulation. Some marginal denticles are there posteroventrally. The ventral ridge is distinct, sharp, long and gently arched, the normal pores are rather rare and large. On the right valve the posteroventral corner is more acute.

Remarks: on material of DOEBL et SONNE (1975) the ornamental elements are more dense and less arranged horizontally.

Dimensions: L = 0.7–0.8 mm, H = 0.39–0.44 mm, L/H = 1.66–2.0

Occurrence: Szentendre–2 borehole 27.7–41.0.

Material: 4 specimens.

Stratigraphical range without Hungary: Austria, Germany: Oligocene.

Stratigraphical range in Hungary: Upper Oligocene.

Hornibrookella confluens xeniae (MOOS, 1963) sensu BRESTENSKÁ, 1975
Pl. 20. fig. 7.

?1963. *Quadracythere confluens xeniae* n. ssp. – MOOS, p. 27, figs 15–17.
1975. *Quadracythere confluens xeniae* MOOS, 1963 – BRESTENSKÁ, 1975, p. 388, Pl. 8, figs 9–14.

Remarks: this form is nearly equivalent with specimens described by BRESTENSKÁ (1975).

Typical is the rather short and arched strong wentral ridge and the backward narrowing form. The type is more elongated and hardly narrowing backward.

Dimensions: L = 0.76 mm, H = 0.43 mm, L/H = 1.76

Occurrence: Csákvár–34 borehole 308.5–308.9 m.

Material: 1 specimen.

Stratigraphical range without Hungary: Germany: Oligocene.

Stratigraphical range in Hungary: Oligocene.

Bosquetina zalanyii BRESTENSKÁ, 1975
Pl. 20. fig. 8., Pl. 21. fig. 1.

1929. *Cythereis dentata* G. W. MÜLLER, 1878 – ZALÁNYI, pp. 111–118, Pl. I, figs 4–7, 12–13, Pl. III, figs 1–8, textfigs 49–50 (partim).
1975. *Bosquetina zalanyii* n. sp. – BRESTENKÁ, pp. 390–392, Pl. 8, figs 1–3.
1985. *Bosquetina zalanyii* BRESTENSKÁ, 1975 – MONOSTORI, p. 201, Pl. 6, figs 9–10.

Dimensions: L = 0.50–0.77 mm, H = 0.28–0.44 mm, L/H = 1.75–1.79
Occurrence: Sárisáp 112 borehole 28.0 m; Eger Wind brickyard borehole 6.1–6.4 m; Eger outcrop, samples 28.3 m.
Material: 4 specimens.
Stratigraphical range without Hungary: Slovakia: Upper Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Bosquetina kisegedense MONOSTORI, 2004
Pl. 21. figs 2–3.

?1918. *Cythereis dentata* G.W. MÜLLER – KUIPER, pp. 68–69, Pl. III, fig. 29.
1985. *Bosquetina* cf. *reticulata* (SCHEREMETA, 1969) sensu BRESTENSKÁ, 1975 – MONOSTORI, p. 202, Pl. 7, figs 1–2.

Remarks: there are (similarly to Lower Oligocene materials (see MONOSTORI, 2004) specimens with smaller pits and specimens with larger pits, the size of the pits on the same valve are irregular differently from the similar BRESTENSKÁ's (1975) *B.* cf. *reticulata* (SCHEREMETA, 1969).
Dimensions: L = 1.08 mm, H = 0.58 mm, L/H = 2.72
Occurrence: Eger Wind brickyard borehole 5.7–11.1 m; Eger outcrop sample 26.
Material: 4 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Bosquetina macroreticulata n. sp.
Pl. 21. figs 4–5.

1941. *Cythereis dentata* G. W. MÜLLER, 1894 – MÉHES, pp. 55–57, Pl. IV, figs 1–3, textfigs 43, 81, 131.
1975. *Bosquetina* cf. *reticulata* (SCHEREMETA, 1969) – BRESTENSKÁ, p. 389, Pl. 8, fig. 8.

Diagnosis: large pits cover the lateral surfaces.
Remarks: the pits are very large and evenly cover the lateral surface of valves except of the anterior and posterior smooth and depressed parts. These pits are so dense that they form a reticulated surface. The form and ventral keels are similar to *Bosquetina kisegedense* (MONOSTORI, 2004).
Dimensions: L = 0.91–0.94 mm, H = 0.55–0.60 mm, L/H = 1.57–1.65
Occurrence: Eger Wind brickyard borehole 5.7–6.1 m; Eger outcrop, samples 27.34 m.
Material: 4 specimens.
Stratigraphical range in Hungary: Upper Oligocene.
Holotype: left valve, deposited in the Collection of the Natural History Museum of Eötvös University, Budapest.

Occultocythereis rupelica MONOSTORI, 1982
Pl. 21. figs 6–8.

1982. *Occultocythereis rupelica* n. sp. – MONOSTORI, pp. 63–64, Pl. VII, fig. 1.

1985. *Occultocythereis rupelica* MONOSTORI, 1982 – MONOSTORI, p. 202.
2004. *Occultocythereis rupelica* MONOSTORI, 1982 – MONOSTORI, p. 63, Pl. 19, fig. 5.

Dimensions: L = 0.53–0.57 mm, H = 0.26–0.36 mm, L/H = 1.83–2.08
Occurrence: Eger Wind brickyard, 5.4–34.8 m.
Material: 14 specimens.
Stratigraphical range in Hungary: Oligocene.

Cytheretta (Flexus) plicata (VON MÜNSTER, 1830)
Pl. 22. figs 1–6.

1830. *Cythere plicata* n. sp. – MÜNSTER, p. 63.
1838. *Cythere plicata* VON MÜNSTER – ROEMER, p. 518, Pl. 6, fig. 26.
1850. *Cypridina plicata* (VON MÜNSTER) – REUSS, p. 83, Pl. 10, fig. 21.
1896. *Cythere plicata* VON MÜNSTER – LIENENKLAUS, p. 141.
1952. *Cytheretta plicata* (VON MÜNSTER) – TRIEBEL, p. 28, Pl. 5, figs 34–35.
1956. *Cytheretta plicata* (VON MÜNSTER) – OERTLI, p. 65, Pl. 8, fig. 194.
1972. *Flexus plicatus* (von MÜNSTER, 1830) – KEEN, p. 339, Pl. 22, fig. 1.
1975. *Cytheretta (Flexus) plicata* (VON MÜNSTER, 1830) – FAUPEL, pp. 21–22, Pl. 2, fig. 3.
1983. *Cytheretta (Flexus) plicata* (VON MÜNSTER, 1830) – WEISS, pp. 64–68, pl. 9–11.

Description: the anterior outline of the left valve is asymmetrically rounded. The dorsal outline hold three parts: short and elevated convex posterior on anterior parts and large and slightly depressed median part consisted of the dorsal ridge. The posterior outline have a shorter and concave upper part and a convex lower part. the ventral outline is convex than straight. The valve become narrower backwards.

Main elements of the ornamentation are the ridges. There is a distinct anteromarginal ridge. The convex dorsal ridge begins at about 0.1 of the length and at ~0.3 of the local height, obliquely run to the dorsal margin then it makes the dorsal margin and disappear on the posterodorsal part of the valve.

There is a thick and slightly convex ridge from 0.5 of the height. It begins at reticulated anterior part of the valve and terminates the posterior reticulated part of the valve at 0.75 of the local height. The third ridge is connected with the second one anteriorly than it is curving down and run parallel with it. There are some weak parallel costae ventrally. All the surface is reticulated, the anterior margin has some minor denticles, the lower part of the posterior margin has 2–4 strong denticles.

On the right valve the anterior outline is less asymmetrical, the dorsal margin is uniformly convex, the anteroventral margin is slightly concave.

In dorsal view the valves arise descreasing from 45° to 0° from the anterior end to the 0.8 of the length, then slope with 45° to 0.9 of the length and terminate with a thick caudal end holding spines.

Remarks: there are more and less elongated form and the reticulation is also variable from the distinct to the indistinct.
Dimensions: L = 0.68–0.80 mm, H = 0.33–0.42 mm, L/H = 1.81–2.22
Material: 6 specimens.
Stratigraphical range without Hungary: Germany: Oligocene, Ukraina: Eocene.
Stratigraphical range in Hungary: Upper Oligocene.

Cytheretta posticalis TRIEBEL, 1952
Pl. 23. figs 1–3.

1952. *Cytheretta posticalis* n. sp. – TRIEBEL, p. 23, Pl. 3, figs 18–21.
1956. *Cytheretta posticalis* TRIEBEL, 1952 – OERTLI, pp. 59–60, Pl. 6, figs 160–162.
1972. *Cytheretta posticalis posticalis* TRIEBEL, 1952 – KEEN, 1972, p. 320.
1972. *Cytheretta posticalis parisiensis* n. ssp. – KEEN, pp. 320–321, pl. 18, figs 1–4, 6.
1973. *Cytheretta posticalis* TRIEBEL, 1952 – SONNE, Abb. 6.
1975. *Cytheretta posticalis* TRIEBEL, 1952 – BRESTENSKÁ, p. 394.
1975. *Cytheretta posticalis* TRIEBEL, 1952 – FAUPEL, pp. 19–20, Pl.2, fig. 4.
1978. *Cytheretta posticalis parisiensis* KEEN, 1972 – KEEN, Pl. 8, fig. 13.
1985. *Cytheretta posticalis* TRIEBEL, 1952 – MONOSTORI, p. 203.
2004. *Cytheretta posticalis* TRIEBEL, 1952 – MONOSTORI, p. 64, Pl. 19, fig. 6.

Remarks: the specimens are mainly smooth, rare forms have remains of the ventrolateral costae. The lengthening is also different.
Dimensions: L = 0.78–0.91 mm, H = 0.31–0.42 mm, L/H = 1.93–2.05
Occurrence: Szentendre–2 borehole 17.5–72.0 m; Csákvár–34 borehole 308.5–308.9 m; Úny outcrop; Alcsútdoboz–3 borehole 239.0 m.
Material. 39 specimens.
Stratigraphical range without Hungary: Germany: Oligocene, Switzerland: Oligocene, France: Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.
Occurrence. Csv–34 borehole 157.0–324.0 m.
Material: 9 specimens.

Cytheretta sagri DELTEL, 1964
Pl. 23. figs 4–6.

1964. *Cytheretta sagri* n. sp. – DELTEL, pp. 156–157, Pl. III, figs 56–57.
1966. *Cytheretta sagri* DELTEL, 1964 – MOUSSOU, pp. 45–46, Pl. 13, fig. 47 a–c.
1969. *Cytheretta sagri* DELTEL, 1964 – DUCASSE, p. 71, Pl. V, fig. 95.
1972. *Cytheretta sagri* DELTEL, 1964 – KEEN, 1972, pp. 327–329.
1972. *Cytheretta sagri sagri* DELTEL, 1964 – KEEN, pp. 329–330, Pl. 19, figs 1–4, textfig. 28.
1972. *Cytheretta sagri inconstans* n. ssp. – KEEN, pp. 330–331, Pl. 19, figs 5–7,9.
1972. *Cytheretta sagri martini* n. ssp. – KEEN, pp. 331–332, Pl. 20, figs 1–4.
1985. *Cytheretta sagri* DELTEL, 1964 – DUCASSE et al., Pl. 86, fig. 9.

Remarks: the variable ornamentation is discussed in KEEN, 1972. In the Hungarian material the anterior part of the valves is more or less smooth, the posterior part is characterised by more or less developed parallel ridges. The posteroventral reticulation sometimes is missing, the posteroventral part of the valves are compressed.
Dimensions: L = 0.80–0.90 mm, H = 0.40–0.44 mm, L/H = 1.98–2.12
Occurrence: Piliscsaba–3 borehole 5.0–50.5 m; Csákvár–34 borehole 221.3–308.9 m; Szentendre–2 borehole 68.0–71.0 m.
Material: 9 specimens.
Stratigraphical range without Hungary: France: Eocene–Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Cytheretta tenuistriata REUSS, 1853 s. l.
Pl. 23. figs 7–8., Pl. 24. fig. 1.

1853. *Cytherella tenuistriata* n. sp. – REUSS, p. 676, Pl. 9, fig. 10.
1952. *Cytheretta tenuistriata* (REUSS, 1853) – TRIEBEL, p. 22, Pl. 3, figs 12–15.
?1955. *Cytheretta tenuistriata* (REUSS, 1853) – KEIJ, p. 119, Pl. 19, fig. 8.
1956. *Cytheretta tenuistriata* (REUSS, 1853) – OERTLI, p. 61, Pl. 6, figs 163–165.
1972. *Cytheretta tenuistriata tenuistriata* (REUSS, 1853) – KEEN, pp. 312–313, Pl. 16, figs 5,7.
1972. *Cytheretta tenuistriata ornata* n. ssp. – KEEN, pp. 313–314, pl. 13, figs 1–12, textfigs 17–20.
1973. *Cytheretta tenuistriata* (REUSS, 1853) – SÖNMEZ–GÖKÇEN, p. 45, Pl. V, figs 25–27.
?1975. *Cytheretta tenuistriata* (REUSS, 1853) – BRESTENSKÁ, p. 395.
1975. *Cytheretta tenuistriata* (REUSS, 1853) – DOEBL et SONNE, p. 142, Pl. 1, fig. 8.
1975. *Cytheretta tenuistriata* (REUSS, 1853) – FAUPEL, pp. 20–21, Pl. 2, fig. 5.
1980. *Cytheretta tenuistriata* (REUSS, 1853) – OLTEANU, Pl. 5, fig. 4.

Remarks: most of the specimens are similar to *C. tenuistriata ornata* KEEN, 1972 with their sharp and alternate costae, the strongness of the ornamental elements are different. Young specimens narrow backwards.
Dimensions: L = 0.79–0.83 mm, H = 0.43–0.48 mm, L/H = 1.73–1.86.
Occurrence: Szentendre–2 borehole 18.5–72.0 m; Csákvár–34 borehole 279.4–308.9 m.
Material: 32 specimens.
Stratigraphical range without Hungary: Germany, Switzerland: Rupelian, France: Eocene–Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Cytheretta ex gr. *tenuistriata* (REUSS, 1853)
Pl. 24, figs 2–4

1985. *Cytheretta* cf. *tenuistriata* (REUSS, 1853) – MONOSTORI, pp. 203–204.

Remarks: the ornamental elements are similar to those of tenuistriata, but there are rather large pits between costae (typical at *C. tenuipunctata* (BOSQUET, 1852)). (see in KEEN, 1972 the *tenuipunctata/tenuicostata* relations).
Dimensions: L = 0.67, H = 0.37, L/H = 1.86.
Occurrence: Csákvár–34 borehole 221–3–308.9 m.
Material: 25 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Cytheretta variabilis OERTLI, 1956 s. l.
Pl. 24. figs 5–7.

1956. *Cytheretta variabilis* n. sp. – OERTLI, pp. 62–63, Pl. 7, figs 172, 180–188.
1982. *Cytheretta variabilis* OERTLI, 1956 – MONOSTORI, pp. 43–44, Pl. II, figs 4–5.
2004. *Cytheretta variabilis* OERTLI, 1956 – MONOSTORI, p. 65, Pl. 19, figs 7–8.

Remarks: the main ornamental elements (short upper swelling anteriorly and longer

lower swelling posteriorly) have same orientation, but the reticulation of the surface is coarser that at the type material.
Dimensions: L = 0.78–0.99 mm, H = 0.42–0.49 mm, L/H = 1.86–2.02
Occurrence: Sárisáp–112 borehole 22.8–26.5 m; Piliscsaba–2 borehole 372.9–374.8 m; Úny outcrop.
Material: 11 specimens.
Stratigraphical range without Hungary: Oligocene, Miocene.
Stratigraphical range in Hungary: Oligocene.

Cytheretta? sp. 1
Pl. 24. fig. 8.

Remarks: the surface is covered by rather irregular large pits. Three longitudinal elements are visible joining near the posterior end, the mid-element only posteriorly visible, anteriorly fade into the strong pitting. The longitudinal elements are close to those of the *Flexus*. The reticulation is similar to pitting *Cytheretta rhenana stigmosa* TRIEBEL, 1952.
Material: 3 specimens.
Dimensions: L = 0.88 mm, H = 0.44 mm, L/H = 2.0

Family Loxoconchidae SARS, 1925
Genus *Loxoconcha* SARS, 1866
Loxoconcha carinata LIENENKLAUS, 1894
Pl. 25. figs 1–2.

1894. *Loxoconcha carinata* n. sp. – LIENENKLAUS, p. Pl. XVI, fig. 5.
?1956. *Loxoconcha carinata* LIENENKLAUS – SUZIN, pp. 68–69, Pl. VI, figs 1–2.
?1959. *Loxoconcha carinata* LIENENKLAUS – MOYES, p. 22, Pl. 7, fig. 1.
?1965. *Loxoconcha carinata* LIENENKLAUS – MOYES, 1965, p. 68, Pl. VII, fig. 11.
1975. *Loxoconcha carinata* LIENENKLAUS, 1894 – BRESTENSKÁ, p. 404, Pl. 10, figs 10–13.
?1981 *Loxoconcha (Loxoconcha) carinata* LIENENKLAUS, 1894 s. l. – UFFENORDE, p. 177, Pl. 8, figs 17, 19.

Remarks: the revision of this form is necessary. Our material is very sporadical for this, but obviously conspecific with BRESTENSKÁ's material (1975).
Dimensions: L = 0.38–0.44 mm, H = 0.22–0.23 mm, L/H = 1.65–2.00
Occurrence: Eger outcrop, sample 24.
Material. 3 specimens.
Stratigraphical range without Hungary: Germany, Russia, Slovakia: Oligocene.
Stratigaraphical range in Hungary: Oligocene.

Loxoconcha favata KUIPER, 1918
Pl. 25. figs 3–7.

1918. *Loxoconcha favata* n. sp. – KUIPER, pp. 25–26, Pl. 1, fig. 7.
1982. *Loxoconcha* cf. *favata* KUIPER, 1918 – MONOSTORI, pp. 44–45.
1985. *Loxoconcha favata* KUIPER, 1918 – MONOSTORI, pp. 206– 207, Pl. 7, figs 5–6. (cum

syn)
2004. *Loxoconcha favata* KUIPER, 1918 – MONOSTORI, p. 67, Pl. 21, figs 6–7.

Dimensions: L = 0.54–0.63 mm, H = 0.29–0.33 mm, L/H = 1.69–1,82
Occurrence: Csákvár–34 borehole 123.6–395.0 m; Piliscsaba–2 borehole 379.0–395.8 m; Piliscsaba–3 borehole 98–102.5 m; Esztergom–123 borehole 330.0–413.0 m, 124.8–187.8 m; Alcsútdoboz–3 borehole 336.0–413.0 m; Szentendre–2 borehole 19.5–39.7 m; Esztergom–123 borehole 124.8–174.0 m; Sárisáp–112 borehole 24.2 m; Sárisáp–117 borehole 27.0 m; Sárisáp–122 borehole 49.5 m; Sárisáp–128 borehole 18.5 m; Alcsútdoboz–3 borehole 170.0–413.0 m; Eger Wind brickyard clay above the K horizon.
Material: 346 specimens.
Stratigraphical range without Hungary: Oligocene–Miocene.
Stratigraphical range in Hungary: Oligocene.

Loxoconcha subovata (MÜNSTER, 1830) sensu BRESTENSKÁ, 1975
Pl. 26. fig. 1.

Remarks: our specimens are very similar to specimens of OERTLI (1956), MOUSSOU (1966), FAUPEL (1975), BRESTENSKÁ (1975), BEKAERT et al (1991), DUCASSE et al. (1991), DUCASSE et CAHUZAC (1997) and MONOSTORI (1985, 2004) with some variations in inflexion of the dorsal outline and the heighth/length ratio.
Dimensions: L = 0.42–0.43 mm, H = 0.28 mm, L/H = 1.50–1.54
Occurrence: Eger Wind brickyard 4.9–34.3 m.
Material: 17 specimens.

Loxoconcha (Loxoconcha) loxocorniculum sp. 1
Pl. 26. fig. 2.

Remarks: very similar form to *Loxocorniculum hastata* (REUSS, 1850) morphe „crêtée" in BEKAERT et al. (1991).
Dimensions: L = 0.40 mm, H = 0.25 mm, L/H = 1.6
Occurrence: Eger Wind brickyard 33.4–33.9 m.
Material: 1 specimen.

Family Paracytheridae PURI, 1957
Genus *Paracytheridea* g. W. MÜLLER, 1894
Paracytheridea cf. *gradata* (BOSQUET, 1852)
Pl. 26. fig. 3.

Remarks: single damaged specimen. His form and ornamentation is very close to this species.
Dimensions: L = 0.60 mm, H = 0.32 mm, L/H = 2.06
Occurrence: Eger Wind brickyard 33.9–34.1 m
Material: 3 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Family Cytheruridae G. W. MÜLLER, 1894
Subfamily Cytherurinae G. W. MÜLLER, 1894
Genus *Eucytherura* G. W. MÜLLER, 1894
Eucytherura dentata LIENENKLAUS, 1905
Pl. 26.figs 4–5.

1905. *Eucytherura dentata* n. sp. – LIENENKLAUS, p. 57, Pl. IV, fig. 31.
1985. *Eucytherura dentata* LIENENKLAUS, 1905 – MONOSTORI, pp. 208–209, Pl. 7, fig. 7, (cum syn).
2004. *Eucytherura dentata* LIENENKLAUS, 1905 – MONOSTORI, p. 69, Pl. 22, fig. 5.

Dimensions: L = 0.42 mm, H = 0.23 mm, L/H = 1.74
Occurrence: Ózd–Szentsimon outcrop; Csákvár–34 borehole 123.6–128.3 m.
Material: 6 specimens.
Stratigraphical range without Hungary: Germany: Rupelian, Belgium: Bartonian–Rupelian, Slovakia: Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Eucytherura ex gr. *macropora* LIENENKLAUS, 1894
Pl. 26. figs 6–7.

Remarks: the anterior part is very angular, the dorsal outline is concave, the caudal part is short. There is a prominal ventral swelling form the 1/3 of the length terminating with posteroventral blunt spine. *E. macropora* in PIETRZENIUK (1969) is very similar.
Dimensions: L = 0.45–0.52 mm, H = 0.27–0.33 mm, L/H = 1.58–1.67
Occurrence: Ózd–Szentsimon outcrop; Eger Wind brickyard borehole 33.4–34.3 m.
Material: 7 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Subfamily Cytheropterinae HANAI, 1957
Genus *Cytheropteron* SARS, 1866
Cytheropteron sp.
Pl. 26. fig. 8.

Remarks: some fragmental forms belonging to this genus.
Occurrence: Csákvár–34 borehole 123.6–128.3 m; Eger Wind brickyard borehole 33.9–34.1 m.
Material: 7 specimens.
Dimensions: L = 0.40 mm, H = 0.30 mm, L/H = 1.33

Genus *Kangarina* CORYELL and FIELDS, 1937
Kangarina? sp.
Pl. 27. fig. 1.

Remarks: very poorly preserved specimen with form and sculpture similar to this genus.
Occurrence: Ózd–Szentsimon outcrop.
Material: 1 specimen.

Dimensions: L = 0.36 mm, H = 0.21 mm, L/H = 1.71
Stratigraphical range in Hungary: Upper Oligocene.

Family Xestoleberididae Sars, 1928
Genus *Xestoleberis* Sars, 1866
Xestoleberis obtusa Lienenklaus, 1900
Pl. 27. fig. 2.

Occurrence: Eger Wind brickyard borehole 12.0–12.6 m.
Material. 1 specimen.
Dimensions: L = 0.40 mm, H = 0.26 mm, L/H = 1.54
Stratigraphical range without Hungary: Germany, Switzerland, Ukraina, Turkey: Oligocene.
Stratigraphical range in Hungary: Upper Oligocene.

Xestoleberis sp.

Remarks: the variation and relations of material is similar those of described in MONOSTORI (1985), the material consist of juvenile forms.
Dimensions: L = 0.43 mm, H = 0.29 mm, L/H = 1.48.
Occurrence: Eger Wind brickyard borehole 5.7–6.1 m.
Material:1 specimen.

Family Pontocyprididae G. W. MÜLLER, 1894
Genus *Protoargilloecia* LIUBIMOVA 1955
Protoargilloecia ex gr. *angulata* DELTEL, 1961
Pl. 27. figs 3–5.

Remarks: variable form, similar those of figured from Uppermost Eocene–Lower Oligocene of Hungary (MONOSTORI, 1985, 2004).
Dimensions: L = 0.42–0.55 mm, H = 0.19–0.30 mm, L/H = 1.83–2.21
Occurrence: Eger Wind brickyard borehole 10.3–10.9 m; Eger Wind brickyarad H–51 borehole 35.0 m; Varbó–50 borehole 319.0–322.0 m.
Material: 4 specimens.
Stratigraphical range in Hungary: Upper Oligocene.

Family Candonidae KAUFMANN, 1900
Subfamily Paracypridinae SARS, 1923
Genus *Phlyctenophora* BRADY, 1880
Phlyctenophora ex gr. *grosdidieri* STCHÉPINSKY, 1963
Pl. 27. figs 6–9.

1963. *Phlyctenophora grosdidieri* n. sp. – STCHÉPINSKY, pp. , Pl. I, figs 8–13.
1985. *Phlyctenophora grosdidieri* SCHÉPINSKY, 1963 – MÜLLER, 1985, pp. 12–13, Pl. 1, figs 1–5.
1985. *Phlyctenophora oligocaenica* (ZALÁNYI, 1929) – MONOSTORI, pp. 220–221, Pl. 8, fig. 4.

Remarks: the differences from *Ph. oligocaenica* were written in MONOSTORI (1985). After the investigation new and large material together the two valves available in 1985 cleared their relationship with species *grosdidieri*.

The elongated form, the distinct ventral sinus obviously different form the species *oligocaenica*. There are some variations in the details.

Dimensions: L = 0.80–0.88 mm, H = 0,36–0.39 mm, L/H = 2.16–2.26.

Occurrence: Csákvár–34 borehole 115.5–145.8 m; Piliscsaba–3 borehole 127.0–128.0 m; Sárisáp–112 borehole 24.2–26.5 m; Sárisáp–128 borehole 18.5 m; Szentendre–2 borehole 18.5–73.0 m; Alcsútdoboz–3 borehole 199.0 m; Eger Wind brickyard borehole 33.9–34.3 m.

Material: 54 specimens.

Stratigraphical range without Hungary: France, Germany: Oligocene.

Stratigraphical range in Hungary: Upper Oligocene.

Acknowledgements

This study was supported by a Hungarian National Science Foundation (OTKA) project T 037.472. Its help is gratefully acknowledged.

References

BABIN, V. et GUERNET, Cl. (1988): Contribution a l'étude de priabonien de la Region–type (Italie du Nord): les Ostracodes. – Revue de Micropal., 30, 4, pp. 209–231, Pl. 1–4.

BASSIOUNI, M. A. (1979): Brakische und marine Ostrakoden (Cytherideinae, Hemicytherinae, Trachyleberidinae) aus dem Oligozän und Neogen der Türkei. – Geol. Jahrb., 1979, B, N° 31, pp. 1–200.

BORNEMANN, J. G. (1985): Die mikroskopische Fauna des Septarienthones von Hemsdorf bei Berlin. – Z. dt. geol. Ges., 7, pp. 307–371, Taf. 12–21.

BOSQUET, I. (1852): Déscription des Entomostracés fossiles des terrains tertiaires de la France et de la Belgique. – Mém. sav. étrang. Acad. Roy. Sci. Belgique 24, pp. 1–142, Pl. 1–6.

BRESTENSKÁ, E. (1975): Ostracoden des Egerien. – In: Chronostratigraphie und Neostratotypen V, pp. 377–411, Pl. 1–12.

CARBONNEL, G., W. WEIDMANN, M. et BERGER, J–P. (1985): Les ostracodes lacustres et saumatres de la molasse de Suisse Occidentale. – Revue de Paléobiologie, 4, 2, pp. 215–251, Pl. I–VII.

DELTEL, B. (1964): Nouveaux Ostracodes de l'Eocene et de l'Oligocene de l'Aquitaine méridionale. – Act. Soc. Linn. Bordeaux, Vol. 100, pp. 127–221, Pl. 1–6.

DOEBL, F., MALZ, H. (1962): Tertiär des Rheintal–Grabens. – Leitfossilien der Mikropaleontologie. Ein Abriss, pp. 379–432, Pl. 56–59, Berlin.

DOEBL, F., MOHAMED-AWAL, H., ROTHE, P., SONNE, V., TOBEIN, H., WEILER, H., WEILER, W. (1972): Ein „Aquitan" Profil von Mainz–Wisenau (Tertiär, Mainzer Becken). – Geol. Jahrb., Reihe A., Heft 5, pp. 67–74, Taf. 12–14.

DOEBL, F. et SONNE, V. (1975): Mikrofauna und Flora des unteren Meeressandes (Rupel) 1. Sandgrube am Steigerberg bei Wendelsheim (Mainzer Becken, C. Ostrakoden. – Mainzer geowiss. Mitt., 4, pp. 139–157, Taf. 1–3.

DUCASSE, O. (1969): Etude micropaléontologique (Ostracodes) de l'Eocène Nord Aquitain – these Univ. Bordeaux, pp. 1–381, Pl. 1–20.

DUCASSE, O., GUERNET, Cl., TAMBAREAU, Y. (1985): Paléogène. *In* OERTLI, H. J. (ed.): Atlas des Ostracodes de France, Bull. Centre Rech. Explor.–Prod. Elf–Aquitaine, Mem. 9, Pau.

DUCASSE, O., ROUSSELLE, L. (1988): Le genre *Leguminocythereis* (Ostracodes) dans le Paléogène Nord–Aquitain: espèces et populations: histoire évolutive – Geobios, 21, 2, pp. 137–167, Pl. 1–4.

DUCASSE, O. (1995): Ostracodes saumâtres à la limite Oligo–Miocène en Aquitaine – Revue de Micropalèontologie, 38, 2, pp. 113–130, Pl. 1–4.

EGGER, J. G. (1858): Die Ostrakoden der Miocän–Schichten bei Ortenburg in Nieder-Bayern – Neues Jahrb. Min. Geogr. Geol., pp. 403–443.

FAUPEL, M. (1975): Die Ostrakoden des Kasseler Meeressandes (Ober oligozän) in Nordhessen – Göttinger Arb. Geol. Paläontol., 17, pp. 1–77, T. 1–13.

GOERLICH, F. (1952): Über die Genotypen und den Begriff der Gattungen *Cyprideis* und *Cytheridea.* – Senckenbergiana, 33, pp. 185–192.

GOERLICH, F. (1953): Ostrakoden der Cytherideinae aus der Tertiären Molasse Bayern – Senckenbergiana, 34, 1–3, pp. 117–148.

GUERNET, Cl. (1990): L'évolution du genre *Pterygocythereis* BLAKE, 1933 (Ostracoda), du Crétacé à l'actuel – Revue de micropal, 33, 3–4, pp. 279–293, Pl. 1–3.

HÉJJAS, J. (1995): Új adatok Erdély fossil Ostracoda faunájához. – Erdélyi Múzeum Egylet, Értesítő az Orvos-Természettudományi Szakosztályból II. Természettudományi Szak, Kolozsvár, pp. 35–68, pp.112, 3–4. tábla.

JIŘIČEK, R. (1983): Redefinition of the Oligocene an Neogene ostracod zonation of the Paratethys. – Mem. Vol. 18th Eur. Colloq. micropaleontol., Bratislava–Praha, Sept. 1983, Hodonín, pp. 195–236.

KEEN, M. C. (1972a): The Sannoisian and some other Upper Paleogene ostracoda from North–West Europe. – Palaeontology, vol 15, N°2, pp. 267–325, Pl. 45–56.

KEEN, M. C. (1972b): Mid–Tertiary Cytherettinae of North–West Europe. – Bull. British mus. (Nat. hist.), Geology, 21, 6, pp. 263–349, Pl. 1–23.

KEEN, M. C. (1989): Oligocene ostracod biofacies from onshore areas of the North Sea Basin. *In* BATTEN, D. J., KEEN, M. C. (eds) North–West European Micropaleontology and Palynology, Wiley, Chichester, pp. 248–264, Pl. 1–2.

KEIJ, A. J. (1955): The microfauna of the Aquitainian–Burdigalian of southwestern France. Tv. Ostracoda – Verhandel. Koninkl. Ned. Akad. Wetenschap., Natuurk., 1e Reeks, 21, (2), pp. 101–136, pl. 14–20.

KEIJ, A. J. (1957): Eocene and Oligocene Ostracoda of Belgium – Inst, Roy. Sci. Nat. Belgique, mem. 136, pp. 1–210, pl. 1–26.

KEMPF, E. K. et NINK, C. (1993): *Henryhowella asperrima* (Ostracoda) aus der Typusregion (Miozaen, Badenien, Wiener Becken). – Sonderveröff. Geol. Inst. Univ. Köln, 70, pp. 95–114.

KUIPER, W. N. (1918): Oligocäne und Miocäne Ostracoden aus den Niederlanden. – Diss. Univ. Groningen, pp. 1–91, Pl. 1–3.

LIENENKLAUS, E. (1894): Monographie der Ostracoden des nordwest deutschen Tertiärs – Zeitschr. Deutsch. Geol. Ges., 46, pp. 158–268, Taf. 1–6.

LIENENKLAUS, E. (1895): Die Ostrakoden des Mittel-Oligocäns von Jeurre bei Etampes im Pariser Becken. – Naturwiss. Ver. Osnabrück. Jahresber., 10 (1893–94), pp. 125–156, Pl. 3.

LIENENKLAUS, E. (1896): Ostracoda: *In* KISSLING, E.: Die Fauna des mittel-Oligocäns im Berner Jura. – Schweiz. Pal. Ges., Abh., 22, pp. 22–23, T. 2.

MALZ, H. et TRIEBEL, E. (1970): Ostracoden aus dem Sannois und jungeren Schichten des Mainzer Beckens, 2. *Hemicyprideis* n. g. – Senckenb. Lethaea, 51, 1, pp. 1–47, T. 1–13.

MÉHES, Gy. (1941): Budapest környékének felsőoligocén ostracodái. – Geol. Hung., ser. Pal. 16,

pp. 1–95, Pl. I–VII.
MONOSTORI, M. (1982): Oligocene ostracods from the surroundings of Budapest. – Ann. Univ. Sci. Budap., Sect. Geol., 21.
MONOSTORI, M. (1985): Ostracods of the Eocene/Oligocene boundary profiles. – Ann. univ. Sci. Budap., Sect. Geol., 25, pp. 161–243, pl. 1–8.
MONOSTORI, M. (2004a): Lower Oligocene (Kiscellian) ostracods in Hungary. – Systematic description – Ann. Univ. Sci Budap., Sect. Geol., 34, pp. 27–141, Pl. 1–28.
MONOSTORI, M. (2004b): Marine ostracods from the Upper Eocene–Lower Oligocene sections from Slovenia and their paleoecologic importance. – Hantkeniana 4, pp. 83–111, Pl. 1–4.
MOOS, B. (1963): Über einige der „*Cythere macropora*" BOSQUET 1852 (Ostr.) ähnliche Arten aus verschiedenen Tertiärstufen. – Geol. Jahrb., 82, pp. 21–42, T. 1–2.
MOOS, B. (1968): Zur Ostracoden–Fauna (Crust.) des Unteroligozäns von Latdorf. – Geol. Jahrb., 87, pp. 1–40, Pl. 1–4.
MOOS, B. (1970): Die Ostracoden–Fauna des Unteroligozäns von Brandhorst bei Bünde. III. Schulerideinae MANDELSTAM 1959 und Cytherideinae SARS, 1925. – Geol. Jahrb., 88, pp. 289–320, Pl. 1–5.
MOOS, B. (1971): Taxonomische Bearbeitung der Ostracodengattung *Cytherura* und verwandter Gattungen. – Beih. Geol. Jahrb., 106, pp. 53–108, T. 1–8.
MOOS, B. (1973a): Ostracoden des norddeutschen Eozän und einige Arten aus dem Oligozän. – Geol. Jahrb., A6, pp. 25–81, T. 1–8.
MOOS, B. (1973b): Einige *Eucytherura*–Arten aus Eozän und Oligozän. – Geol. Jahrb., A6, pp. 83–95, T. 1.
MOYES, J. (1959): Répartition et valeur des Ostracodes dans l'interprétation du Miocène nord–aquitain. – Thèse Troisieme Cycle, Université de Bordeaux, N°41, pp. 1–117, Pl. 1–16.
MOYES, J. (1965): Les Ostracodes du Miocène aquitain. Thés. Doct. sci. natur. Fac. sci. Univ. Bordeaux, pp. 1–340, Pl. 1–13, Drouillard, Bordeaux.
MOUSSOU, A. (1966): Contribution à l'étude des Ostracodes de l'Oligocène girondin. – Thèse Troisième Cycle, Université de Bordeaux, N° 374, pp. 1–218, Pl. 1–3.
MÜLLER, D. (1985): Biostratigraphische Untersuchungen in der subalpinen Unteren Süsswassermolasse zwischen Inn und Lech anhand von Ostrakoden. – Paleontogr., Abt. A, 187, 1–3, pp. 1–57, Pl. 1–5.
MÜNSTER, G. (1830): Über einige fossile Arten *Cypris* und *Cythere*. – Neues Jahrb. Min., pp. 60–67.
OERTLI, H. J. et KEY, A. J. (1955): Drei neue Ostracoden–Arten aus dem Oligozän Westeuropas. – Bull. Ver. Schweiz. Petrol. – Geol. Ing., 22, pp. 19–28, pl. 1.
OERTLI, H. (1956): Ostracoden aus der oligozänen und miozänen Molasse der Schweiz. – Schweiz. Paläontol. Abh., 74, pp. 1–118, T. 1–16.
OLLIVIER–PIERRE, M. F., MAUPIN, C., ESTEOULE–CHOUX, J. and SITTLER, C. S. (1993): Transgression et paleoenvironment a l'Oligocene en Bretagne (France): sedimentologie, micropaleontologie, palynologie et palynofacies du Rupelien du Bassin de Rennes. – Palaeogeogr., Palaeoclimatol., Palaeoecol. 103, 3–4, pp. 223–250.
OLTEANU, r. (1980): Évolution de la communauté d'ostracodes dans l'Oligocene du NW de la Transylvanie. – Rev. Roum. Géol., Géophys. et Géogr., Ser. Géol., 24, pp. 177–198, Pl. I–VI.
PIETRZENIUK, E. (1969): Taxonomische und biostratigraphische Untersuchungen an Ostracoden des Eozän 5 im Norden der Deutschen Demokratischen Republik. – Paläontologische Abhandlungen, A, Paläozoologie, IV, 1, pp. 1–162, T. I–XXVIII.
REUSS, A. E. (1850): Die fossilen Entomostraceen des österreichischen Tertiärbeckens. – Haidingers Naturwiss. Abhandl., 3, 1, pp. 1–92, T. 8–11.
REUSS, A. E. (1856): Beiträge zur charakteristik der Tertiärschichten des nördlichen und mittleren Duetschlands. – Sitz.–Ber. Akad. Wiss., math.–naturwiss. Kl., 18, pp. 197–273.
ROEMER, F. A. (1838): Die Cytherinen des Molasse–Gebirges. – Neues Jahrb. Min. Geogn. Geol.

Petref.-Kunde, pp. 514–519, T. 6.
RUGGIERI, G. (1953): Iconografia degli ostracodi marini del pliocene e del pleistocene italiani. – Atti Soc. ital. Sci. Nat., 92, pp. 40–56.
RUGGIERI, g. (1967): Due ostracofaune del miocene allochtono della Val Marecchia (Apennino settentrionale). – Riv. Ital. Paleont., 73, 1, pp. 351–384, Pl. 1.
RÜSBÜTT, J. et STRAUSS, Ch. (1992): Mikrofossilien des Unter und Mittelmiozän in der Braunkohlenborung Lubteen 46/84 (Südwest–Mecklenburg). – Neues Jahrb. Paläont., Monatsh., 1992/3, pp. 150–170.
SCHEREMETA, V. G. (1964): Ostracoda in Maikopskie othlozhenia. Naukova dumka, Kiev, pp. 111–122, Pl. III–IV. (In Russian)
SCHEREMETA, V. G. (1969): Ostrakodi paleogena Ukraini. Lvov – Univ. Lvov, pp. 1–273, Pl. 1–21. In Russian.
SONNE, V. (1973): Ein profil im Grenzbereich Schleichsand Cyrenen–Merge in Rheinhessen (Tertiär, Mainzer Becken). – Mainzer Geowiss. Mitt., 2, pp. 105–114, Abb. 5–12.
SÖNMEZ–GÖKÇEN, N. (1973): Étude paleontologique (Ostracodes) et stratigraphique de niveaux du Paleogene du Sud–Est de la Thrace. – Publ. Inst. Et. Rech. Min. Turquie (MTA), N°147, pp.1–118, Pl. 1–12.
SPEYER, O. (1863): Die Ostracoden der Casseler Tertiärbildungen. – ber. Ver. Naturk., 13, Kassel, pl. 1–4.
STCHEPINSKY, A. (1963): Étude des Ostracodes du Stampien d'Alsace et complément à l'étude des Ostracodes du Sannoisian Alsace. – Bull. Serv. Carre Géol. Als. Lorr., 16, 31, pp. 151–174, Pl. 3, Strasbourg.
STRAUB, E. W. (1952): Mikropaläontologische Untersuchungen im Tertiär zwischen Ehingen und Ulm an der Donau. – Geol. Jahrb., 66, pp. 433–524, T. 1–3.
SUZIN, A. V. (1956): Ostrakodi tretichnih otlozhenii Severnovo Predkavkaza. Gostoptehizdat, Moscow, 1956 (In Russian).
SZCZECHURA, J. (2000): Age and evolution of depositional environments of the supra-evaporitic deposits in the northern, marginal part of the Carpathian fordeep: micropaleontological evidence. – Geological Quarterly, 44, 1, pp. 81–100, Pl. I–VIII.
TRIEBEL, E. (1941): Zur Morphologie und Ökologie der fossilen ostracoden, mit Beschreibung einiger neuen Gattungen und Arten. – Senckenbergiana, 23, 4–6, pp. 204–400.
TRIEBEL, E. (1952): Ostracoden der Gattung Cytheretta aus dem Tertiär des Mainzer Beckens. – Notizbl. Hess. Landesantes Bodenforsch., Wiesbaden, 6, 3, pp. 15–30, T. 1–4.
UFFENORDE, H. (1981): Ostracoden aus dem oberoligozän und Miozän des unteren Elbe–Gebietes (Niedersachsen und Hamburg, NW Deutsches Tertiärbecken. – Palaeontogr., A, 172, 4–6, pp. 103–198, T. 1–10.
UFFENODRE, H. (1989): Ostrakoden des Tertiär aus der Forschungsborung Wustrheide (NW Deutschland): II. Hoheres Mittel–Oligozän bis Ober–Miozän. – Geol. Jahrb., A, 111, pp. 397–401, T. 1–2.
WEISS, R. (1983): Rasterelektronmikroskopische Untersuchungen an Oligozänen marinen Ostracoden, 1. – Palaeontographica, 182, 1–3, pp. 44–82, T. 1–15.
WEISS, R. (1983): Rasterelektronmikroskopische Untersuchungen an Oligozänen marinen Ostracoden, 2. – Palaeontographica, 182, 4–6, pp. 83–115, T. 16–28.
WEISS, R. H. (1997): Die Gattung *Muellerina* (Ostracoda) aus dem oberen Oberoligozän von NW–Deutschland und die Abgrenzung gegen eine jüngere, Homöomorphe Gattung. – Sonderveröff. Geol. Inst. Univ. zu Köln, 114, pp. 499–533, T. 1–4.
WITT, W. (1967): Ostracoden der bayerischen Molasse (unter besonderer Berücksichtigung der Cytherinae, leptocytherinae, Trachyleberidinae, hemicytherinae und Cytherettinae). – Geol. Bavarica, 57, pp. 1–120, T. 1–7.
ZALANYI, B. (1929): Oberoligocene Ostracoden aus dem Bükk–Gebirge. – Geologica Hung., Ser. Paleont., 5, pp. 90–130, T. 2–4.

ZIEGLER, F. K. et RÖDDER, G. (1993): Das Grössenwachstum der bentonischen Ostracoden–Art Alteratrachyleberis scrobiculata als paleobathymetrischer indikator. – Senckenbergiana Lethaea, 73, pp. 37–48.

ZIEGLER, F. K. (1996): Die Mittel und Oberoligozänen Pterygocythereis–Arten (Ostracoda) der Grube Sophia Jacoba, Wetterschacht 8 (Erkelenz, NW Deutschland). – Neues Jahrb. Paläont. Abh., 199, 1, pp. 17–31, Abb. 1–3.

Plate 1

Figs 1–4. *Cytherella compressa* (VON MÜNSTER, 1830)

Fig. 1. Carapace from the left valve. 91x. Eger section, sample 24.
Fig. 2. Carapace from the right valve. 80x. Eger section, sample 30.
Fig. 3. Carapace from the right valve. 82x. Eger section, sample 36.
Fig. 4. Left valve. 90x. Eger, Wind brickyard borehole, 4.9–5.4 m.

Figs 5–8. *Cytherella dentifera* MÉHES, 1941

Fig. 5. Left valve. 75x. Eger Wind brickyard borehole, 8.3–9.2 m.
Fig. 6. right valve. 80x. Eger Wind brickyard borehole, 7.0–7.8 m.
Fig. 7. right valve, 75x. Eger section, sample 32.
Fig. 8. Right valve. 80x. Eger Wind brickyard borehole, 7.5–7.8 m.

Plate 1

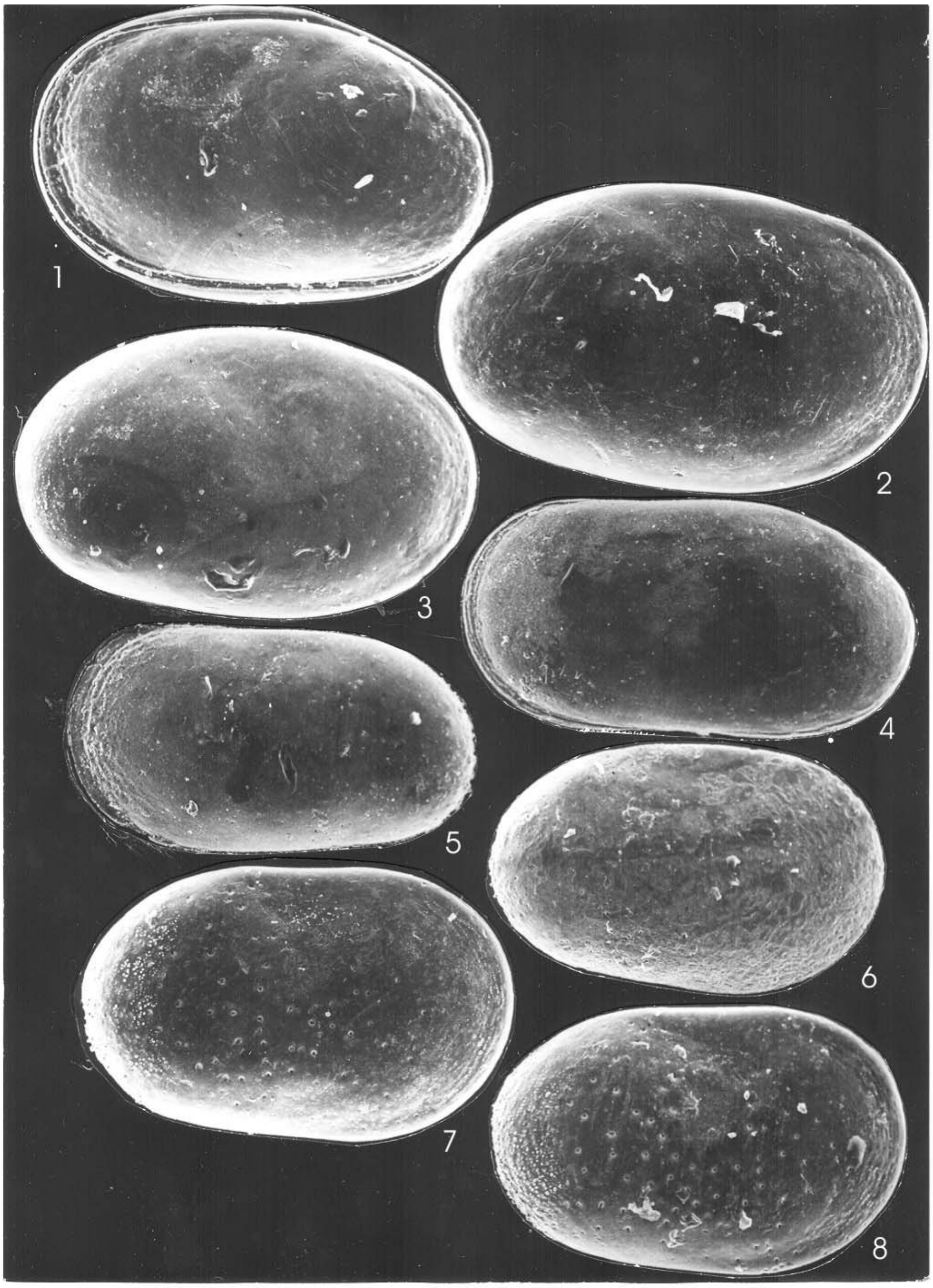


Plate 2

Figs 1–3. *Cytherella drako* PIETRZENIUK, 1969.

Fig. 1. Right valve. 60x. Eger Wind brickyard borehole, 34.3 m.

Fig. 2. Right valve. 62x. Eger Wind brickyard borehole, 34.3 m.

Fig. 3. Carapace from the dorsal side. 62x. Eger Wind brickyard borehole, 8.3 m.

Figs 4–8. *Cytherella gracilis* LIENENKLAUS, 1894.

Fig. 4. Carapace from the left valve. 75x. Szentendre–2 borehole, 71.0–72.0 m.

Fig. 5. Carapace from the left valve, Szentendre–2 borehole, 71.0–72.0 m.

Fig. 6. Right valve. 80x. Szentendre–2 borehole, 71.0–72.0 m.

Fig. 7. Right valve. 80x. Szentendre–2 borehole, 71.0–72.0 m.

Fig. 8. Carapace from the dorsal side. 80x. Szentendre–2 borehole, 71.0–72.0 m.

Plate 2

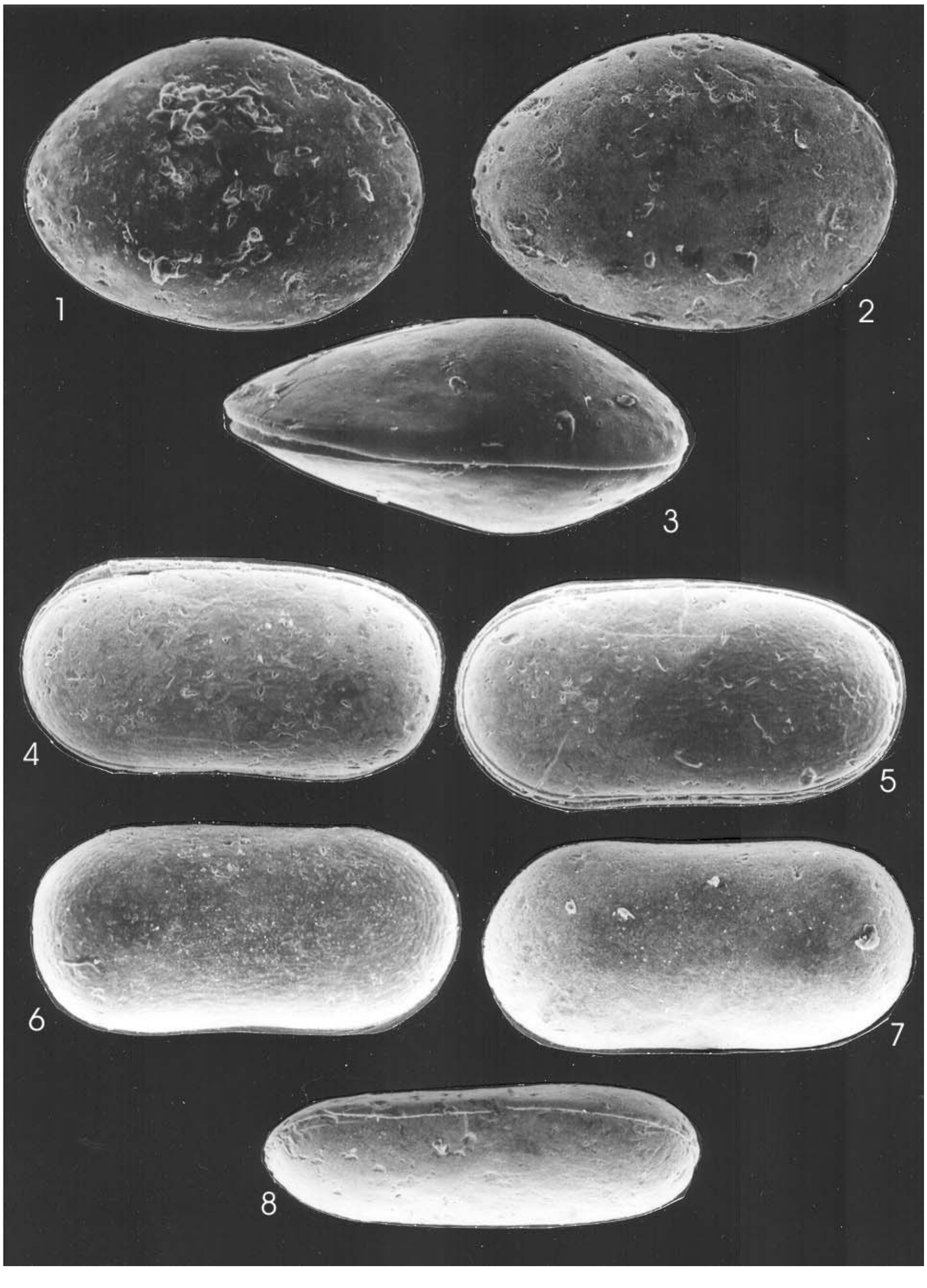


Plate 3

Figs 1–4. *Cytherella hyalina* MÉHES, 1941

Fig. 1. Left valve. 72x. Wind brickyard borehole, 10.9–11.1 m.

Fig. 2. Carapace from the left valve. 72x. Wind brickyard borehole 14.6–14.9 m.

Fig. 3. Left valve. Eger section, sample 31.

Fig. 4. Carapace from the left valve. 32x. Eger Wind brickyard borehole, 4.4–4.6 m.

Fig. 5. *Cytherella mehesi* BRESTENSKÁ, 1975. Right valve. 75x. Eger Wind brickyard borehole 8.3 m/a.

Figs 6–8. *Cytherella transversa* SPEYER, 1863.

Fig. 6. Left valve. 70x. Eger Wind brickyard borehole, 5.7–6.1 m.

Fig. 7. Inside of the right valve. 70x. Eger section sample 30.

Fig. 8. right valve. 75x. Eger section, sample 30.

Plate 3

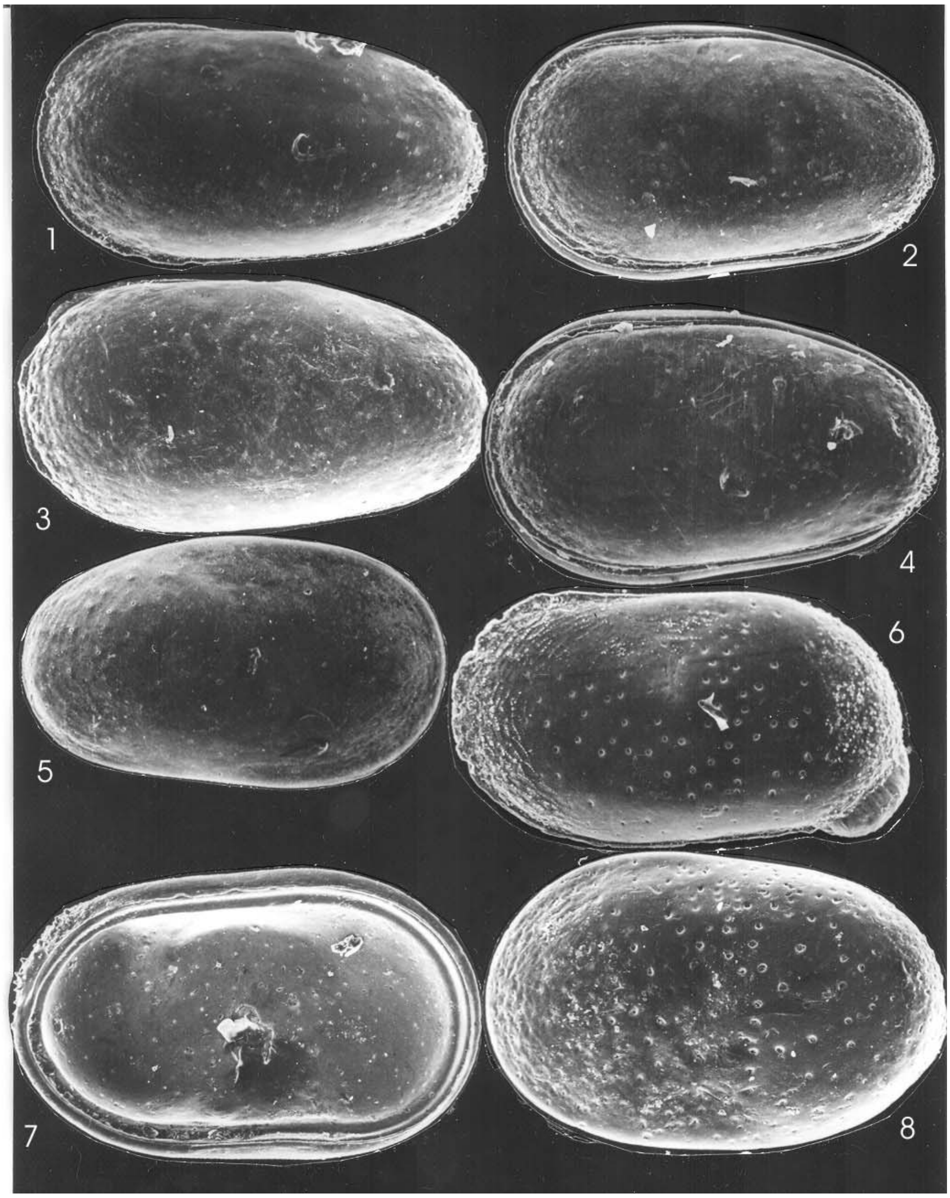


Plate 4

Figs 1–2. *Cytherella transversa* SPEYER, 1863.

Fig. 1. Inside of the right valve. 70x. Eger, Wind brickyard borehole 9.7–10.3.

Fig. 2. Left valve. Eger section, sample 24. 83x.

Figs 3–4. *Cardobairdia boldi* PIETRZENIUK 1969.

Fig. 3. Carapace from the right valve. 112x. Eger, Wind brickyard H 5/1 borehole, 22.5 m.

Fig 4. Carapace from the right valve. 120x. Eger, Wind brickyard 5/1 borehole 46 m.

Fig. 5. *Cardobairdia*? sp. Carapace from the right valve. 70x. Eger, Wind brickyard borehole 10.3–10.9 m.

Figs 6–7. *Bairdia brevis* LIENENKLAUS, 1900 sensu BRENSTENSKÁ, 1975.

Fig. 6. Left valve. 90x. Eger Wind brickyard borehole, 10.9–11.1 m.

Fig. 7. Right valve. 80x. Eger, Wind brickyard borehole, 7.5–7.8 m.

Plate 4

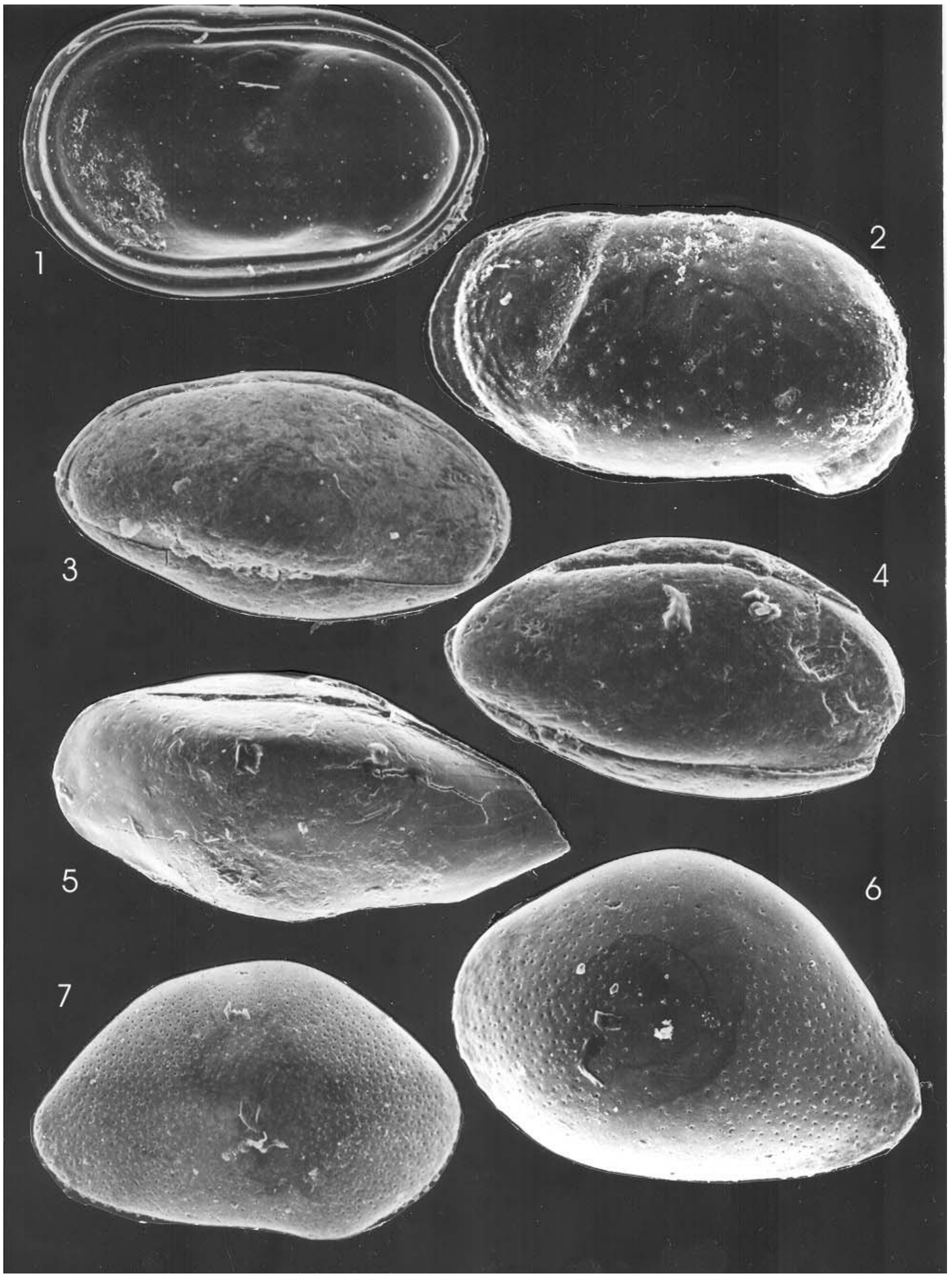


Plate 5

Fig. 1. *Bairdia brevis* sensu BRESTENSKÁ, 1975.
Right valve. 80x. Eger, Wind brickyard borehole 6.1–6.4 m.

Fig. 2. *Bairdia* sp. Left valve. 60x. Eger, Wind brickyard borehole 34.3–34.6 m.

Figs 3–4. *Bythocypris arcuata* (VON MÜNSTER, 1830) sensu FAUPEL, 1975.
Fig. 3. Carapace from the right valve. 68x. Piliscsaba–2 borehole 224.9–226.9 m.
Fig. 4. Right valve. 95x. Szentendre–2 borehole 19.5–20.5 m. (instar?).

Fig. 5. *Microcytherura* ex gr. *lienenklausi* MOOS, 1971. Right valve. 110x. Eger, Wind brickyard borehole 33.9–34.1 m.

Figs 6–7. *Cnestocythere* ex gr. *oligocaenica* MOOS, 1968.
Fig. 6. Left valve. 105x. Eger Wind brickyard borehole 34.1–34.3 m.
Fig. 7. Left valve. 130x. Eger Wind brickyard borehole 34.1–34.3 m.

Plate 5

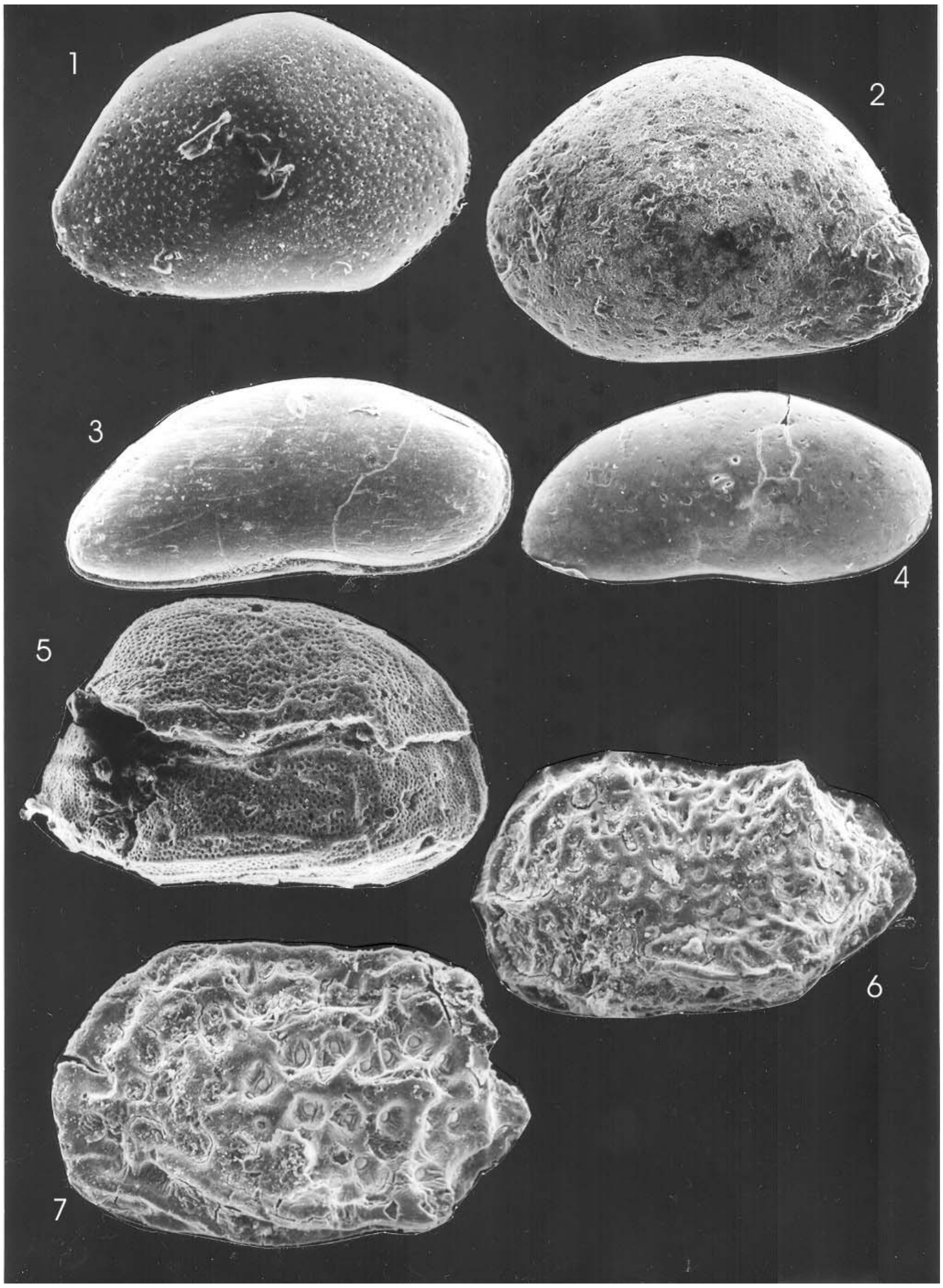


Plate 6

Figs 1–2. *Cnestocythere* ex gr. *oligocaenica* MOOS, 1968.
Fig. 1. Left valve. 100x. Eger, Wind brickyard borehole, 33,4–33.9 m.
Fig. 2. Left valve. 105x. Eger, Wind brickyard borehole, 34.1–34.3 m.

Fig. 3. *Paijenborchella sturovensis*. Left valve. 128x.

Figs 4–6. *Callistocythere majzoni* n. sp.
Fig. 4. Holotypus. Right valve. 102x. Szentendre–2 borehole, 71.0–72.0 m.
Fig. 5. Carapace from dorsal side. 100x. Szentendre–2 borehole, 68.0–71.0 m.
Fig. 6. Inside of the right valve. 100x. Szentendre–2 borehole, 68.0–71.0 m.

Fig. 7. *Callistocythere* ? sp. Right valve. 95x. Ózd, Szentsimon.

Fig. 8. *Cytheridea mülleri* (VON MÜNSTER, 1830 s. l.)
Fig. 1. Inside of the left valve. 70x. Alcsútdoboz–3 borehole 246.0 m.

Plate 6

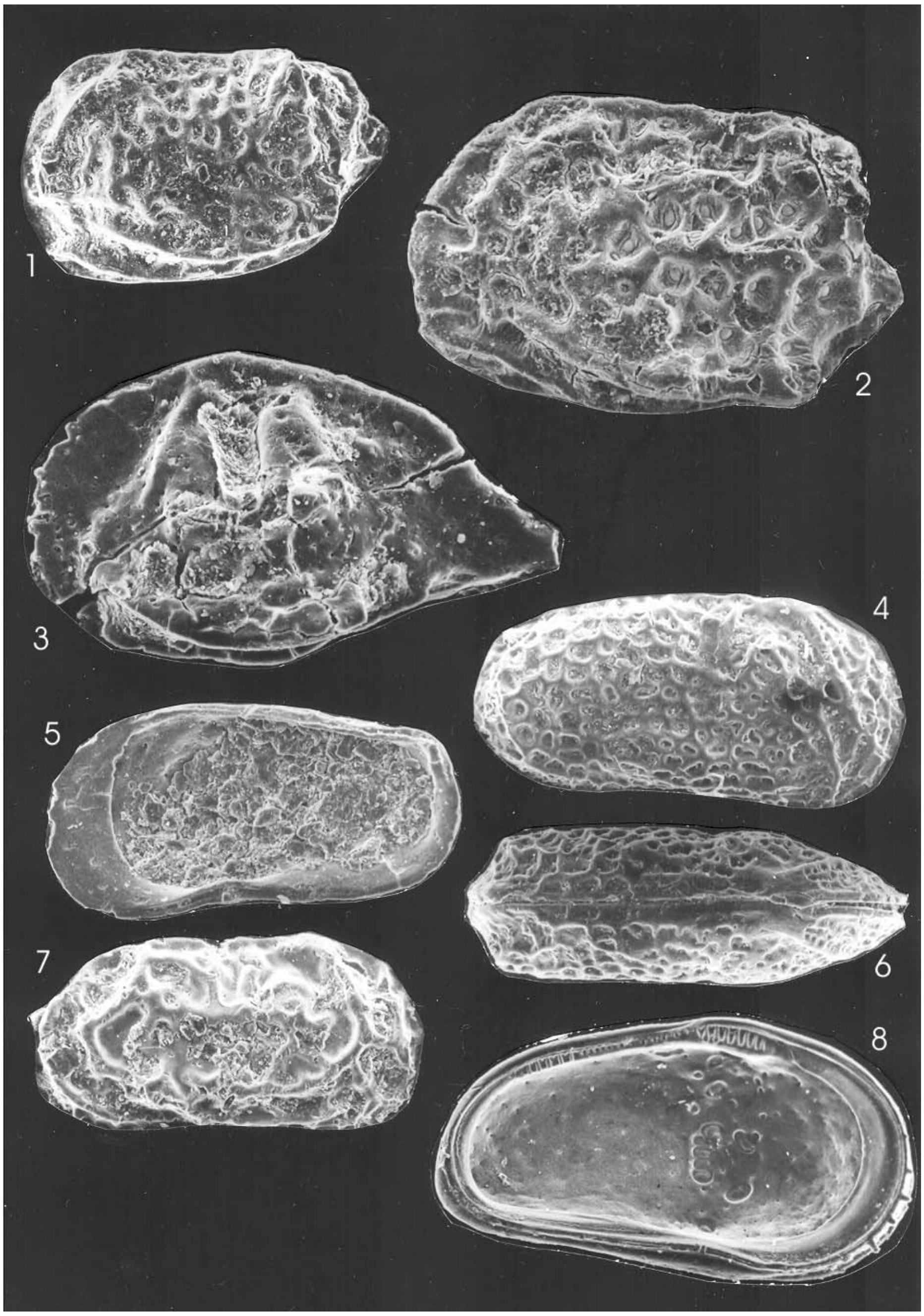


Plate 7

Figs 1–3. *Cytheridea mülleri* (VON MÜNSTER, 1830 s. l.)

Fig. 1. Left valve. 75x. Eger, Wind brickyard, clay on the K horizont.

Fig. 2. right valve. 72x. Eger section, sample 18.

Fig. 3. Left valve. 70x. Alcsútdoboz–3 borehole, 126.0 m.

Figs 4–7. *Cytheridea pernota* OERTLI et KEY, 1955 s. l.

Fig. 4. Carapace from the right valve. 67x. Piliscsaba–2 borehole 191.7–192.9 m.

Fig. 5. Carapace from the dorsal side. 70x. Csákvár–34 borehole 123.6–123.8 m.

Fig. 6. Left valve. 65x. Piliscsaba–2 borehole, 373.8–374.8 m.

Fig. 7. Left valve. 85x. Alcsútdoboz–3 borehole 170.0 m.

Plate 7

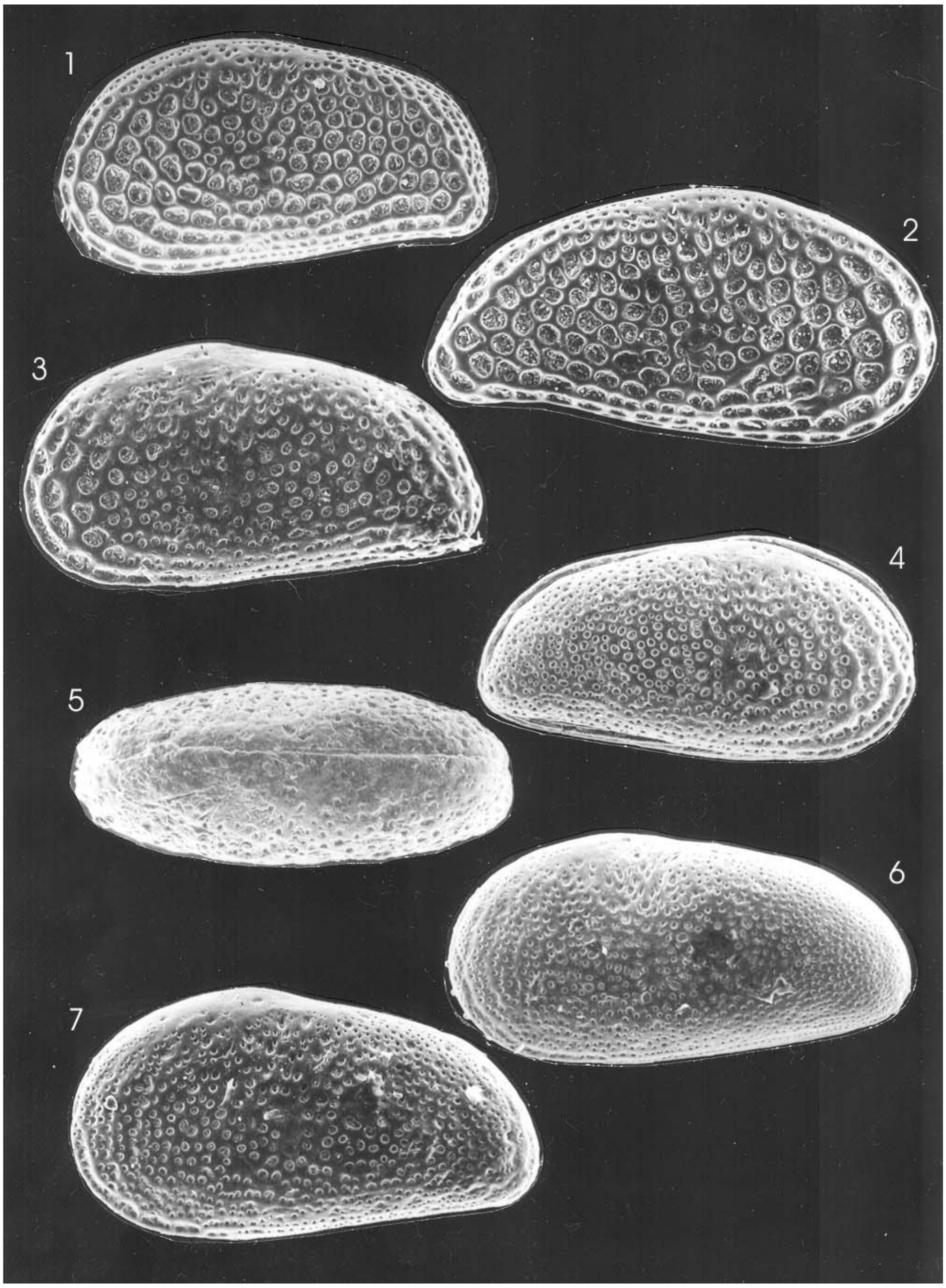


Plate 8

Figs 1–4. *Cyamocytheridea punctatella* (BOSQUET, 1852).
Fig. 1. Left valve. 90x. Csákvár–34 borehole, 263.0–263.3 m.
Fig. 2. Left valve. 80x. Úny.
Fig. 3. Left valve. 80x. Piliscsaba–2 borehole 178.3–179.3 m.
Fig. 4. Carapace from the dorsal side. 80x. Sárisáp–115 borehole 9.0 m.

Figs 5–8. *Miocyprideis rara* (GOERLICH, 1963).
Fig. 5. Left valve. 70x. Eger 77 section (Wind brickyard).
Fig. 6. Right valve. 78x. Csákvár–34 borehole 164.6–166.1 m.
Fig. 7. Left valve. Alcsútdoboz–3 borehole 223.0 m.
Fig. 8. Inside of the right valve. 67x. Csákvár–34 borehole 175.0–177.0 m.

Plate 8

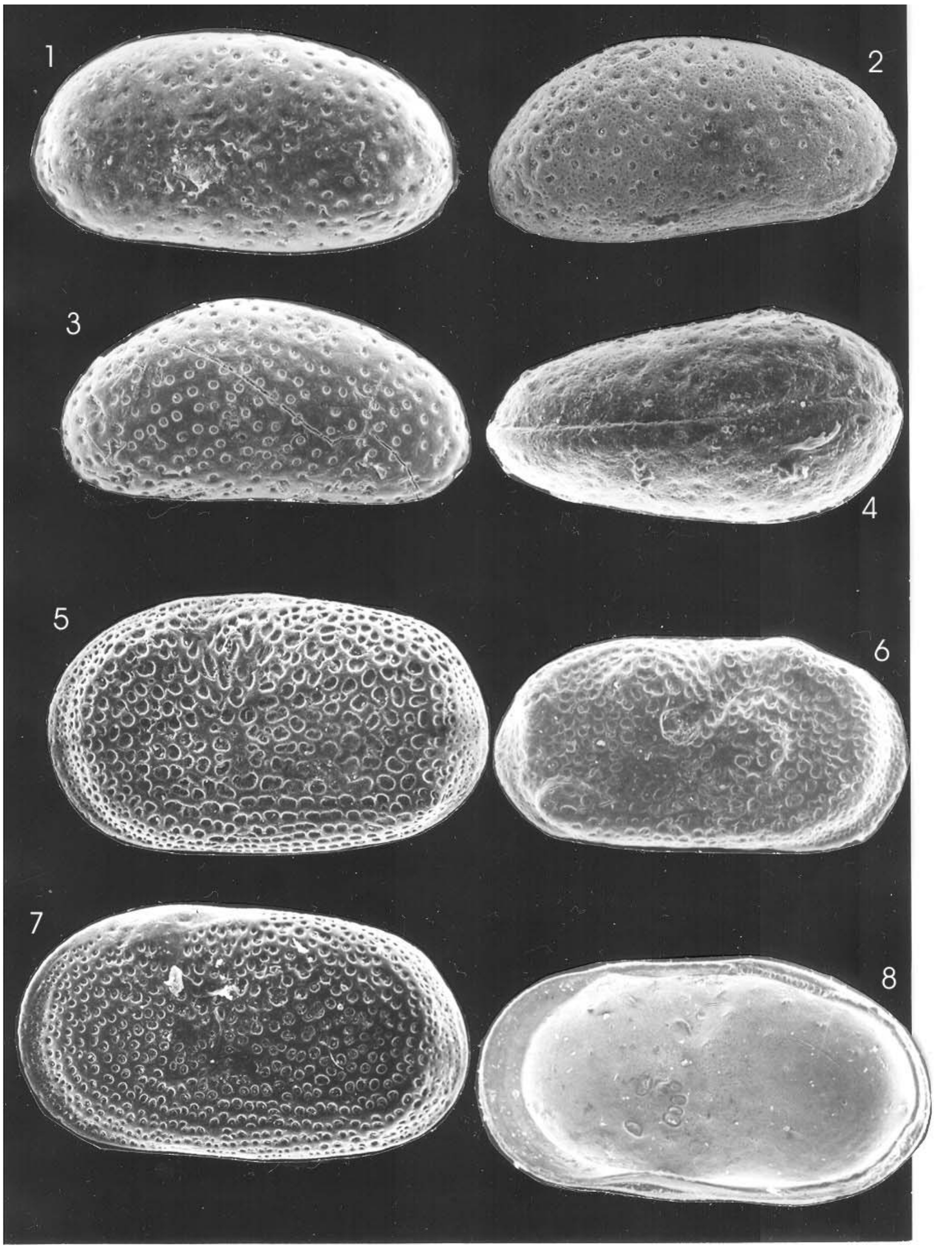


Plate 9

Figs 1–2. *Miocyprideis rara* (GOERLICH, 1963).

Fig. 1. Carapace from the dorsal side. 70x. Csákvár–34 borehole 164–6–166.1 m.

Fig. 2. Left valve. 65x. Csákvár–34 borehole 175.0–177.0 m.

Figs 3–6. *Hemicyprideis anterocostata* MONOSTORI, 1982.

Fig. 3. Right valve. 65x. Piliscsaba–3 borehole 164.0–165.0 m.

Fig. 4. Left valve. 55x. Piliscsaba–2 borehole 372.0–372.9 m.

Fig. 5. Inside of the right valve. 72x. Piliscsaba–2 borehole 224–9–226.9 m.

Fig. 6. Caraapace from the dorsal side. 60x. Piliscsaba–2 borehole 372.0–372.9 m.

Figs 7–8. *Hemicyprideis dacica* HÉJJAS, 1894.

Fig. 7. Left valve. 85x. Szentendre–2 borehole, 19.5–20.5 m.

Fig. 8. Right valve. 67x. Csákvár–34 borehole 175.0–177.0 m.

Plate 9

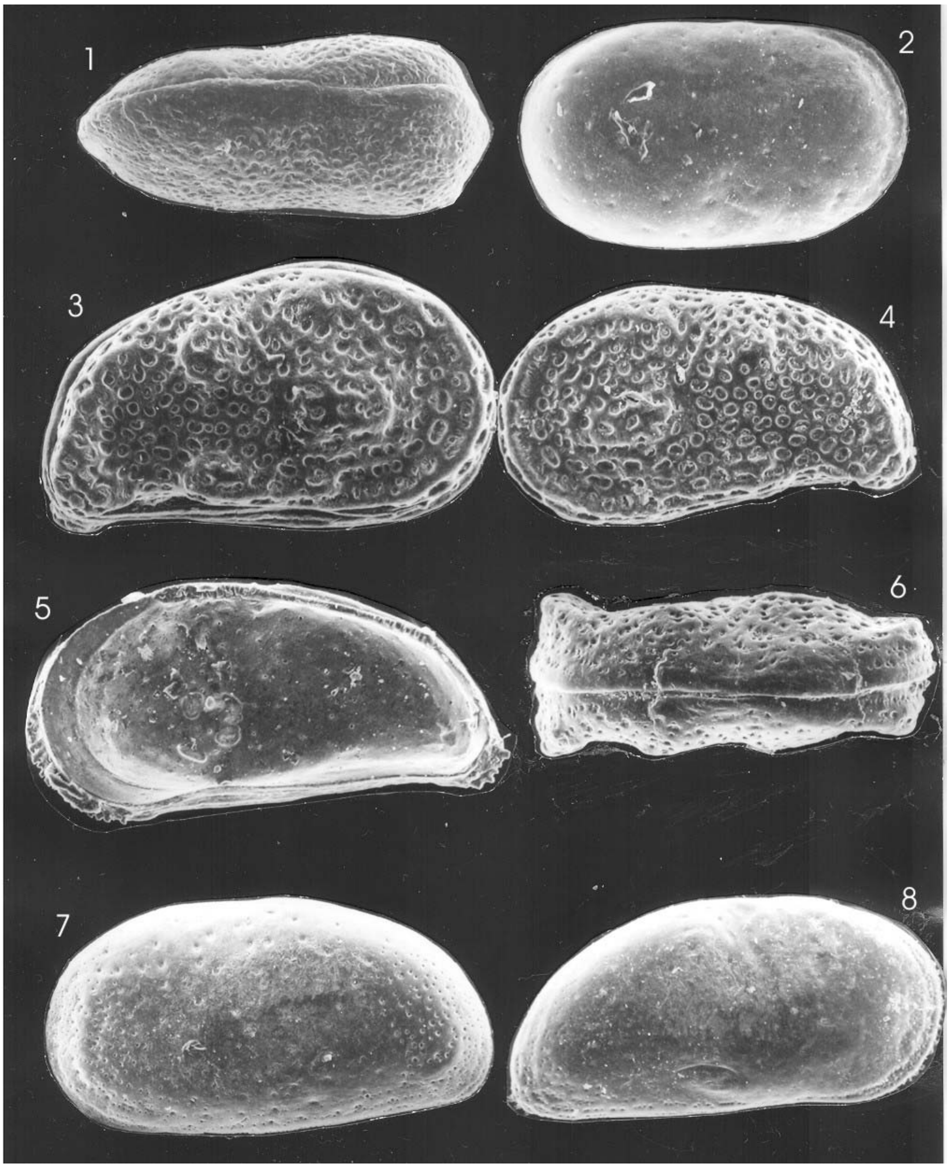


Plate 10

Figs 1–4. *Hemicyprideis dacica* HÉJJAS, 1894.

Fig. 1. Right valve. 62x. Szentendre–2 borehole 17.5–18.5 m.
Fig. 2. Right valve. 65 x. Mesterberek–78 borehole 322.0 m.
Fig. 3. Carapace from the dorsal side. 70x. Csákvár–34 borehole 175.0–177.0 m.
Fig. 4. Inside of the right valve. 60x. Csákvár–34 borehole, 175.0–177.0 m.

Figs 5–8. *Hemicyprideis helvetica* (LIENENKLAUS, 1895).

Fig. 5. Right valve. 80x. Csákvár–34 borehole 271.6–271.9 m.
Fig. 6. Carapace from the dorsal side. 85x. Sárisáp–122 borehole, 43.0 m.
Fig. 7. Right valve. 80x. Alcsútdoboz–3 borehole 201.0 m.
Fig. 8. Left valve. 70x. Csákvár–34 borehole 167.7–171.9 m.

Plate 10

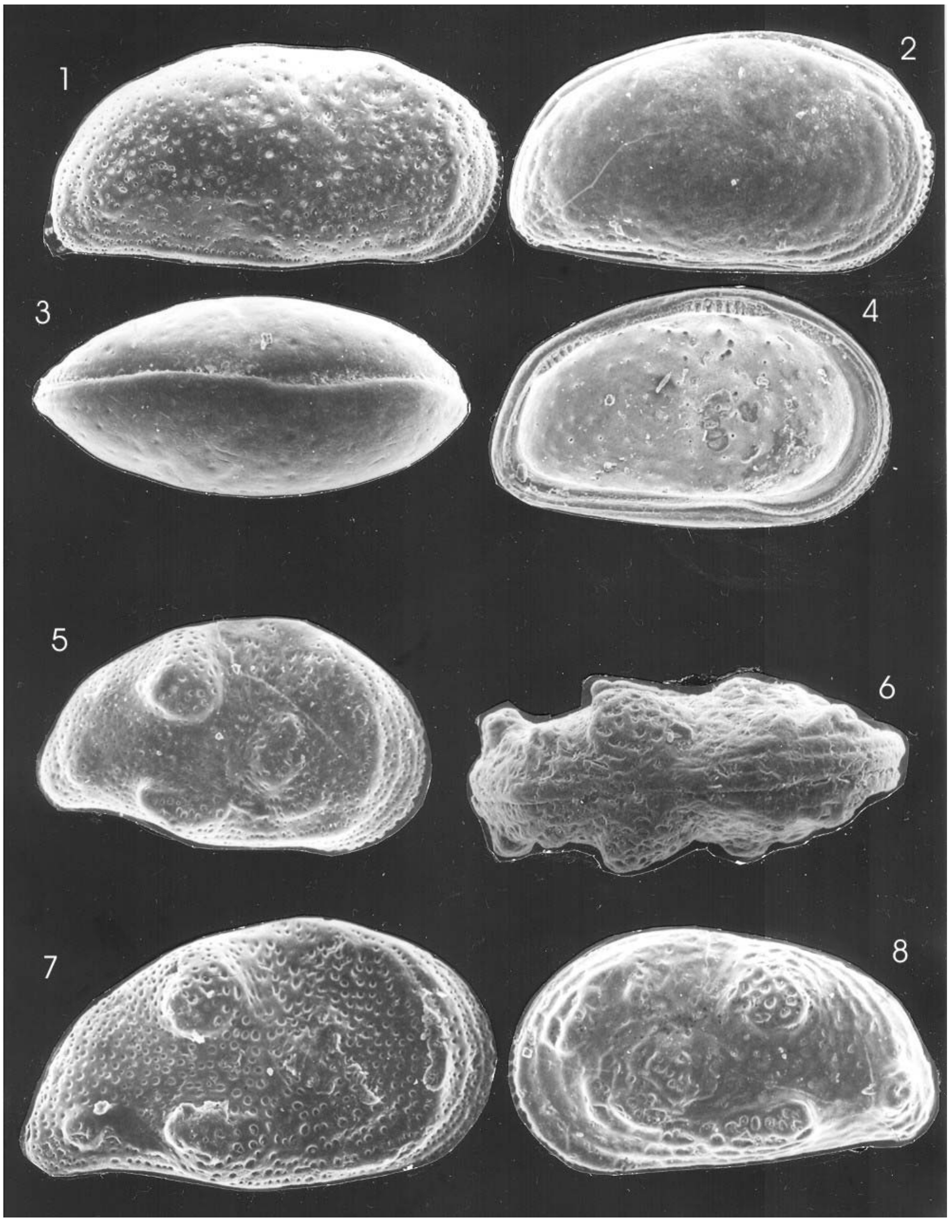


Plate 11

Fig. 1–3. *Hemicyprideis helvetica* (LIENENKLAUS, 1895).
Fig. 1. Right valve. 80x. Sárisáp–122 borehole 43.0 m.
Fig. 2. Right valve. 60x. Csákvár–34 borehole 175.0–177.0 m.
Fig. 3. Inside of the right valve. 78x. Csákvár–34 borehole, 368.7 m.

Fig. 4. *Hemicyprideis* ex gr. *parvula* MALZ et TRIEBEL, 1970. Carapace from the right valve. 60x. Csákvár–34 borehole 161.2–162.3 m.

Figs 5–6. *Schuleridea dorsoarcuata* (MÉHES, 1941).
Fig. 5. Left valve. 70x. Alcsútdoboz–3 borehole, 246.0 m.
Fig. 6. Left valve. 53x. Csákvár–34 borehole 308.5–308.9 m.

Figs 7–8. *Schuleridea rauracica* OERTLI, 1956.
Fig. 7. Left valve. 67x. Sárisáp–128 borehole 18.5 m.
Fig. 8. Carapace from the right valve. 60x. Piliscsaba–2 borehole, 372.0–371.9 m.

Plate 11

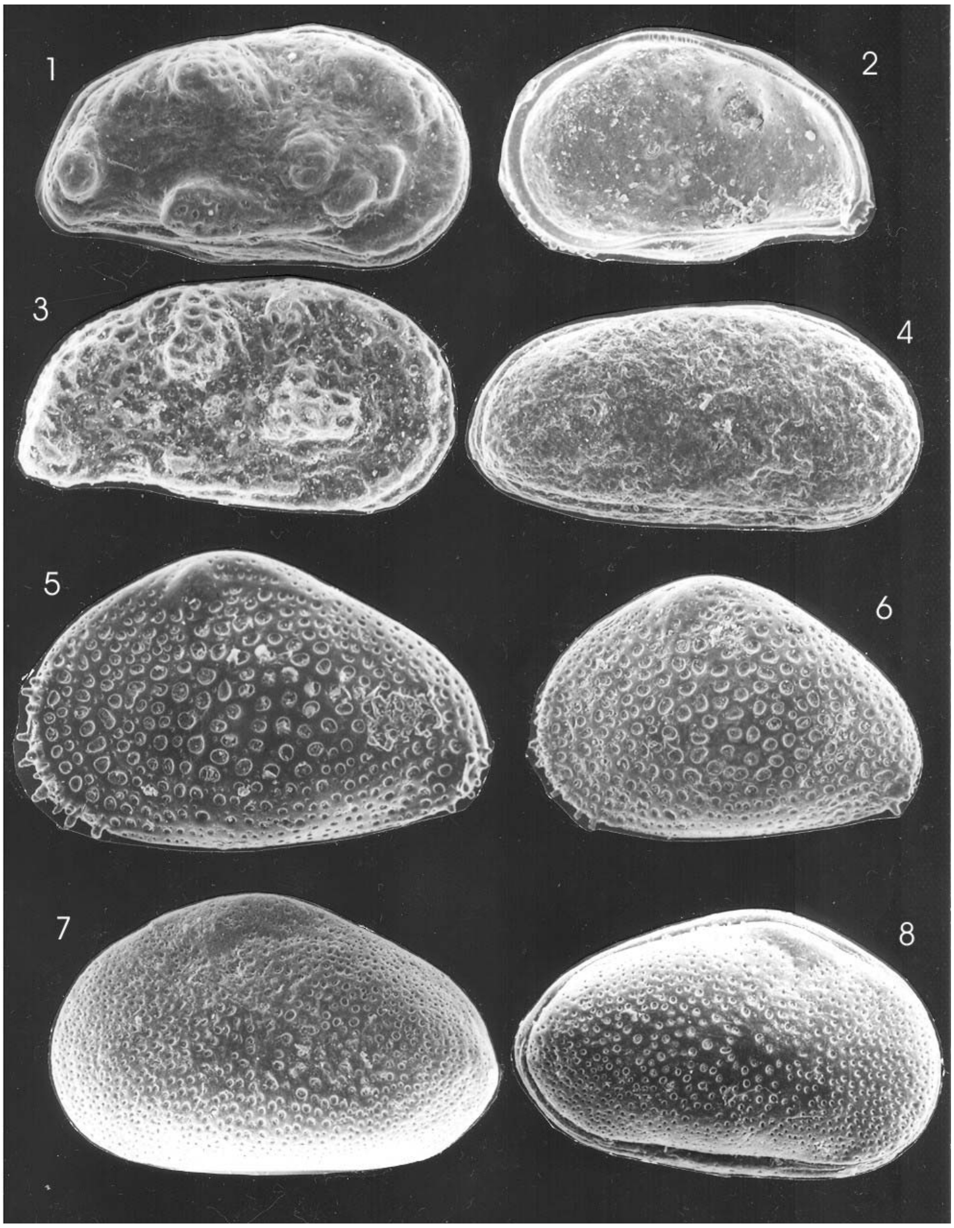


Plate 12

Figs 1–2. *Schuleridea rauracica* OERTLI, 1956.
Fig. 1. Carapace from the right valve. 70x. Piliscsaba–3 borehole 164.0–165.0 m.
Fig. 2. Carapace from the dorsal side. 65x. Piliscsaba–2 borehole, 373.8–374.8 m.

Figs 3–4. *Schuleridea* sp. 1.
Fig. 3. Left valve. 60x. Csákvár–34 borehole 201.5–207.1 m.
Fig. 4. Right valve. 65x. Csákvár–34 borehole 201.5–207.1 m.

Figs 5–8. *Cuneocythere marginata* (BOSQUET, 1852).
Fig. 5. Left valve. 98x. Csákvár–34 borehole 308.5–308.9 m.
Fig. 6. Left valve. 100x. Szentendre–2 borehole, 68.0–71.0 m.
Fig. 7. Carapace from the dorsal side. 90x. Csákvár–34 borehole, 123.6–128.3 m.
Fig .8. Right valve. 85x. Csákvár–34 borehole 306.8–308.5 m.

Plate 12

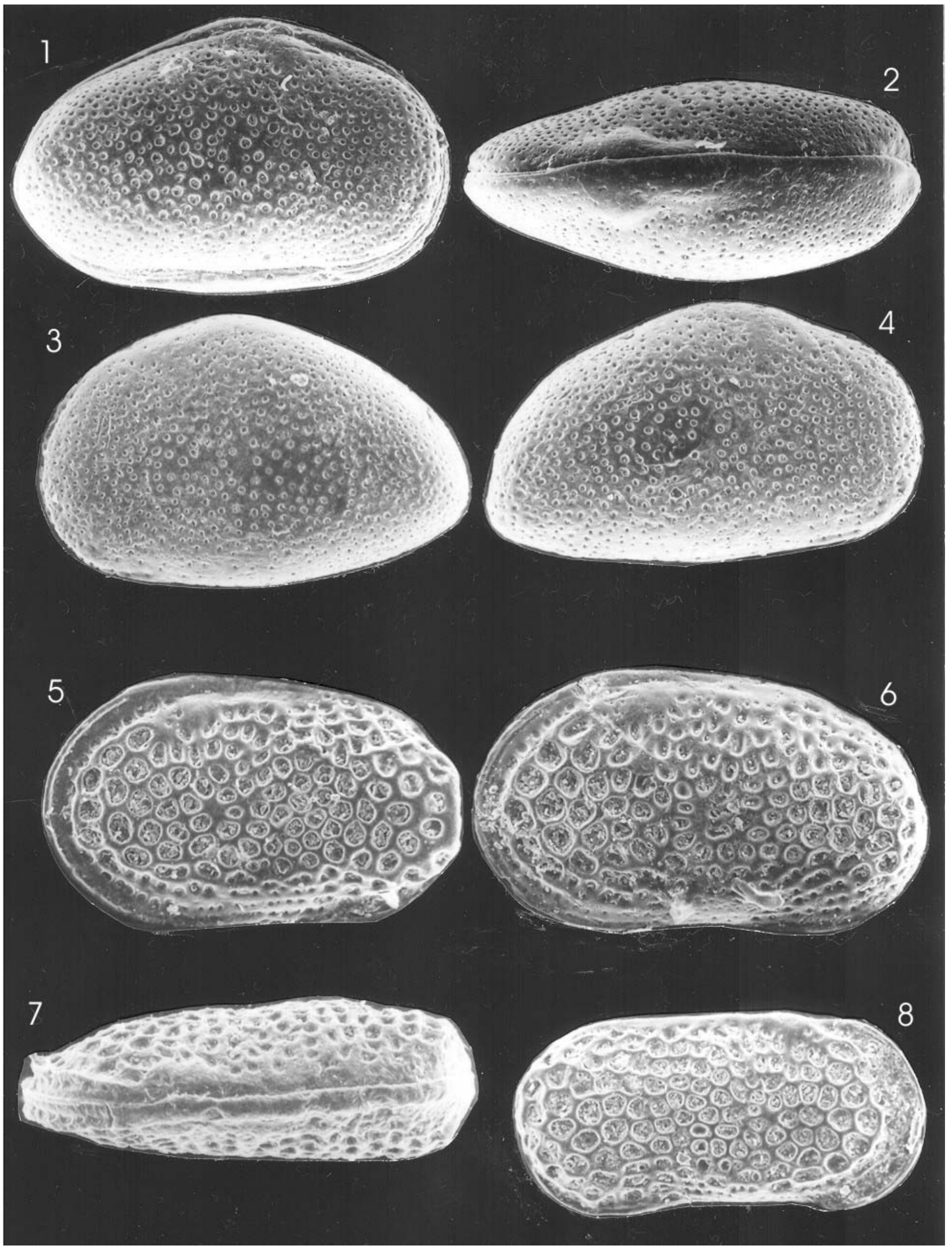


Plate 13

Figs 1–2. *Cuneocythere marginata* BOSQUET, 1852.
Fig. 1. Left valve. Alcsútdoboz–3 borehole, 170.0 m.
Fig. 2. Right valve. 90x. Alcsútdoboz–3 borehole, 373.0 m.

Fig. 3. *Pontocythere* ex gr. *denticulata* (LIENENKLAUS,1894).

Figs 4–5. *Pontocythere truncata* (LIENENKLAUS, 1894).
Fig. 4. Right valve. 82x. Piliscsaba–2 borehole 53.6–54.6 m.
Fig. 5. Left valve. 80x. Alcsútdoboz–3 borehole, 126.0 m.

Figs 6–8. *Krithe papillosa* (BOSQUET, 1852).
Fig. 6. Right valve. 78x. Sárisáp–128 borehole, 18.5 m.
Fig. 7. Carapace from the right valve. 120x. Eger, Wind brickyard 5/1 borehole, 22.5 m.
Fig. 8. Carapace from the right valve. 75x. Sárisáp–112 borehole, 26.5 m.

Plate 13

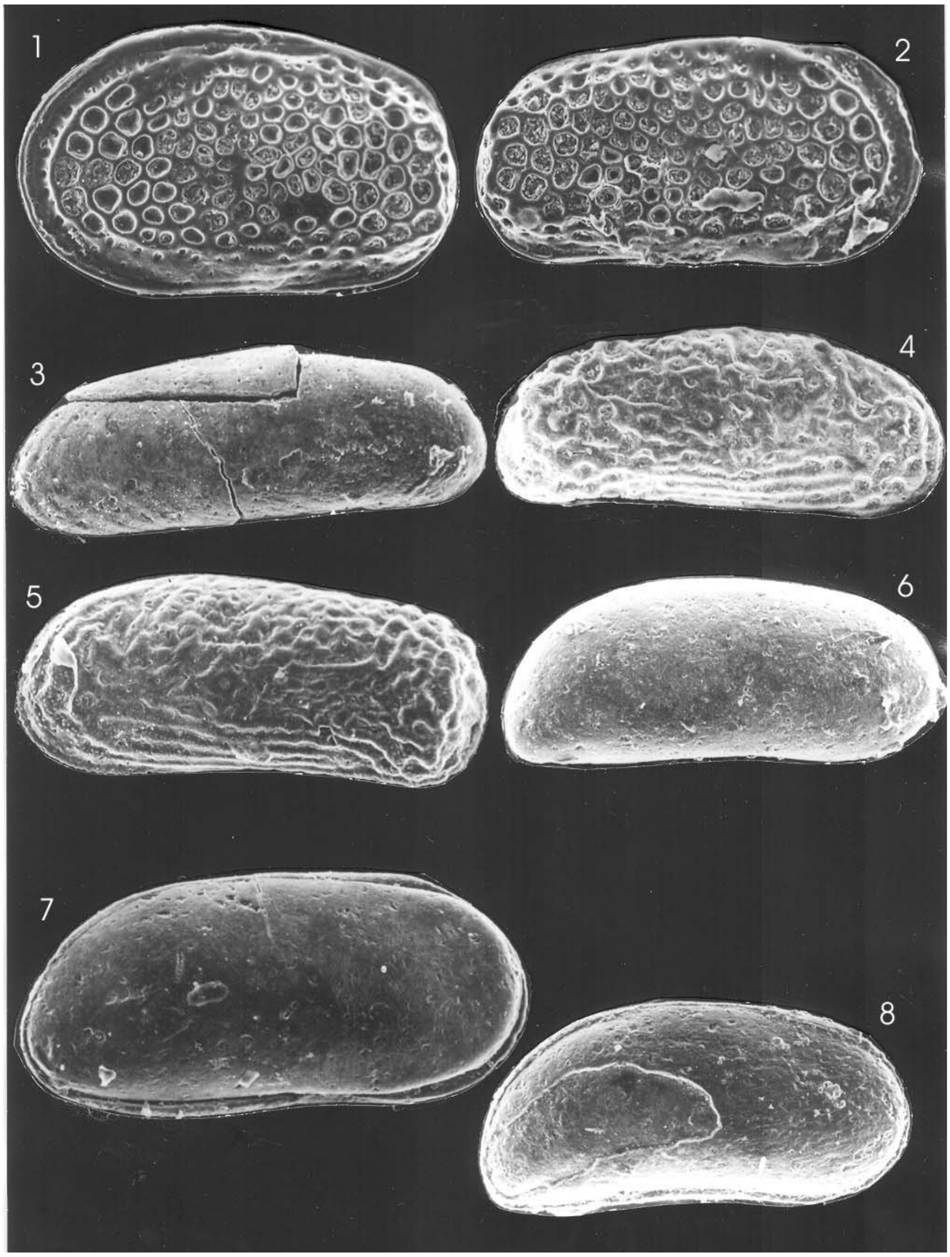


Plate 14

Figs 1–3. *Krithe papillosa* (BOSQUET, 1852).

Fig. 1. Left valve. 88x. Eger, Wind brickyard borehole 33.4–33.9 m.
Fig. 2. Left valve. 75x. Eger, Wind brickyard borehole 34.8–34.9 m.
Fig. 3. Left valve. Csákvár–34 borehole, 133.6–134.0 m.

Figs 4–7. *Krithe pernoides* (BORNEMANN, 1855).

Fig. 4. Right valve. 98x. Eger, Wind brickyard borehole, 5.7–6.1 m.
Fig. 5. Right valve. 68x. Eger, Wind brickyard borehole 10.9–11.1 m.
Fig. 6. Right valve. 68x. Eger, Wind brickyard borehole, 14.0–14.6 m.
Fig. 7. Right valve. 68x. Eger, Wind brickyard borehole 14.0–14.6 m.

Fig. 8. *Krithe* sp. 2. MONOSTORI, 2004.

Left valve. 120x. Eger, Wind brickyard borehole, 10.3–10.9 m.

Plate 14

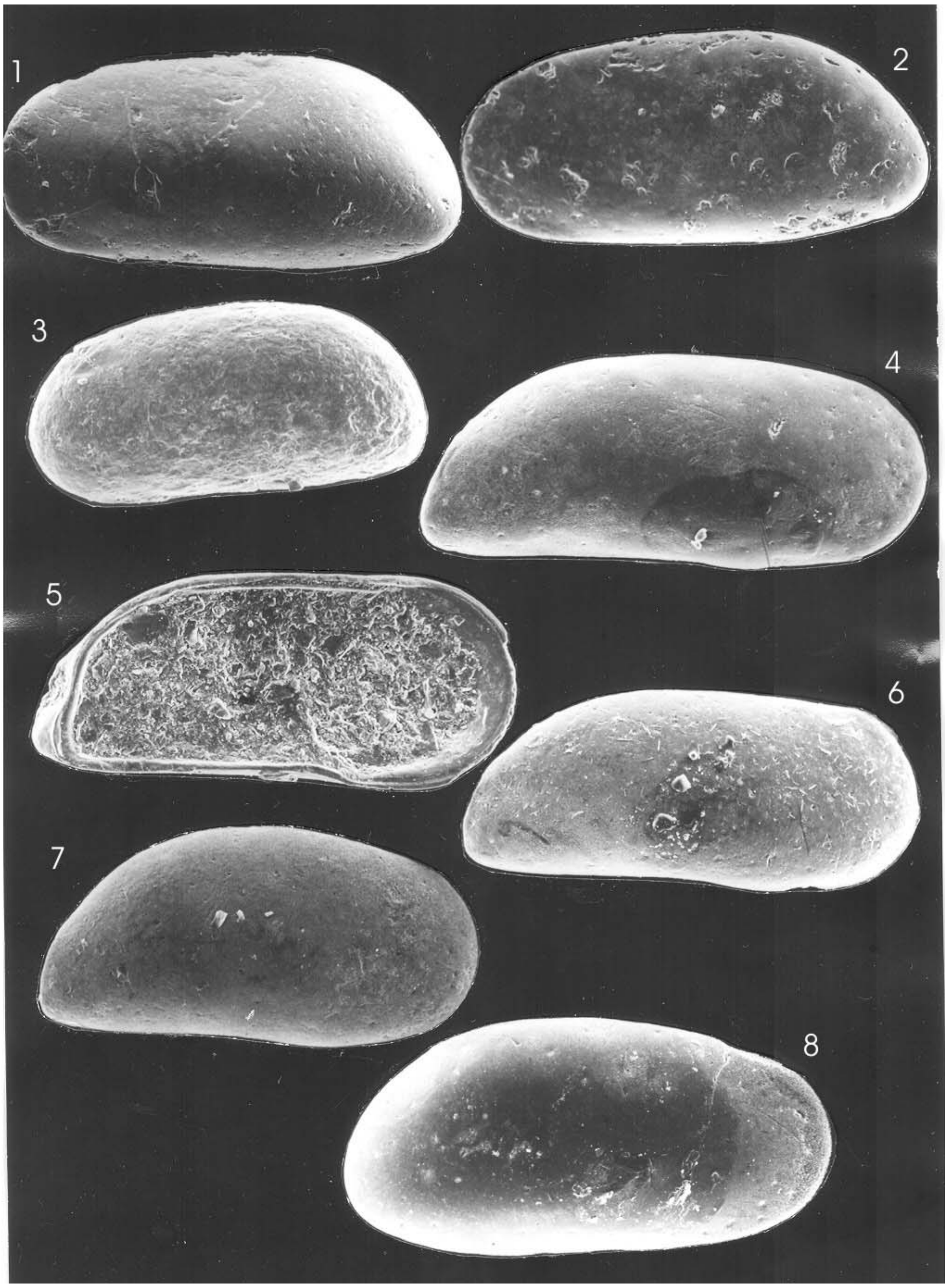


Plate 15

Fig. 1. *Krithe* sp. 2 MONOSTORI, 2004.
Right valve. 110x. Eger, Wind brickyard borehole 10.3–10.9 m.

Fig. 2. *Parakrithe costatomarginata* MONOSTORI, 1982. Fragment of the right valve.

Fig. 3. *Parakrithe* sp. 1. Carapace from the right valve. 100x. Eger section, sample 24.

Figs 4–8. *Costa hermi* WITT, 1967.
Fig. 4. Left valve. 72x. Wind brickyard borehole, 4.0–4.1 m.
Fig. 5. Left valve. 68x. Eger, Wind brickyard borehole, 5.7–6.1 m.
Fig. 6. Left valve. 80x. Eger, Wind brickyard borehole, 5.4–5.7 m/b.
Fig 7. Inside of the right valve. 80x. Eger, Wind brickyard borehole, 5.7–6.1 m.
Fig. 8. Carapace from the dorsal side. 70x. Eger, Wind brickyard borehole, 4.4–4.6 m.

Plate 15

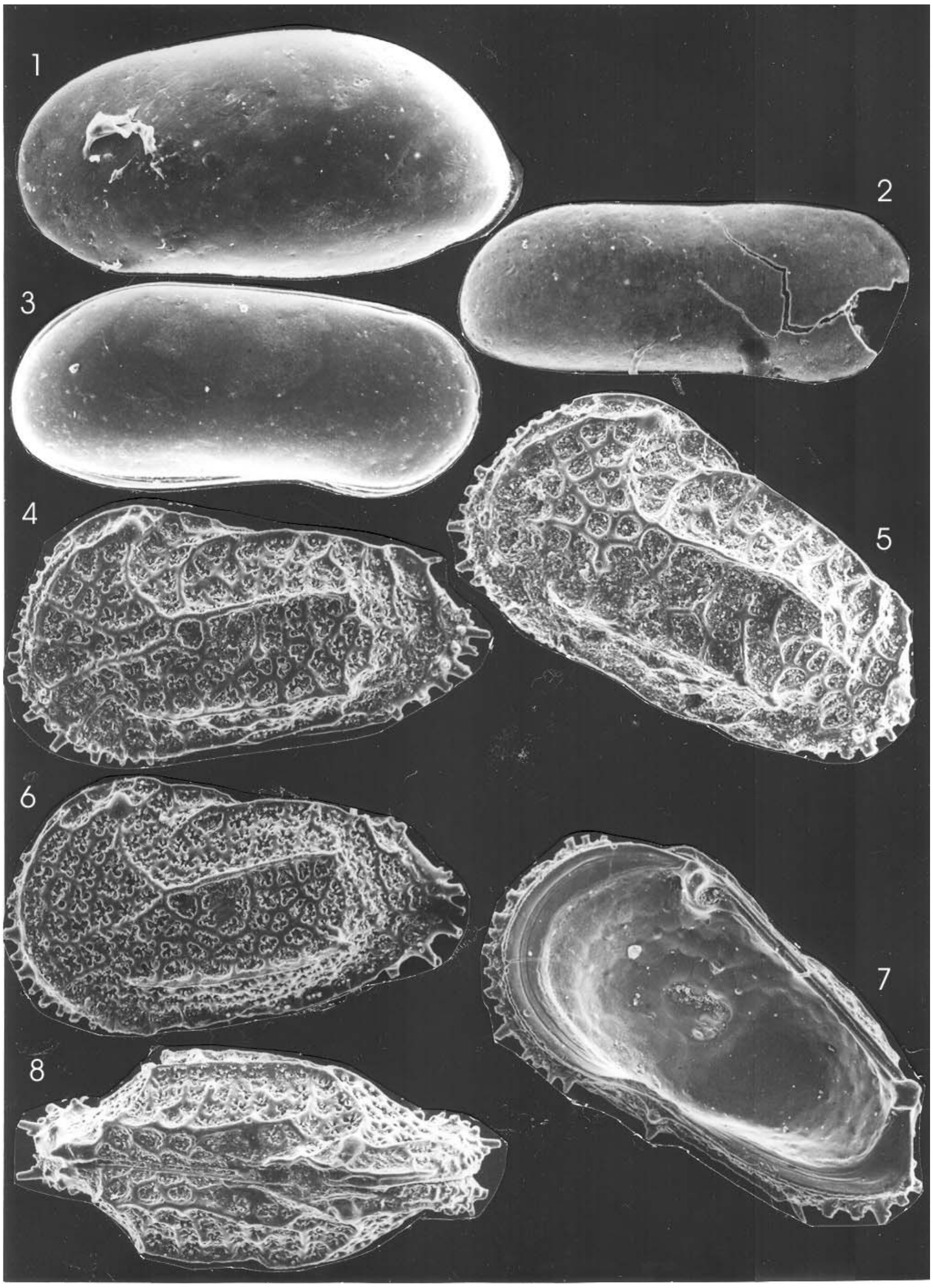


Plate 16

Fig. 1. *Costa hermi* WITT, 1967.
Left valve. 100x. Eger, Wind brickyard borehole, 4.4–4.6 m.

Figs 2–7. *Pterygocythereis ceratoptera* (BOSQUET, 1852).
Fig. 2. Right valve. 60x. Eger, Wind brickyard borehole, 16.8–17.2 m.
Fig. 3. Left valve. 60x. Piliscsaba–3 borehole, 164.0–165.0 m.
Fig. 4. Right valve. 60x. Piliscsaba–2 borehole, 373.8–374.8 m.
Fig. 5. Left valve. 68x. Eger, Wind brickyard borehole 5.4–5.7 m/c.
Fig. 6. Left valve. Sárisáp–117 borehole, 27.0 m.
Fig. 7. Left valve. 53x. Csákvár–34 borehole, 297.7–285.9 m.

Fig. 8. *Pterygocythereis retinodosa* OERTLI, 1956.
Left valve. 70x. Alcsútdoboz–3 borehole, 170.0 m.

Plate 16

Plate 17

Figs 1–6. *Henryhowella asperrima* (REUSS, 1850).

Fig. 1. Left valve. 80x. Eger, Wind brickyard borehole, 4.4–4.6 m.

Fig. 2. Left valve. 68x. Zádorfalva outcrop.

Fig. 3. Left valve 80x. Eger, Wind brickyard borehole, 33.9–34.1 m.

Fig. 4. Left valve. 75x. Eger, Wind brickyard borehole 10.3–10.9 m.

Fig. 5. Inside of the right valve. 76x. Eger, Wind brickyard borehole, 6.4–6.6 m.

Fig. 6. Left valve. 95x. Eger, Wind brickyard borehole, 5.5–5.7 m.

Figs 7–8. *Leguminocythereis scrobiculata* VON MÜNSTER, 1830.

Fig. 7. Inside of the right valve. 48x. Csákvár–34 borehole, 308–9–324.0 m.

Fig. 8. Carapace from the dorsal side. 47x. Csákvár–34 borehole, 308.9–324.0 m.

Plate 17

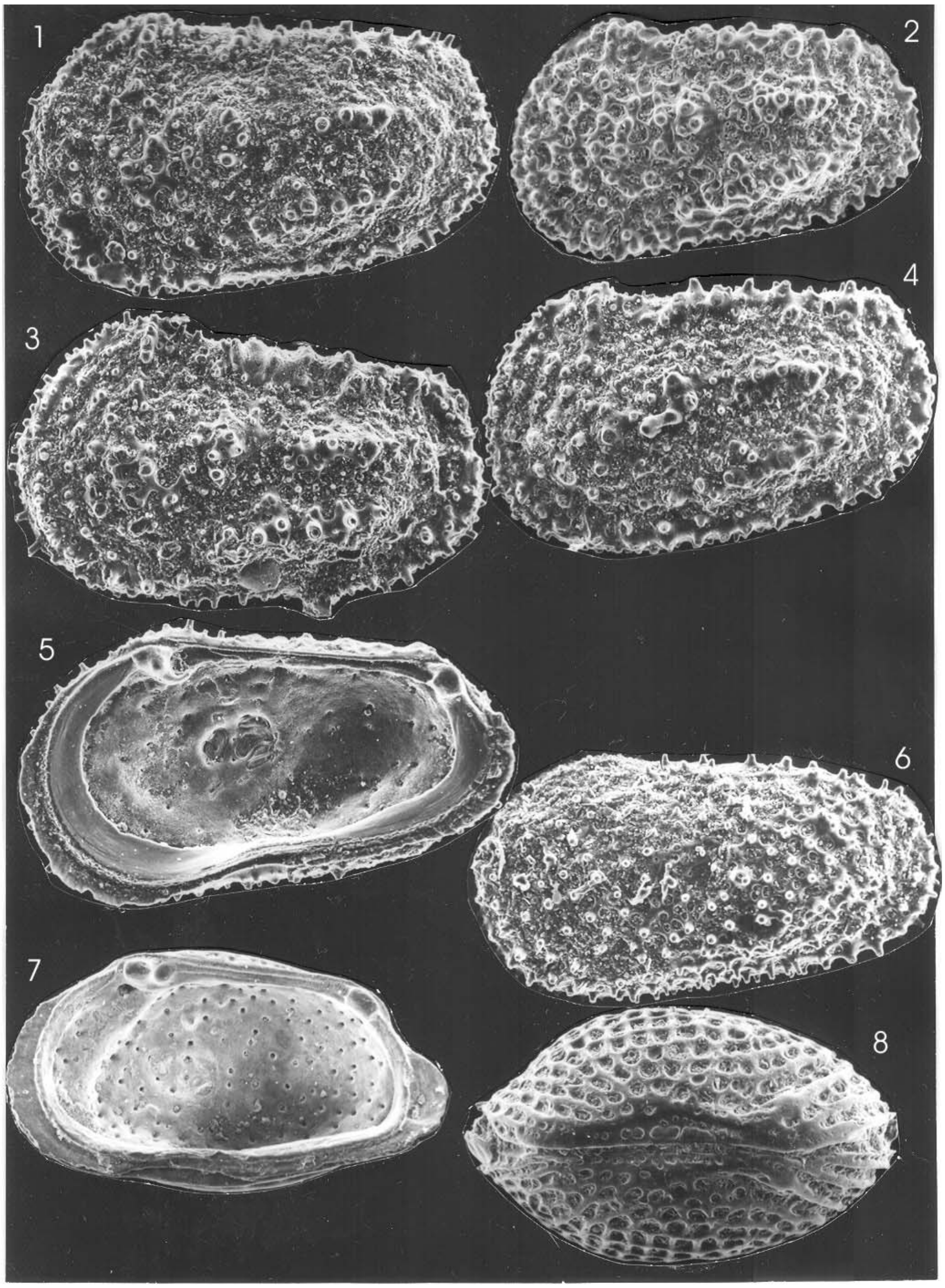


Plate 18

Figs 1–2. *Leguminocythereis scrobiculata* von Münster, 1830.
Fig. 1. Right valve. 43x. Csákvár–34 borehole, 308.5–308.9 m.
Fig. 2. Right valve. 45x. Csákvár–34 borehole, 308.9–324.0 m.

Figs 3–5. *Legumiinicythereis* ex gr. *sorneana* Oertli, 1956.
Fig. 3. Right valve. 70x. Szentendre–2 borehole, 84.5–86.0 m.
Fig. 4. Inside of the left valve. 70x. Szentendre–2 borehole, 84.5–86.0 m.
Fig. 5. Right valve. 70x. Szentendre–2 borehole 27.7–30.4 m.

Figs 6–8. *Leguminocythereis subtiliclatrata* n. sp.
Fig. 6. Left valve, Holotypus, Szentendre–2 borehole, 17.8–18.5 m.
Fig. 7. Inside of the right valve. 65x. Szentendre–2 borehole 18.5–19.5 m.
Fig. 8. Carapace from the dorsal side. 63x. Szentendre–2 borehole, 17–5–18.5 m.

Plate 18

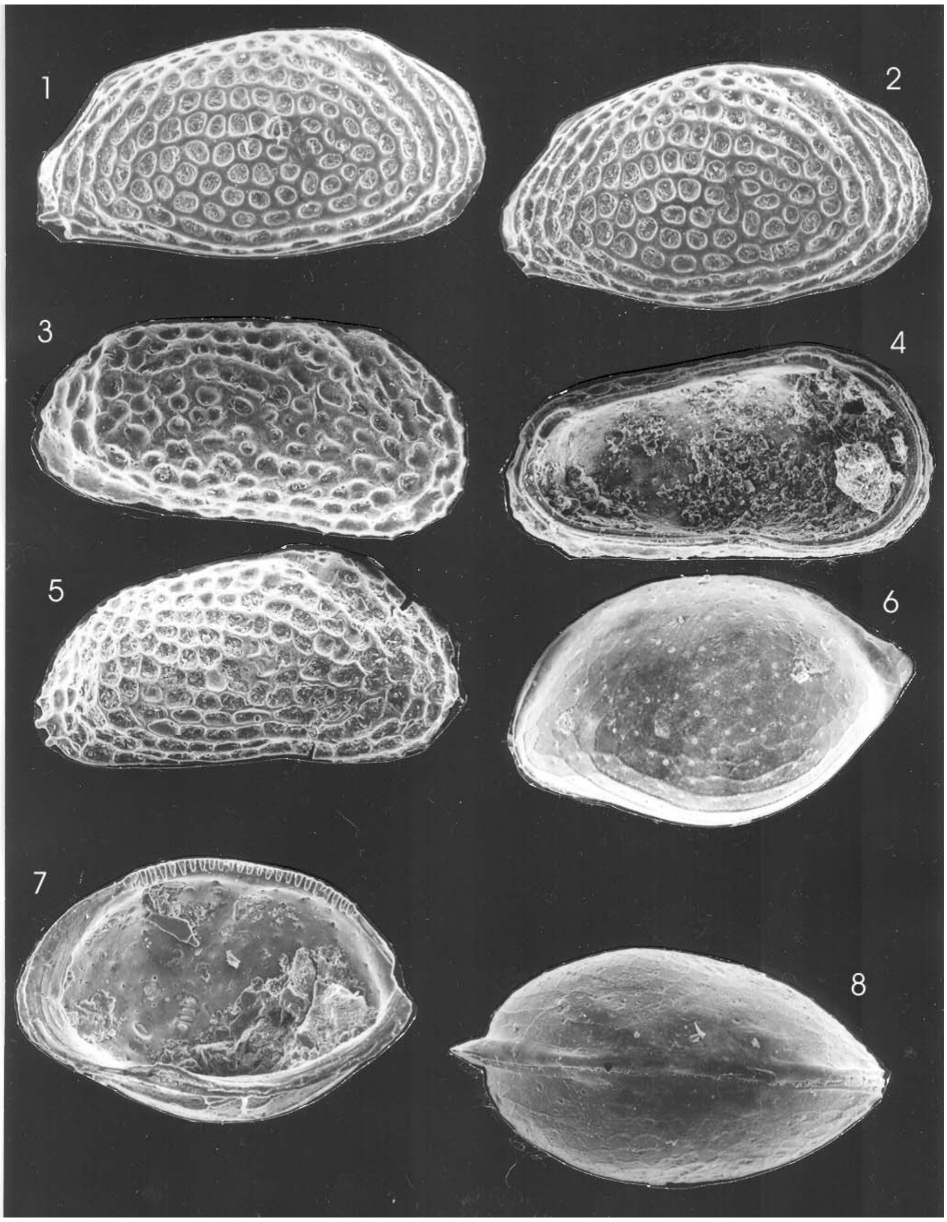


Plate 19

Figs 1–6. *Murrayina gibberula* (PURI, 1953).

Fig. 1. Inside of the left valve. 75x. Szentendre–2 borehole 20.5–21.5 m.
Fig. 2. Left valve. 75x. Alcsútdoboz–3 borehole, 336.0 m.
Fig. 3. Left valve. 75x. Alcsútdoboz–3 borehole 164.0 m.
Fig. 4. Right valve. 70x. Alcsútdoboz–3 borehole 20.5–21.5 m.
Fig. 5. Right valve. 72x. Szentendre–2 borehole 19.5–20.5 m.
Fig. 6. Left valve. 75x. Szentendre–2 borehole 84.5–86.0 m.

Fig. 7. *Mulellerina latimarginata* (SPEYER, 1863), Sample 11.

Fig. 8. *Aurila*? sp. 1. Left valve. 80x. Eger, Wind brickyard borehole, 34.3–34.6 m.

Plate 19

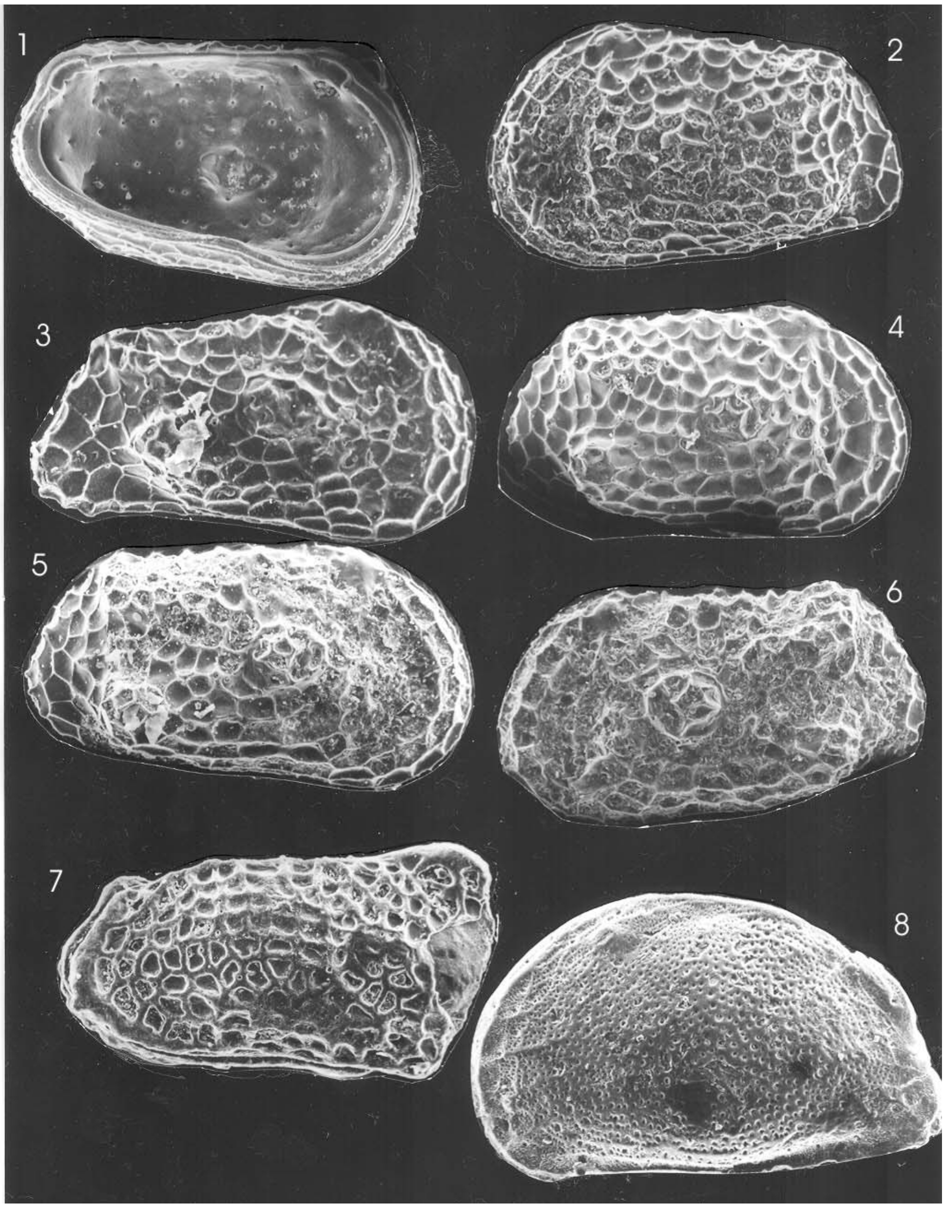


Plate 20

Fig. 1. *Pokornyella* ? sp. 1. Right valve. 82x. Eger, Wind brickyard borehole, 33.4–33.9 m.

Fig. 2. *Pokornyella*? sp. 2. Right valve. 50x. Csákvár–34 borehole, 184.4–185.2 m.

Figs 3–6. *Hornibrookella confluens confluens* (REUSS, 1856).
Fig. 3. Inside of the left valve. 68x. Szentendre–2 borehole, 39.7–41.0 m.
Fig. 4. Left valve. 68x. Szentendre–2 borehole, 39.7–41.0 m.
Fig. 5. Right valve. 75x. Szentendre–2 borehole, 39.7–41.0 m.
Fig. 6. Right valve. 72x. Szentendre–2 borehole 27.7–30.7 m.

Fig 7. *Hornibrookella confluens xeniae* MOOS, 1963 sensu Brestenská, 1975.
Right valve. 65x. Csákvár–34 borehole 308.5–308.9 m.

Fig. 8. *Bosquetina zalanyii* BRESTENSKÁ, 1975.
Left valve. 60x. Eger, Wind brickyard borehole, 6.1–6.4 m/b.

Plate 20

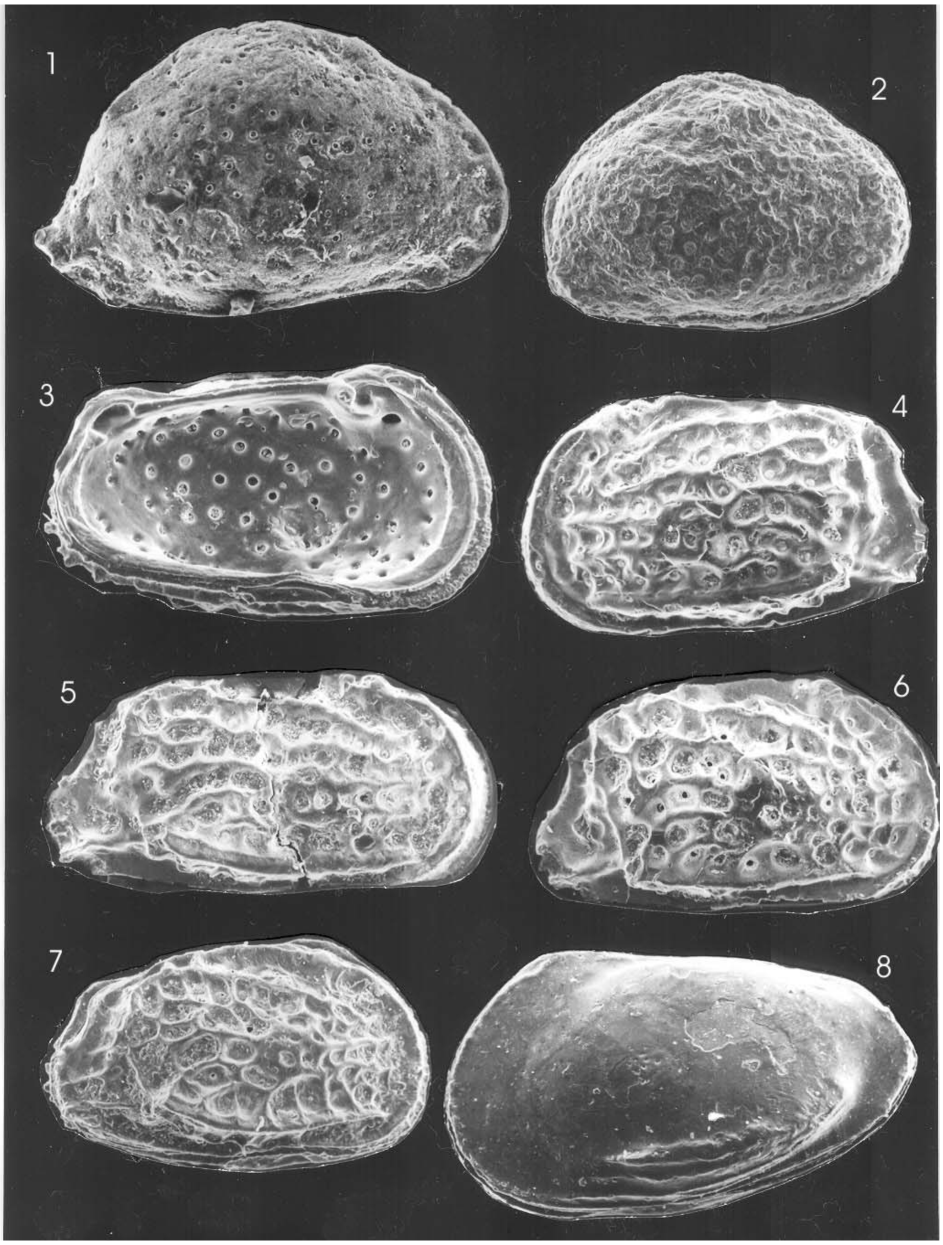


Plate 21

Fig. 1. *Bosquetina zalanyii* BRESTENSKÁ, 1975.

Figs 2–3. *Bosquetina kisegedense* MONOSTORI, 2004.
Fig. 2. Left valve. 60x. Eger ,Wind brickyard borehole 10.9–11.1 m.
Fig. 3. Fragment of the right valve. 70x. Eger section sample 34.

Figs 4–5. *Bosquetina macroreticulata* n. sp.
Fig. 4. Left valve. Eger, Wind brickyard borehole 5.7–6.1 m. Holotype.
Fig. 5. Left valve. Eger section, Sample 34.

Figs 6–8. *Occultocythereis repelica* MONOSTORI, 1982.
Fig. 6. Right valve. 108x. Eger, Wind brickyard borehole 5.4–5.7 m/c.
Fig. 7. Right valve. 110x. Eger, Wind brickyard borehole 34.1–34.3 m.
Fig. 8. Left valve. 105x. Eger, Wind brickyard borehole 34.6–34.8 m.

Plate 21

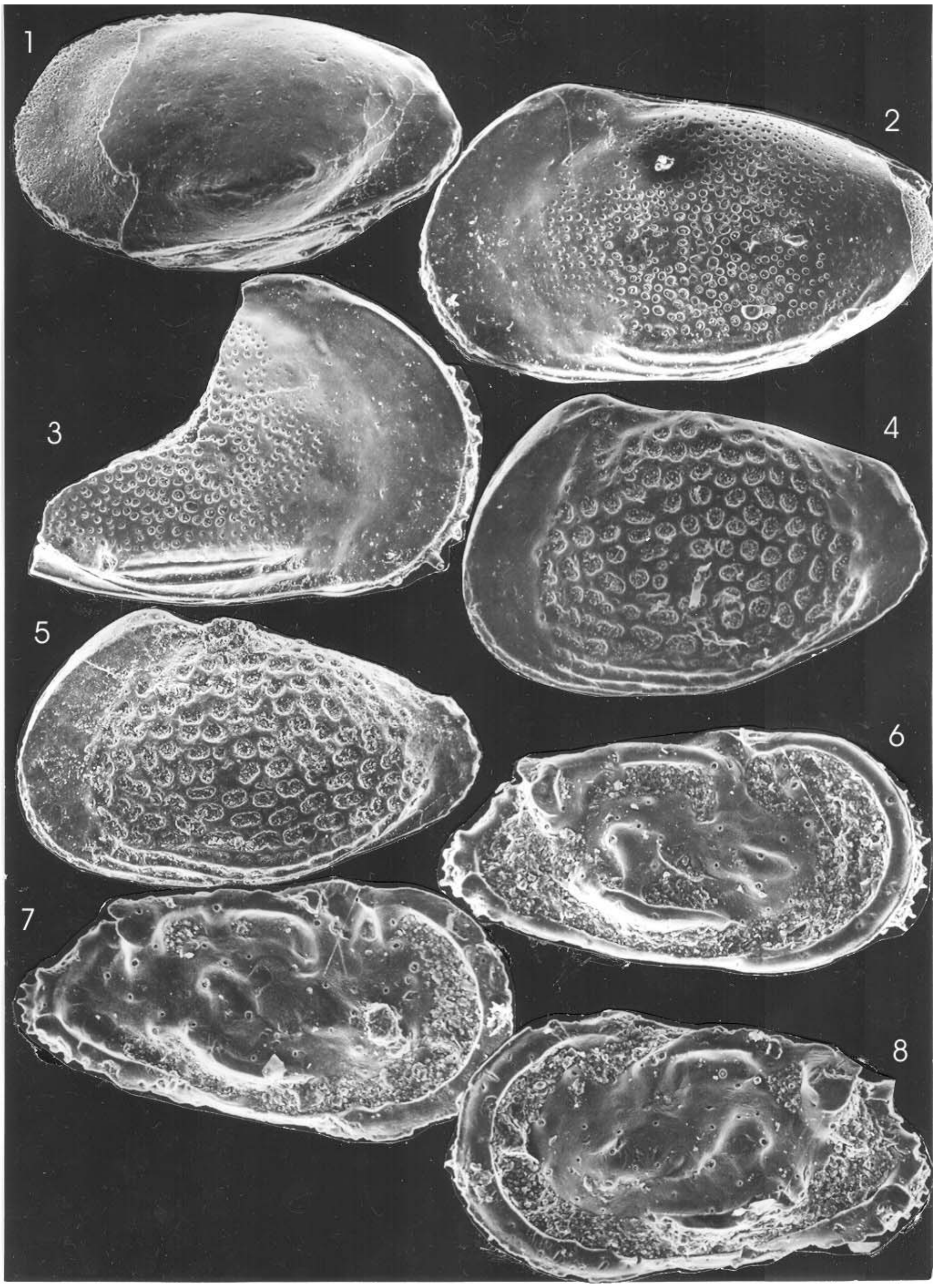


Plate 22

Figs 1–6. *Cytheretta (Flexus) plicata* (VON MÜNSTER, 1830).

Fig. 1. Left valve. 75x. Csákvár–34 borehole, 157.0–159.2 m.

Fig. 2. Carapace from the dorsal side. 75x. Csákvár–34 borehole, 308.9–324.0 m.

Fig. 3. Right valve. 75x. Csákvár–34 borehole, 308.9–324.0 m.

Fig. 4. Right valve. 80x. Csákvár–34 borehole, 308.9–324.0 m.

Fig. 5. Left valve. 70x. Csákvár–34 borehole 308.9–324.0 m.

Fig. 6. Right valve. 68x. Csákvár–34 borehole. 38.9–324.0 m.

Figs 7–8. *Cytheretta posticalis* TRIEBEL, 1952..

Fig. 7. Left valve. 69x. Szentendre–2 borehole, 68.0–71.0 m.

Fig. 8. Carapace from the dorsal side. 68x. Szentendre–2 borehole, 68.0–71. 0 m.

Plate 22

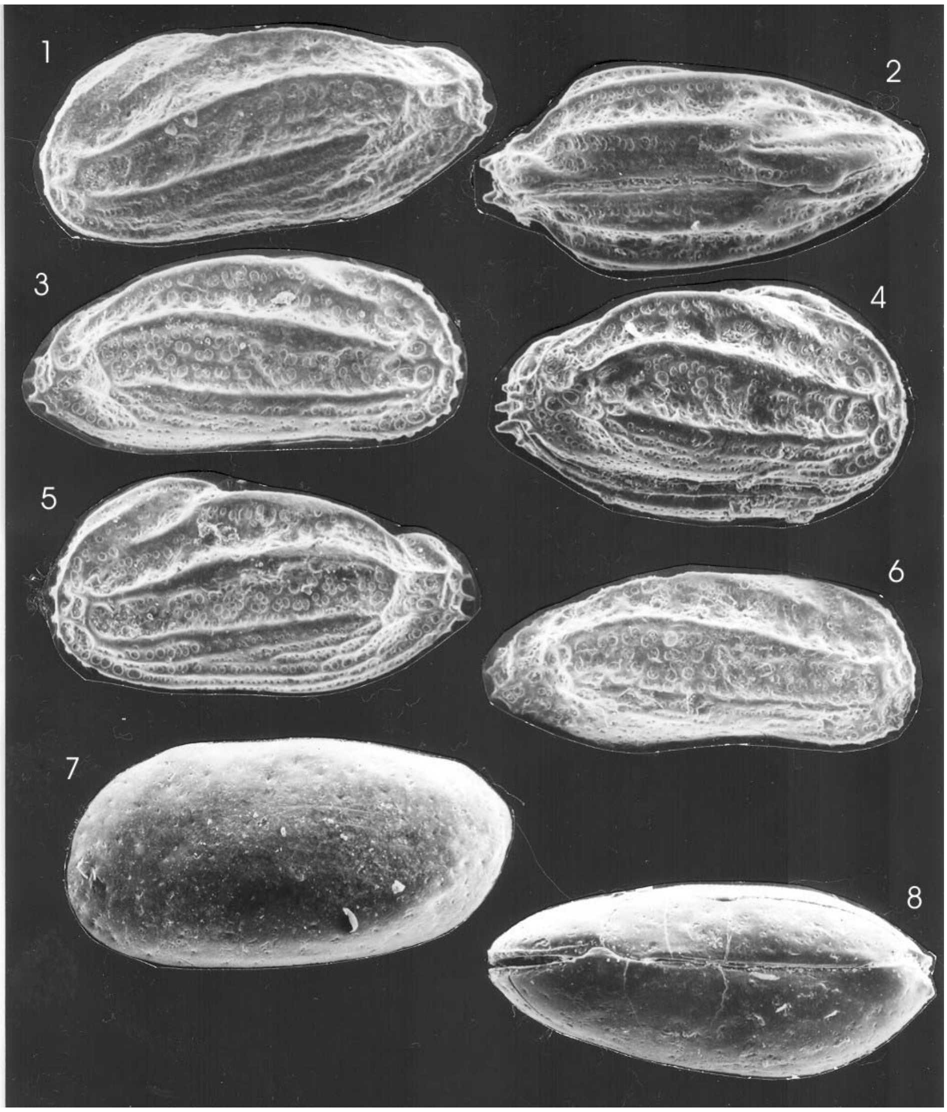


Plate 23

Figs 1–3. *Cytheretta posticalis* TRIEBEL, 1952.
Fig. 1. Left valve. 78x. Szentendre–2 borehole, 68.0–71.0 m.
Fig. 2. Inside of the right valve. 78x. Szentendre–2 borehole 68.0–71.0 m.
Fig. 3. Left valve. 62x. Csákvár–34 borehole, 308.5–308.9 m.

Figs 4–6. *Cytheretta sagri* DELTEL, 1964.
Fig. 4. Right valve. 67x. Csákvár–34 borehole 221.3–221.5 m.
Fig. 5. Right valve. 60x. Csákvár–34 borehole 308.5–308.9 m.
Fig. 6. Right valve. 65x. Csákvár–34 borehole, 308.5–308.9 m.

Figs 7–8. *Cytheretta tenuistriata* (REUSS, 1853).
Fig. 7. Left valve. 75x. Szentendre–2 borehole 71.0–72.0 m.
Fig. 8. Left valve. 63x. Csákvár–34 borehole 308.5–308.9 m.

Plate 23

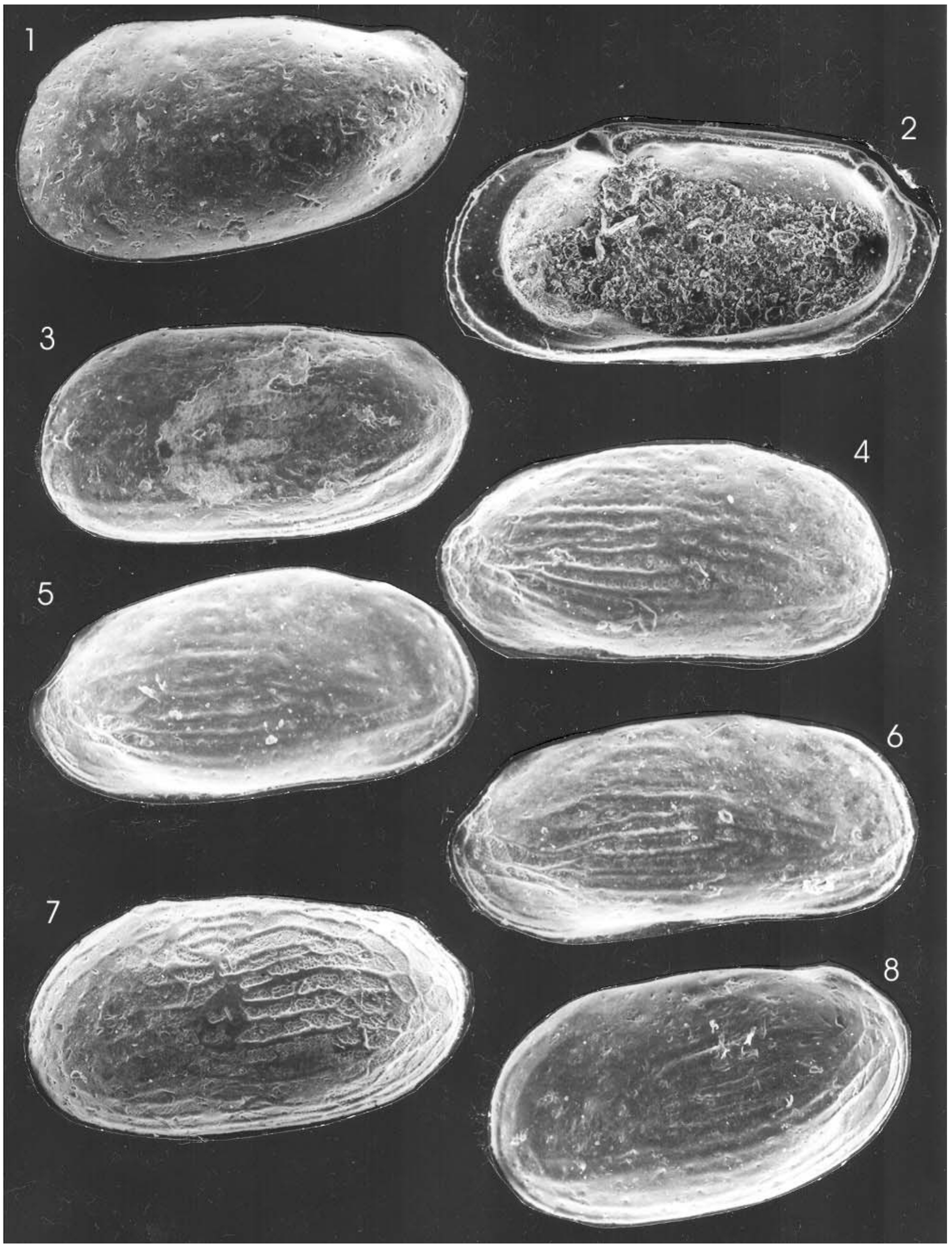


Plate 24

Fig. 1. *Cytheretta tenuistriata* (REUSS, 1853).
Left valve. 65x. Csákvár–34 borehole 308.5–308.9 m.

Figs 2–4. *Cytheretta* ex gr. *tenuistriata* (REUSS, 1853).
Fig. 2. Left valve. 70x. Alcsútdoboz–3 borehole–2, 23.0 m.
Fig. 3. Right valve. 70x. Csákvár–34 borehole 308.5–308.9 m.
Fig. 4. Left valve. 75x. Csákvár–34 borehole 221.3–221.5 m.

Figs 5–7. *Cytheretta variabilis* OERTLI, 1956.
Fig. 5. Inside of the right valve. 63x. Úny outcrop.
Fig. 6. Left valve. 65x. Sárisáp–112 borehole 26.5 m.
Fig. 7. Left valve. 55x. Piliscsaba–3 borehole 164.0–165.0 m.

Fig. 8. *Cytheretta* sp. 1.
Left valve. 58x. Szentendre–2 borehole 86.0–87.0 m.

Plate 24

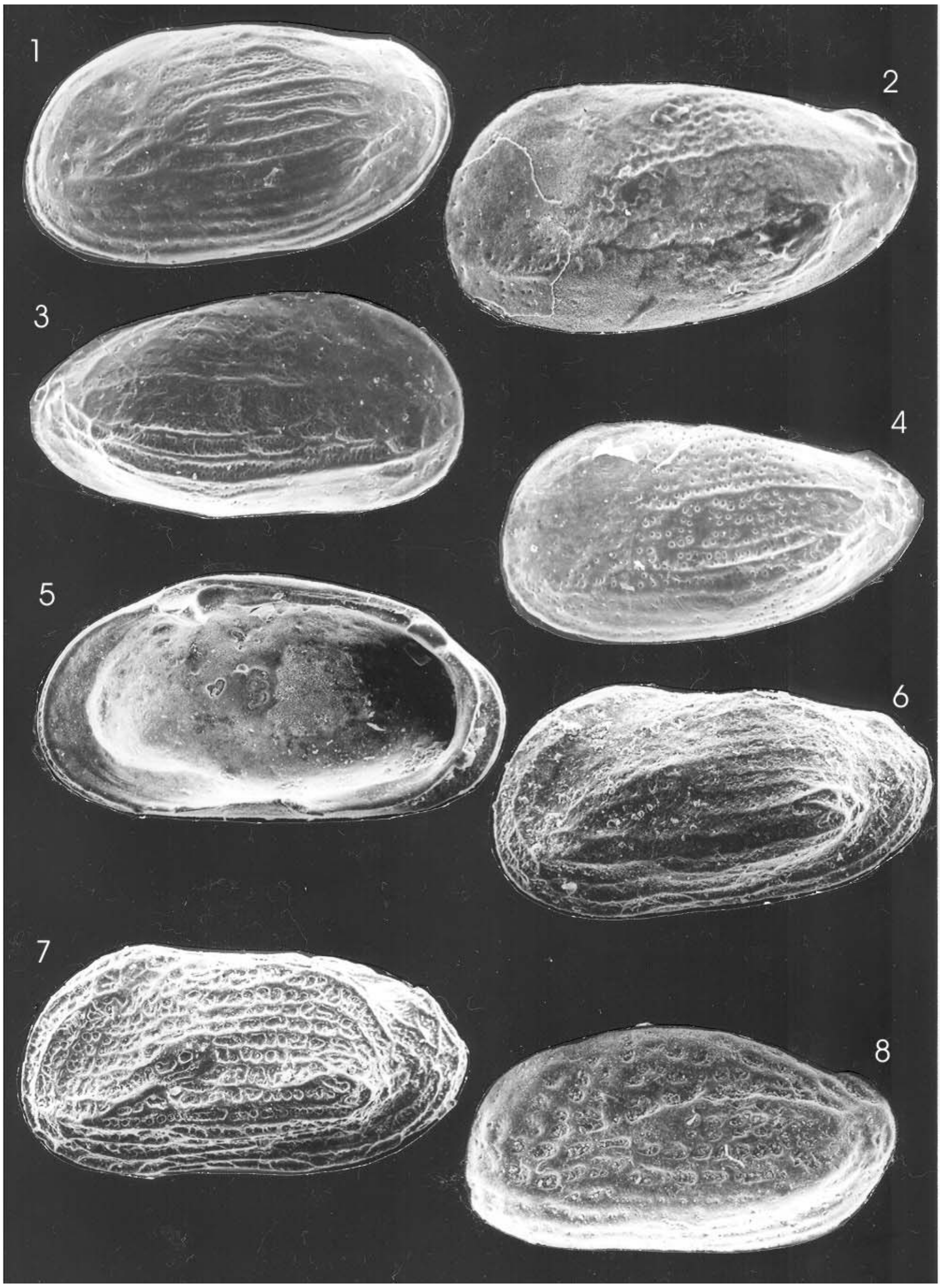


Plate 25

Figs 1–2. *Loxoconcha carinata* LIENENKLAUS, 1894.

Fig. 1. Left valve. 138x. Eger outcrop, sample 24.

Fig. 2. Right valve. 160x. Eger outcrop, sample 24.

Figs 3–7. *Loxoconcha favata* KUIPER, 1918.

Fig. 3. Inside of the left valve. 100x. Alcsútdoboz–3 borehole 170.0 m.

Fig. 4. Right valve. 100x. Piliscsaba–2 borehole 373.8–374.8 m.

Fig. 5. Carapaace from the dorsal side. 100x. Szentendre–2 borhole 19.5–20.5 m.

Fig. 6. Left valve. 92x. Szentendre–2 borehole 20.5–21.5 m.

Fig. 7. Right valve. 85x. Piliscsaba–3 borehole 98.0–100.0 m.

Plate 25

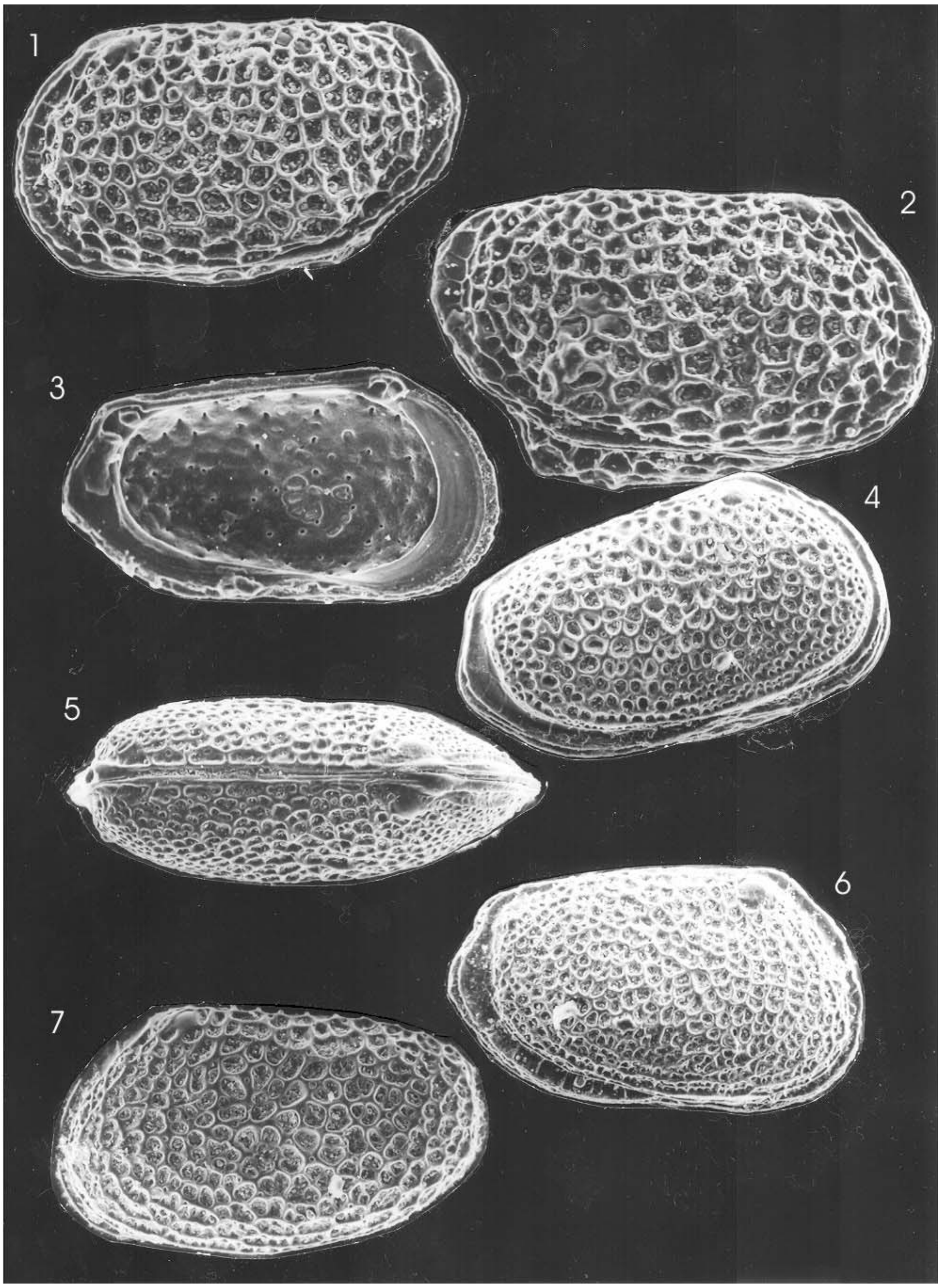


Plate 26

Fig. 1. *Loxoconcha subovata* (MÜNSTER, 1830) sensu BRESTENSKÁ, 1975.
Left valve. 140x.

Fig. 2. *Loxoconcha* (*Loxocorniculum*) sp. 1.
Left valve. 135x. Eger, Wind brickyard borehole 33.4–33.9 m.

Fig. 3. *Paracytheridea* cf. *gradata* (BOSQUET, 1852).
Right valve. 82x. Eger, Wind brickyard borehole 33.9–34.1 m.

Figs 4–5. *Eucytherura dentata* LIENENKLAUS, 1905.
Fig. 4. Left valve. 110x. Ózd–Szentsimon sutcrop.
Fig. 5. Carapace from the dorsal side. 120x. Ózd–Szentsimon sutcrop.

Figs 6–7. *Eucytherura* ex gr. *macropora* LIENENKLAUS, 1894.
Fig. 6. Right valve. 110x. Eger, Wind brickyard borehole, 33.9–34.1 m.
Fig. 7. Left valve. 105x. Eger, Wind brickyard borehole, 34.1–34.3 m.

Fig. 8. *Cytheropteron* sp.
Left valve. 140x. Eger, Wind brickyard borehole 33.9–34.1 m.

Plate 26

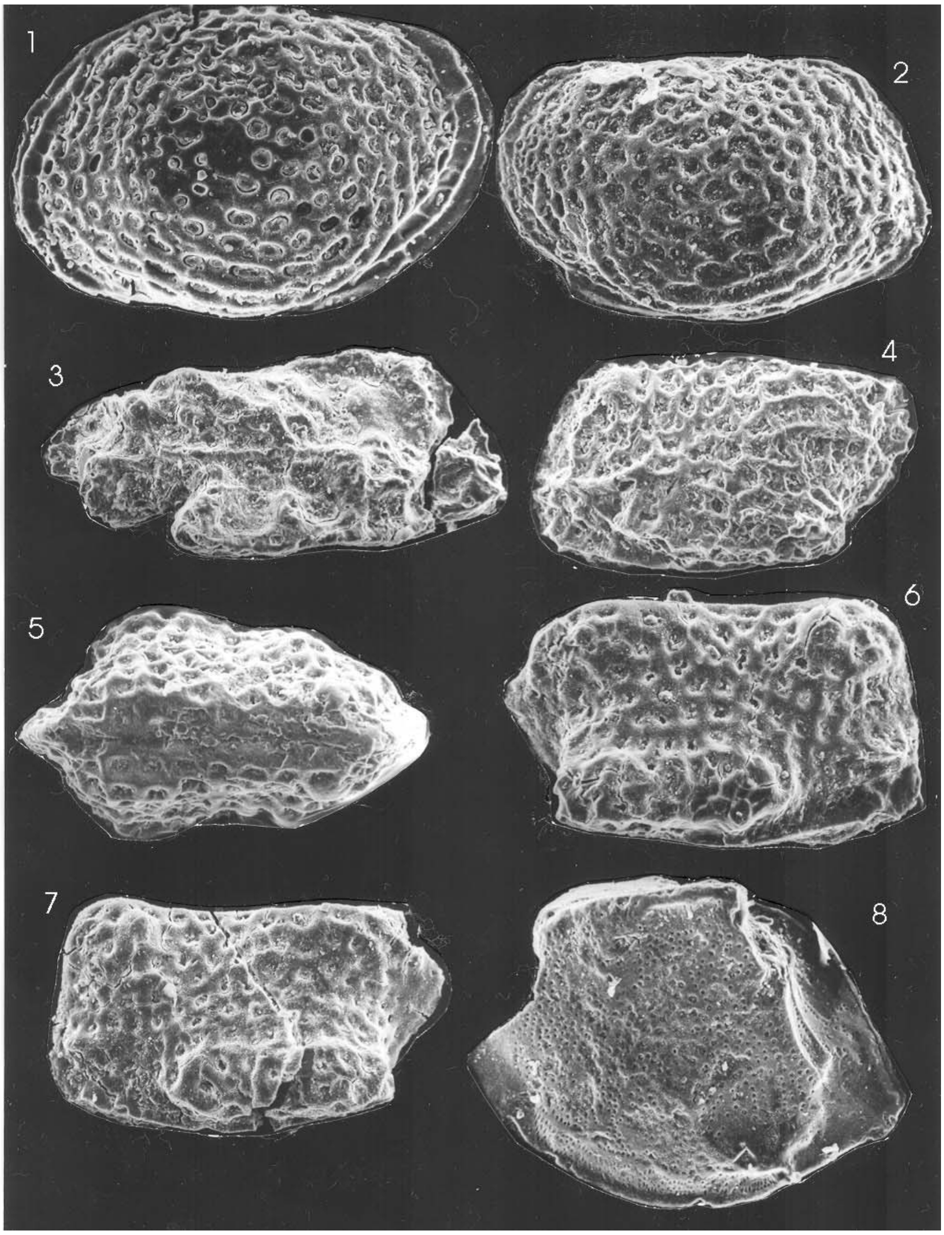


Plate 27

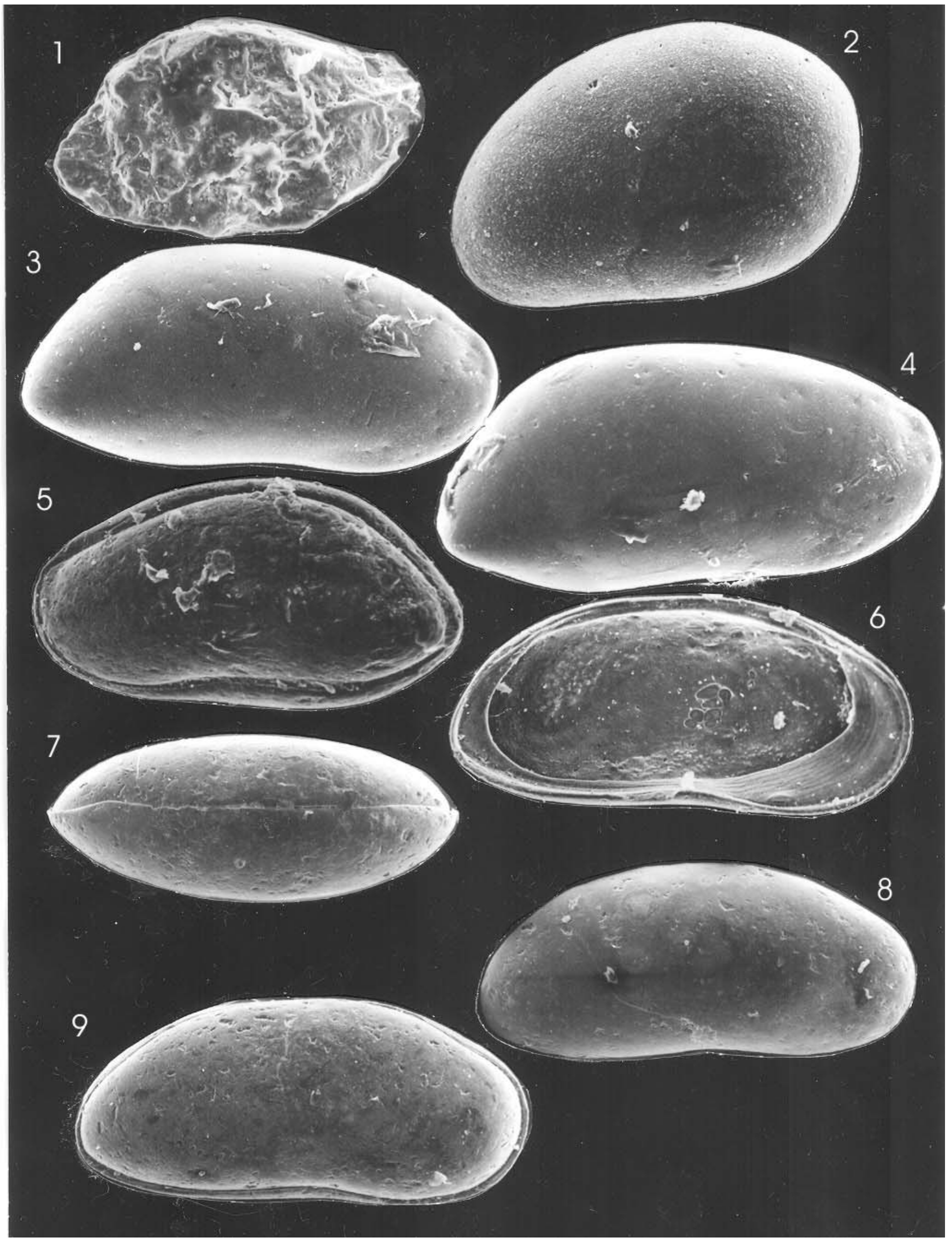
Fig. 1. *Kangarina*? sp.
Right valve. 125x. Ózd–Szentsimon outcrop.

Fig. 2. *Xestoleberis obtusa* LIENENKLAUS, 1900. Left valve. 133x. Eger, Wind brickyard borehole 12.0–12.6 m.

Figs 3–5. *Protoargilloecia* ex gr. *angulata* DELTEL, 1961
Fig. 3. Right valve. 145x. Eger, Wind brickyard borehole 10.3–10.9 m.
Fig. 4. Right valve. 140x. Eger, Wind brickyard borehole 10.3–10.9 m.
Fig. 5. Carapace from the left valve. 95x. Eger, Wind brickyard 5/1 borehole, 35.0 m.

Figs 6–9. *Phlyctenophora grosdidieri* STCHÉPINSKY, 1963.
Fig. 6. Inside of the left valve. 65x. Alcsútdoboz–3 borehole 199.0 m.
Fig. 7. Carapace from the dorsal side. 62x. Szentendre–2 borehole 68.0–71.0 m.
Fig. 8. Right valve. 65x. Szentendre–2 borehole 17.5–18.5 m.
Fig. 9. Carapace from the right valve. 60x. Szentendre–2 borehole 68.0–71.0 m.

Plate 27



Geologica Pannonica 36, 101—151 (2008) Budapest

Sarmatian (Middle Miocene) ostracod fauna from the Zsámbék Basin, Hungary

Emőke TÓTH[1]

(with 2 figures, 1 table and 10 plates)

Abstract

Well preserved ostracod fauna derives from three boreholes of the Zsámbék Basin, from a small subbasin of the Central Paratethys. These drillings penetrated almost complete Sarmatian succession. Detailed descriptions and illustrations of the following 25 ostracoda taxa are provided: *Cnestocythere* aff. *truncata* (REUSS), *Amnicythere tenuis* (REUSS), *Amnicythere* (?) sp., *Euxinocythere (E.) diafana* (STANCHEVA), *E.* (*E.*) *naca* (MÉHES), *E.* (*E.*) *praebosqueti* (SUZIN), *Callistocythere egregia* (MÉHES), *C. incostata* PIETRZENIUK, *C. postvallata* PIETRZENIUK, *Cyamocytheridea dérii* (ZALÁNYI), *C. leptostigma leptostigma* (REUSS), *Hemicyprideis dacica dacica* (HÉJJAS), *Cytheridea hungarica* ZALÁNYI, *Miocyprideis janoscheki* KOLLMANN, *M. sarmatica* (ZALÁNYI), *Hemicytheria omphalodes* (REUSS), *Aurila mehesi* (ZALÁNYI), *A. merita* (ZALÁNYI), *A. notata* (REUSS), *Senesia vadaszi* (ZALÁNYI), *Loxoconcha kochi* MÉHES, *L. porosa* MÉHES, *L.* ex. gr. *punctatella* (REUSS), *Loxocorniculum hastatum* (REUSS), *Xestoleberis fuscata* SCHNEIDER. The studied Sarmatian ostracod fauna is most similar to that from the Vienna Basin. In general low diversity and great abundance of the r-strategist specimens are characteristic of both Sarmatian communities. Furthermore the representatives of Leptocytheridae, Cytherideidae and Hemicytheridae families are dominant in both area.

Introduction

The uplift of the Dinarids during the Middle Miocene caused a distinct change in the evolution of the Paratethys. This geodynamic process interrupted or limited the connection between the Central-Paratethys and the Mediterranean, but the seaway between the Eastern and Central Paratethys existed until the end of Sarmatian. Present days there is still a discussion about the changes of environmental factors in the basin of the Central Paratethys that caused faunal change at the Badenian/Sarmatian boundary. Almost the complete polyhaline fauna and microflora of the Late Badenian were eliminated, only few taxa persisted in the Sarmatian. The primary aim of this work is to give a detailed systematical description of the ostracods which is studied in the Central Paratethys, exactly in the Pannonian Basin. Detailed taxonomic work on the Hungarian Sarmatian ostracods has not been published since the first descriptions accomplished by

[1] Department of Palaeontology, Eötvös University, P.O. Box 120, H–1518 Budapest, Hungary.
E-mail: cypridina1981@yahoo.com

ZALÁNYI in 1913 and my previous paper on the Lower Sarmatian ostracods from Budapest (TÓTH, 2004). Moreover a comparison with the other parts of the Central Paratethys are given on the basis of the fauna composition. For the present studies, the ostracod fauna from three boreholes, from the Zsámbék Basin (small subbasin of the Pannonian Basin) was collected.

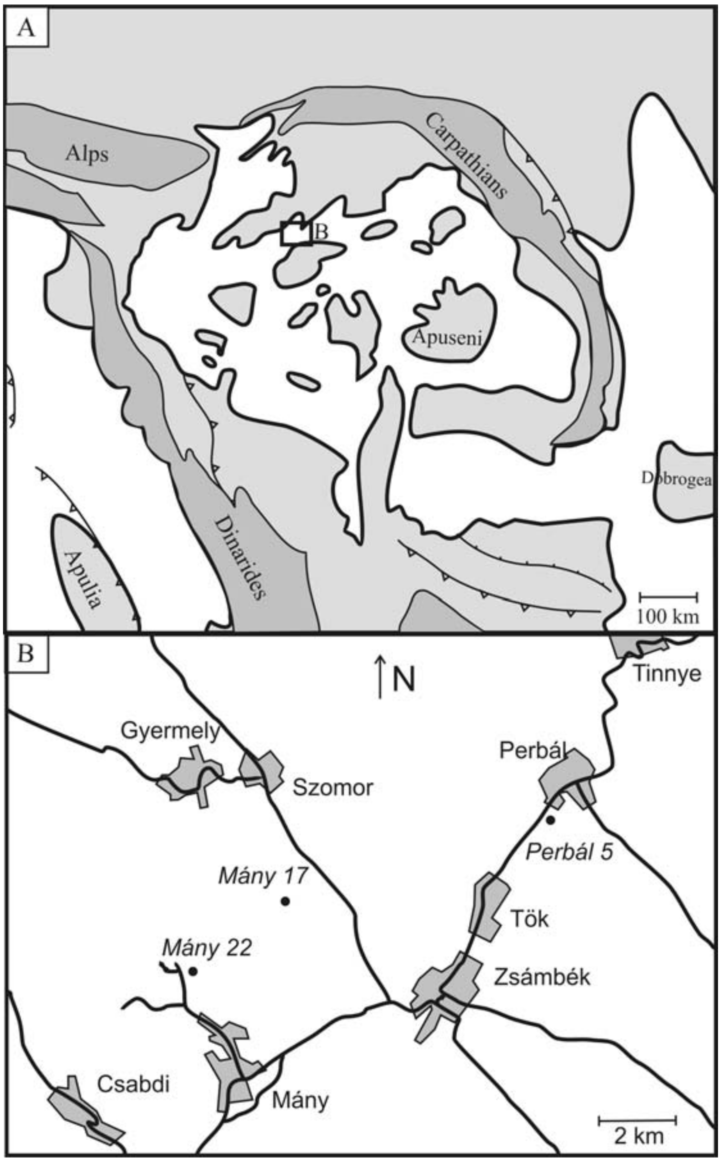


Fig. 1. Palaeogeographical map of the Central Paratethys based on POPOV et al. (2004) with the location of the Zsámbék Basin (A). The insert map (B) shows the position of the boreholes in the studied basin.

Previous work

First descriptions and illustrations of the Sarmatian ostracods were published by REUSS (1850) from the Vienna Basin. The great pioneers like MÉHES (1908) and ZALÁNYI (1913, 1929, 1956, 1959) studied Sarmatian ostracods from the region of Transylvania and Hungary. These taxonomic works are very important in the recognition of the Sarmatian ostracods, since they described numerous new species. Further studies from Hungary have been made by SZÉLES (1963), PIETRZENIUK (1973), SZUROMI-KORECZ, SZEGŐ (2001) and TÓTH (2004). Some papers including descriptions and/or illustrations of the Sarmatian ostracods applied to the other regions of the Central Paratethys, i.e. from Serbia and Croatia (KRSTIĆ, 1959; MITROVIĆ, RUNDIĆ, 1991), from Poland (CHOCZEWSKI, 1956; SZCZECHURA, 2000). From the Vienna Basin numerous studies dealt with the Sarmatian fauna: REUSS (1850), KOLLMANN (1958, 1971), CERNAJSEK (1971, 1972, 1974), GROSS et al. (2006). The Sarmatian ostracods from Slovakia and from the Czech Republic were investigated by DORNIČ, KHEIL (1963), JIŘIČEK (1974), ZELENKA (1989) and ZLINSKÁ, FORDINÁL (1994, 1995) and FORDINÁL et al. (2006).

Moreover several authors made ostracod zonations for the Sarmatian in the region of the Central Paratethys (JIŘIČEK, 1983; JIŘIČEK, RIHA, 1991; ZELENKA, 1990).

Material and methods

The investigated material is derived from three boreholes (Mány–17, Mány–22, Perbál–5) of Zsámbék Basin (20 km to west from Budapest) and they penetrated almost complete Sarmatian successions. Localities are shown in Fig. 1.

Sarmatian layers are underlain by the Badenian strata with similar lithology, but with sharp changes in biofacies as attested by a strong decrease in the diversity of the macro- and microfauna. The Sarmatian successions are overlain in Mány–22 and Mány–17 boreholes by Pleistocene, while in Perbál–5 boreholes by Lower Pannonian deposits. The lithology of the Sarmatian layers is varied; in the lower part of the Sarmatian series there are mainly grey, greenes-grey mollusc-bearing clays, clay marls, with intercalations of sandstones and calcareous marls. Moreover the clay marls contain diatomite, alginite and bentonite intercalations (SAS, 1977). This series is placed in the Kozardi Formation (HÁMOR, 1997). The upper part of the Sarmatian succession belongs to the Tinnyei Formation (HÁMOR, IVANCSICS, 1997) and consists of calcareous sandstones and oolithic limestones. There are sand infiltrations between these layers (Fig. 2).

In each borehole three foraminiferal zones (E. reginum Zone, E. hauerinum Zone, S. austriaca Zone) could be distinguished (GÖRÖG, 1992). The present study was based on 122 samples from 3 boreholes containing determinable ostracod fauna. For the paleontological analyses about 100 g of the air-dried sediments has been soaked in a dilute solution of hydrogen peroxide. Ostracods were picked and identified using the usual method for fossil ostracods. The terminology of the descriptions are following MORKHOVEN (1962). In this study detailed descriptions are not given for those species which were described in the previous work of the author (TÓTH, 2004). The photos were made by scanning electron microscope.

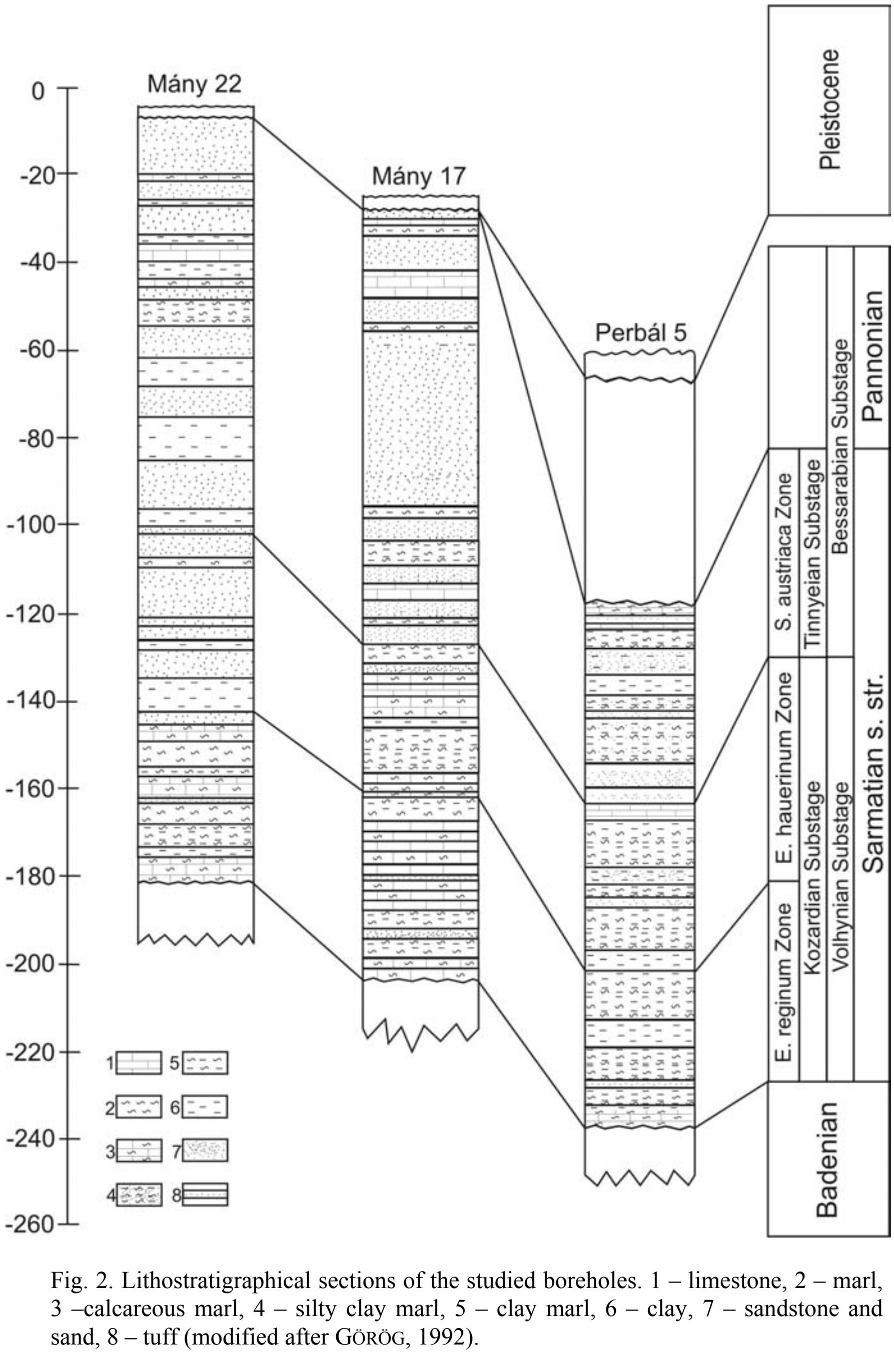


Fig. 2. Lithostratigraphical sections of the studied boreholes. 1 – limestone, 2 – marl, 3 –calcareous marl, 4 – silty clay marl, 5 – clay marl, 6 – clay, 7 – sandstone and sand, 8 – tuff (modified after GÖRÖG, 1992).

Tab. 1. Stratigraphical distribution of the ostracod species from the Zsámbék Basin in the Sarmatian.

Species of ostracod	*E. reginum* Zone	*E. hauerinum* Zone	*S. austriaca* Zone
Cnestocythere aff. *truncata* (REUSS, 1850)			x
Amnicythere sp.		x	x
Amnicythere tenuis (REUSS)	x	x	x
Euxinocythere (E.) diafana (STANCHEVA)	x	x	x
Euxinocythere (E.) naca (MÉHES)			x
Euxinocythere (E.) praebosqueti (SUZIN)			x
Callistocythere egregia (MÉHES)	x	x	x
Callistocythere incostata PIETRZENIUK	x		
Callistocythere postvallata PIETRZENIUK	x		
Cyamocytheridea dérii (ZALÁNYI, 1913)			x
Cyamocytheridea leptostigma leptostigma (REUSS)			x
Hemicyprideis dacica dacica (HÉJJAS)	x	x?	x
Cytheridea hungarica ZALÁNYI	x		
Miocyprideis janoscheki KOLLMANN			x
Miocyprideis sarmatica (ZALÁNYI)	x		
Hemicytheria omphalodes (REUSS)	x	x	x
Aurila méhesi (ZALÁNYI)	x		
Aurila merita (ZALÁNYI)	x		
Aurila notata (REUSS)		x	x
Senesia vadászi (ZALÁNYI)	x		
Loxoconcha kochi MÉHES			x
Loxoconcha porosa MÉHES		x	x
Loxoconcha ex gr. *punctatella* (REUSS)	x		
Loxocorniculum hastatum (REUSS)	x	x	x
Xestoleberis fuscata SCHNEIDER	x	x	x

Characteristics of the Sarmatian ostracod fauna

The Sarmatian successions from the studied boreholes (Mány–22, Mány–17, Perbál–5) show great abundance of the well preserved ostracods. It seems that this ostracod fauna represents the original biocenosis because the small-sized and large-sized forms coexist. The fauna does not show significant mechanical selection; the juvenile forms generally coexist together the adult forms. From the whole Sarmatian succession 25 ostracod taxons belonging to one order (Podocopida), 5 families (Cytheridae, Leptocytheridae, Cytherideidae, Hemicytheridae, Loxoconchidae, Xestoleberididae) and 13 genera could be distinguished (Tab. 1).

The stratigraphical distribution of the ostracod taxa in the studied sections is shown in Tab. 1. In the lower E. reginum Zone 15, in the E. hauerinum Zone 9 and in the S. austriaca Zone 17 species can be found. Only 6 species occur throughout the whole Sarmatian section. Presumably the species *H. dacica dacica* is also present in the entire Sarmatian succession, however it is rare in the middle zone. 8 species can be observed only in the lower zone, while 7 species are only in the upper foraminiferal zone. Species, which are limited only to the middle zone, have not been found yet, but 3 new species appear in the E. hauerinum Zone.

In the E. reginum Zone among the 15 species three species namely *Aurila mehesi*, *Cytheridea hungarica* and *Senesia vadaszi* are most frequent. The ostracod fauna in the E. hauerinum Zone is less diversified than in the lower zone. In these beds the so-called small-sized ostracods (*Amnicythere, Euxinocythere, Callistocythere, Loxoconcha, Xestoleberis*) became conspicuous beside the *Aurila notata* and *Hemicytheria omphalodes* which also appeared in great number. In some samples *Hemicytheria omphalodes* occurs in great abundance. At the boundary between the E. hauerinum and S. austriaca Zone a pronounced increasing of the diversity of ostracods can be observed. In the latter zone *Aurila notata* become dominant generally; except some samples where *Cyamocytheridea leptostigma leptostigma* is the prevalent species. Few Badenian species being absent in the Lower Sarmatian layers, i. e. *Cyamocytheridea dérii* (i. e. ZORN, 2004, KOLLMANN, 1958), *C. leptostigma leptostigma* (AIELLO, SZCZECHURA, 2004), *Miocyprideis janoscheki* (BRESTENSKÁ, JIŘIČEK, 1978; JIŘIČEK, 1983) occur here.

The forms originated from Lower Miocene (*Callistocythere egregia, Hemicyprideis dacica dacica*, *Hemicytheria omphalodes*, *Senesia vadaszi, Loxoconcha* ex. gr. *punctatella*, *Loxocorniculum hastatum* and *Xestoleberis fuscata*) and the endemic fauna (*Cnestocythere* aff. *truncata*, *Amnicythere* sp., *A. tenuis, Callistocythere incostata*, *Euxinocythere (E.) praebosqueti*, *E. (E.) diafana*, *E. (E.) naca, Cytheridea hungarica*, *Miocyprideis sarmatica*, *Aurila merita, A. mehesi, Loxoconcha kochi, L. porosa*) evolved in the Sarmatian Paratethys are present in the studied ostracod assemblage. Only two species of the Mediterranean (*Hemicyprideis dacica dacica, Loxocorniculum hastatum*) are present in the Sarmatian fauna of the Zsámbék Basin. This fact supports that the connection between the Paratethys and the Mediterranean became very restricted or possibly stopped at Badenian/Sarmatian boundary. The presence of the seaway between the Central Paratethys and Eastern Paratethys during the Sarmatian is confirmed by the studied ostracod fauna. More than half of the determined species are present in both basins of the Paratethys (*Euxinocythere (E.) diafana*, *E. (E.) naca, E. (E.) praebosqueti, Amnicythere tenuis*, *Cyamocytheridea leptostigma leptostigma*, *Hemicyprideis dacica dacica*, *Miocyprideis sarmatica, Aurila mehesi, A. notata, Senesia vadászi, L. kochi, L. porosa, Xestoleberis fuscata*) (i. e. STANCHEVA, 1963, 1990; SCHNEIDER, 1953, SUZIN, 1956). The fauna in the Eastern Paratethys seems to be more diversified that one found in the Central Paratethys. However the comparison of the faunas in the basins is very difficult due to the poor records from the Eastern Paratehys that can be evaluated.

The comparison with the Sarmatian ostracods of the southwestern part of the Central Paratethys is also not easy because only some taxa were described and illustrated by KRSTIĆ (1959, 1972, 1980), MITROVIĆ, RUNDIĆ (1991) from Serbia. They belong to *Aurila mehesi, Miocyprideis sarmatica, Cytheridea hungarica, Loxoconcha kochi, L. porosa*. However other Sarmatian species (*Leptocythere naca, Hemicytheria omphalodes*) from Hungary were described from the Pannonian beds of Croatia and Serbia (Sokač, 1967, 1972).

Detailed taxonomic work from the Polish Sarmatian ostracod fauna has not been made yet. Only some forms were published by CHOCZEWSKI (1956) and SZCZECHURA (2000). *Aurila mehesi, A. merita* and *Senesia vadaszi* occur in Poland as well as in Hungary. *Cyamocytheridea leptostigma, Loxoconcha* ex gr. *punctatella* and *Loxocorniculum hastatum* were determined by AIELLO and SZCZECHURA (2004), and SZCZECHURA (2006) from older Miocene (Badenian) of the Western Carpathians.

Sarmatian ostracods from different localities of the Czech Republic and Slovakia were described in detail and illustrated by JIŘIČEK (1974) and were illustrated by ZLINSKÁ and FORDINÁL (1994, 1995, 2006). This Sarmatian ostracod fauna shows similarity to the ostracod fauna from the Zsámbék Basin. The latter one is more diversified.

My results comparing to the taxonomic works made by CERNAJSEK (1974) and GROSS et al. (2006) from the Vienna Basin can be stated that these faunas are very identical. The number of the common species is 20 (about 80%). Low diversity and an abundance of the r-strategist species are characteristic of both Sarmatian faunas. The representatives of the Leptocytherideidae, Cytherideidae and Hemicytheridae families are present in a great number in both ostracod communities.

The comparison of the studied ostracod fauna to the Sarmatian fauna from the eastern part of the Central Paratethys (Transylvania and southwestern Ukraine) is not possible because of the scarce reliable data.

Conclusions

The studied Sarmatian ostracod fauna from the Zsámbék Basin is less diversified than the fauna of the Badenian. Only 25 taxa belonging to the Podocopida could be distinguished in the Sarmatian successsions. It consists mainly of the endemic species (70 %). Only two Mediterranean species and the dominance of the endemic forms suggest the very restricted or interrupted connection between the Paratethys and the Mediterranean in the Sarmatian while the seaway between the Central and Eastern Paratethys existed until the end of Sarmatian. This latter is supported by the presence of more than 50 % of the ostracod species in both basins of the Paratethys. In the Central Paratethys the studied Hungarian Sarmatian fauna is most similar to the ostracod fauna from the Vienna Basin in comparison with the fauna of the surrounding region.

During the Sarmatian the taxonomic structure of the fauna shows a significant change in the middle (E. hauerinum) zone. In this zone the number of species is strongly reduced in comparison with the ostracod assemblage of the lower (E. reginum) zone. Numerous species (8) disappear at the upper boundary of the lower zone and three new species appear. After the decrease of the diversity in the E. hauerinum Zone many taxa appear in the upper S. austriaca Zone beside the extant forms. This significant change of the ostracod fauna coincides with the alteration of the foraminiferal assemblages studied by GÖRÖG (1992). This fact confirms that the Sarmatian in the studied area can be divided into three zones based on the microfauna.

Acknowledgements

I am indebted to Á. GÖRÖG and M. MONOSTORI for discussions and consultations and J. SZCZECHURA for helpful advices. Sincere thanks are due to K. GÁL-SOLYMOS and P. PEKKER for the scanning electron microscopy photos that were taken in Eötvös Loránd University, Budapest.

Systematical part

After HARTMANN and PURI, 1974

Phylum Arthropoda SIEBOLD et STANNIUS, 1845
Subphylum Crustacea PENNANT, 1777
Class Ostracoda LATREILLE, 1802
Order Podocopida G. W. MÜLLER, 1894
Suborder Podocopa SARS, 1866
Superfamily Cytheracea BAIRD, 1850
Family Cytheridae BAIRD, 1850
Subfamily Cytherinae BAIRD, 1850
Genus *Cnestocythere* TRIEBEL, 1950

Cnestocythere aff. *truncata* (REUSS, 1850)
Pl. 1, Figs 1–4.

1974. *Cnestocythere* sp. – CERNAJSEK, p. 481, pl. 3, fig. 10.
2006. *Cnestocythere* sp. – GROSS, PILLER, p. 24–25, pl. VI, figs 5, 6–9, Pl. 7, figs 5–6.

Material: Mány–22: 1 RV, Mány–17: 10 RV, 7 LV (?juveniles).
Dimensions (in mm): L= 0,6–0,64 mm, H= 0,36–0,39 mm, L/H= 1,54–1,78.
Description: The outline of valves subrectangular or elongated triangular in lateral view; anterior outline slightly asymmetrically rounded; dorsal outline gently concave and declined towards the posterior end; posterior margin with an elongated and pointed caudal process situated centrally; ventral outline almost straight and somewhat covered by the lateroventral inflation bordered by distinct rib, maximum height situated under the anterodorsal distinct eye-tubercle.

Ornamentation: numerous prominent ribs of which the most characteristic seem: the median rib extending from the anterior margin up to the posterodorsal corner, anterior rib parallel to the anterior margin, dorsal rib along the hinge margin and distinct rib bordering the lateroventral inflation, this latter is bordered in its lower part and the posterior part, where it reaches to the median rib.

Inner lamella narrow with a prominent flange and a selvage situated halfway beetwen outer and inner margin; normal pore canals numerous, large and sieve-type;

marginal pore canals few, straight and simple; hinge merodont with crenulated, elongated anterior and posterior teeth and a finely crenulated groove in the right valve with complementary elements are in the left valve; central muscle scars pattern consists of four scars and a V-shaped frontal scar.
Remarks: This species is very similar to the specimen described by REUSS (1850) as *Cytherina truncata* (now *Cnestocythere truncata*) that is common in the Badenian of the Central Paratethys (i. e. GROSS, PILLER, 2006; BRESTENSKÁ, JIŘIČEK, 1978). The major differences are details of ornamentation of these specimens. The Hungarian specimens are smaller and less ornamented, but they retain most of the characteristic features for the discussed species. These specimens may be juveniles or ecological variations.
Stratigraphical and geographical distribution: Upper Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974; GROSS, PILLER, 2006), Hungary (Zsámbék Basin) (this work).

Family Leptocytheridae HANAI, 1957
Subfamily Leptocytherinae HANAI, 1957
Genus *Amnicythere* DEVOTO, 1965

Amnicythere tenuis (REUSS, 1850) s. l.
Pl. 2, Figs 1–3, 5.

1850. *Cytherina tenuis* n. sp. – REUSS, pl. VIII, fig. 14.
1908. *Krithe paralella* n. sp. – MÉHES, p. 615, pl. 10, figs 1–3.
1967. *Cytherina tenuis* REUSS, 1850 – KLEIN, p. 615, fig. 1.
1974. *Amnicythere paralella* (MÉHES) – HANGANU, pl. III, figs 25–26.
1974. *Leptocythere tenuis* (REUSS) – CERNAJSEK, p. 475– 476, pl. II, fig. 6.
1990. *Amnicythere mironovi mironovi* (SCHNEIDER) – STANCHEVA, p. 55–56, pl. XIX, figs 1–2.
1990. *Amnicythere mironovi effigiata* (STANCHEVA) – STANCHEVA, p. 56, pl. XIX, figs 3–4.
1995. *Leptocythere* sp. – ZLINSKÁ, FORDINÁL, pl. XXVIII, fig. 6.
1998. *Amnicythere plana* (SCHNEIDER) – OLTEANU, pl. VIII, fig. 1.
1998. *Amnicythere* aff. *plana* (SCHNEIDER) – OLTEANU, pl. VIII, fig. 3.
2000. *Leptocythere* cf. *Leptocythere* sp. ZLINSKÁ, FORDINÁL – SZCZECHURA, pl. VII, fig. 14.
2004. *Leptocythere tenuis* (REUSS)– TÓTH, p. 133–134, pl. II, figs 1–3.

Material: Mány–22: 2 carapaces, 35 RV, 13 LV (2 juveniles, 48 adults), Perbál–5: 19 RV, 10 LV (1 juveniles, 28 adults), Mány–17: 840 RV, 342 LV (30 juveniles, 1152 adults).
Dimensions (in mm): L= 0,51–0,55 mm; H= 0,25–0,28 mm; L/H= 1,96–2,04.
Remarks: The almost smooth specimens with ripples at posterior end are characteristic in the Zsámbék Basin but some more ornamented specimens (with reticulation and few thiny ribs attained the the upper part of the sulcus) also present in the studied material. In my opinion these latter specimens also belong to the species described by REUSS (1850). both forms are probably ecological variations because of the presence of transitional forms, however STANCHEVA (1963) the ornamented specimens described as new subspecies.

Based on the details in the features of marginal pore canals and hinge elements the species belong to the *Amnicythere* DEVOTO, 1965 genus (STANCHEVA, 1968).
Stratigraphical and geographical distribution: Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974), Poland (Upper Silesia) (SZCZECHURA, 2000), Hungary (Zsámbék Basin, Budapest) (this work, TÓTH, 2004), Lower Sarmatian: eastern Slovakia (ZLINSKÁ, FORDINÁL, 1995), Romania (Transylvania) (OLTEANU, 1998), Bessarabian: northern Bulgaria (STANCHEVA, 1963, 1990), Pannonian: Hungary (MÉHES, 1908), Pontian: Romania (Dacian Basin) (HANGANU, 1974).

Amnicythere (?) sp. (REUSS, 1850)
Pl. 2, Figs 5,6.

1974. *Leptocythere* sp. – CERNAJSEK, p. 488– 489, pl. II, fig. 7.
1998. *Amnicythere* aff. *plana* (SCHNEIDER) – OLTEANU, p. 153, pl. VIII, fig. 7.

Material: Mány–22: 2 carapaces, 16 RV, 8 LV, Perbál–5: 4 RV, 3 LV, Mány–17: 48 RV, 24 LV (only adults).
Méret (mm): L= 0,54–0,65 mm; H= 0,24–0,31 mm; L/H= 2,07–2,25.
Description: The outline of valves subrectangular and slightly tapered posteriorly in lateral view, anterior outline nearly symmetrically rounded in the right valve while slightly asymmetrically rounded in the left valve; dorsal outline nearly straight; posterior outline narrowly and symmetrically rounded; ventral outline nearly straight, gently sinuous in front of the mid-length of valve; maximum height near the anterior end.

Ornamentation: the valve surface reticulated tend to be arranged in rows along the anterior, ventral and posterior margin, few thiny ribs attained the the upper part of the sulcus.
Remarks: The classification of the specimens from the Zsámbék Basin are uncertain because the internal features are not visible. The degree of ornamentation distinctly varies. The more ornamented specimens are more frequent in the Zsámbék Basin.
Stratigraphical and geographical distribution: Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974), Lower Sarmatian: Romania (Transylvania) (OLTEANU, 1998), Upper Sarmatian: Hungary (Zsámbék Basin) (this work).

Genus *Callistocythere* RUGGIERI, 1953

Callistocythere egregia (MÉHES, 1908)
Pl. 2, Fig. 4.

1908. *Cythere egregia* n. sp. – MÉHES, p. 546–548, pl. 9, figs 17–23.
1973. *Callistocythere pusztafaluensis* n. sp. – PIETRZENIUK, p. 716–718, pl. II, figs 7–8, pl. VI, fig. 1–6, fig. 11–12.
1974. *Callistocythere egregia* (MÉHES) – CERNAJSEK, p. 476– 477, pl. II, fig. 8.
1998. *Callistocythere* aff. *canaliculata* (REUSS) – ZORN, p. 184–185.
2004. *Callistocythere egregia* (MÉHES)– TÓTH, p. 135, pl. I, figs 1–4.

Material: Mány–22: 789 carapaces, 1421 RV, 1105 LV, Perbál–5: 13 carapaces, 24 RV, 18 LV, Mány–17: 70 carapaces, 126 RV, 98 LV (only adults).
Dimensions (in mm): L= 0,49–0,52 mm, H= 0,25–0,27 mm, L/H= 1,92–1,96.
Remarks: Most specimens only a week ornamentation, however it seems to be greatly variable in the studied samples.
Stratigraphical and geographical distribution: Karpatian: Lower Austria (ZORN, 1998) Sarmatian: Hungary (Tokaj Hill and Zsámbék Basin) (PIETRZENIUK, 1973, this work) Lower Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974), Pannonian: Hungary (MÉHES, 1908).

Callistocythere incostata PIETRZENIUK, 1973
Pl. 2, Figs 7,8.

1973. *Callistocythere incostata* n. sp. – PIETRZENIUK, p. 714–716, pl. II, figs 9–10, pl. VI, figs 7–9, fig. 10.
2006. *Callistocythere* sp. – FORDINÁL et al, p. 127, fig. 4/7.

Material: Mány–22: 3 RV, 2 LV, Perbál–5: 1 RV, 1 LV, Mány–17: 28 RV, 29LV (only adults).
Dimensions (in mm): L= 0,5–0,56 mm, H= 0,26–0,31 mm, L/H= 1,8–1,92.
Description: The outline of valves elongated and bean-shaped in lateral view; anterior outline broadly rather simmetrically rounded; dorsal outline nearly straight; posterior margin broadly rounded and indistinctly truncated in its upper part; ventral outline gently sinuous in front of the mid-length of the valve; maximum height located near the anterior end.

Ornamentation: prominent reticulation on the entire valve surface which tend to be arranged in rows along the ventral and posterior parts and more or less regular ribs of which obliquely running near the anterior margin, almost vertical rib parallel to the posterior margin and short posteroventral rib seem most characteristic; few thiny ribs near the dorsal margin tend to attain the upper part of the sulcus.
Variability: Some specimens are less ornamented whit less developed posterior rib.
Remarks: The holotype of this species is described by PIETRZENIUK (1973) from the Sarmatian of Hungary (from the Tokaj Hill).
Stratigraphical and geographical distribution: Lower Sarmatian: Hungary (Tokaj Hill, Zsámbék Basin) (PIETRZENIUK, 1973, this work), Slovakia (northern part of the Danube Basin) (FORDINÁL et al., 2006).

Callistocythere postvallata PIETRZENIUK, 1973
Pl. 3, Fig. 1.

1973. *Callistocythere postvallata* n. sp. – PIETRZENIUK, p. 714–716, pl. II, figs 9–10, pl. VI, figs 7–9, fig. 10.
?2006. *Callistocythere postvallata* PIETRZENIUK– GROSS, PILLER, p. 28, pl. IX, figs 1–10.

Material: Mány–22: 2 RV (only adults).
Dimensions (in mm): L= 0,52 mm, H= 0,28 mm, L/H= 1,85.

Description: Similar to *Callistocythere incostata*, except for the posterior outline, that is symmetrically rounded; eye-tubercle weakly developed.

Ornamentation: the valve surface finely reticulated, an irregular short rib extending downward from the eye-tubercle and few distinct knobs (nodes) of which those near the center of the posterior end, near the posteroventral and centroventral part as well in the anterocentral part appear most typical for this species.

Remarks: The holotype of the species is described by PIETRZENIUK (1973) from the Sarmatian of Hungary (from the Tokaj Hill). The forms illustrated by GROSS and PILLER (2006) are more strongly reticulated than the holotype and the specimens found in the studied samples.

Stratigraphical and geographical distribution: Lower Sarmatian: Hungary (Tokaj Hill, Zsámbék Basin) (PIETRZENIUK,1973, this work), (?) Upper Badenian: Austria (Vienna Basin) (GROSS, PILLER, 2006).

Genus *Euxinocythere* STANCHEVA, 1968

Euxinocythere (Euxinocythere) diafana (STANCHEVA, 1963)
Pl. 1, Figs 5,6.

1963. *Leptocythere diafana* n. sp. – STANCHEVA, p. 21, 44, 54, pl. III, fig. 11.
1974. *Leptocythere diafana* STANCHEVA – JIŘIČEK, p. 442, pl. III, figs 3–4.
1990. *Euxinocythere (Euxinocythere) diafana* (STANCHEVA) – STANCHEVA, p. 63, pl. XXIV, fig 6.

Material: Mány–22: 3 RV, Mány–17: 26 RV, 6 LV (only adults).
Dimensions (in mm): L= 0,47–0,48 mm, H= 0,25–0,27 mm, L/H= 1,74–1,92.
Description: The outline of valves elongated and bean-shaped in lateral view; anterior outline rather broadly somewhat obliquely and asymmetrically rounded; dorsal margin nearly straight in the right valve, slightly arched in the left valve and declined slightly towards the posterior end; posterior margin narrowly and symmetrically rounded; ventral outline weakly sinuous in front of the mid-length; maximum height near the anterior end; eye spot absent.

Ornamentation: the valve surface sparsely but coarsely pitted. Three slight ripples occur along the anterior margin of both valves and one ripple along the posterior end in the left valve.

Sexual dimorphism: the male forms are more elongated than females.

Remarks: The specimens of the Zsámbék Basin are very related to the original description from Bulgaria (STANCHEVA, 1963).

Stratigraphical and geographical distribution: Sarmatian: northern Bulgaria (STANCHEVA, 1963, 1990), Slovakia (Vienna Basin and eastern region) (JIŘIČEK, 1974), Hungary (Zsámbék Basin) (this work).

Euxinocythere (Euxinocythere) naca (MÉHES, 1908)
Pl. 1, Fig. 7.

1908. *Cythere naca* n. sp. – MÉHES, p. 548–549, pl. X, figs 8–12.
?1961. *Leptocythere naca* (MÉHES) – AGALAROVA, p. 122, pl. LXX, figs 8–9.

?1965. *Leptocythere naca* (MÉHES) – STANCHEVA, p. 26, pl. IV, fig. 3.
?1966. *Leptocythere naca* (MÉHES) – SCHEIDAJEVA-KULCEVA, p. 85, pl. III, fig. 3ab.
1967. *Leptocythere naca* (MÉHES) – AGALAROVA, p. 105–106, pl. XV, figs 5–6.
1967. *Leptocythere naca* (MÉHES) – SOKAČ, pl. III, fig. 1.
1972. *Leptocythere naca* (MÉHES) – SOKAČ, p. 66, pl. XXX, figs 11–13.
1973. *Leptocythere (Amnicythere) naca* (MÉHES) – KRSTIĆ, p. 85–86, figs 112–115, pl. II, figs 3–6, pl. V, figs 4–7, pl. VI, fig. 9.
1974. *Callistocythere naca* (MÉHES) – CERNAJSEK, p. 477–478, pl. II, fig. 9.
1975. *Leptocythere naca* (MÉHES) – IONESI, CHINTĂUAN, pl. I, fig. 16.
1982. *Leptocythere naca* (MÉHES) – SZÉLES, p. 252, pl. XI, fig. 7.
1985. *Leptocythere naca* (MÉHES) – IONESI, CHINTĂUAN, pl. II, fig. 2.
1986. *Leptocythere naca* (MÉHES) – IONESI, CHINTĂUAN, pl. II, fig. 1.
1990. *Leptocythere naca* (MÉHES) – ZELENKA, pl. I, fig. 10.
1990. *Euxinocythere (Euxinocythere) spinulosa* (VOROSHILOVA) – STANCHEVA, p. 75–76, pl. XXIV, fig 1.
2000. *Leptocythere naca* (MÉHES) – SZCZECHURA, pl. VII, figs 7–10.

Material: Mány–22: 2 RV, 4 LV, Perbál–5: 2 LV, Mány–17: 17 RV, 51 LV (only adults).
Dimensions (mm): L= 0,47–0,51 mm; H= 0,25–0,26 mm; L/H= 1,88–1,92.
Description: The outline of valves subrectangular in lateral view; anterior outline slightly asymmetrically rounded; dorsal margin nearly straight; posterior end nearly symmetrical, ventral outline gently sinuous in front of the mid-length of valve; maximum height at one third of the length; eye spot absent.

Ornamentation: the valve surface heavily and densely ornamented by spines and small tubercles.
Remarks: The specimens illustrated by AGALAROVA (1961), STANCHEVA (1965) and SCHEIDAJEVA- KULCEVA (1966) are similar in their outlines and general appearance to the holotype of *Euxinocythere (Euxinocythere) naca* described by MÉHES (1908) and to the studied specimens, but their ornamentation seems different. The valves of the species presented by these authors seem to bear large knobs. It is difficult to decide whether the presence of these knobs is due to their true lateral features or results of inaccuracy of the drawings. In my opinion based on the details in the features of marginal pore canals and hinge elements the species can be classify in the *Euxinocythere (Euxinocythere)* subgenus described by STANCHEVA (1968).
Stratigraphical and geographical distribution: Sarmatian: Austria (Vienna Basin, Danube Basin) (CERNAJSEK, 1974, ZELENKA, 1990), Romania (Moldavian Platform, Dobrogea) (IONESI, CHINTĂUAN, 1975, 1985, 1986), Poland (Upper Silesia) (SZCZECHURA, 2000), Sarmatian (Volhynian): northern Bulgaria (STANCHEVA, 1990), Upper Sarmatian: Slovakia (Vienna Basin, Danube Basin) (ZELENKA, 1990), Hungary (Zsámbék Basin) (this work), Pannonian: Hungary (MÉHES, 1908; SZÉLES, 1982), Serbia (KRSTIĆ, 1973), Croatia (southwestern Pannonian Basin) (SOKAČ, 1967, 1972), Pontian: Azerbaijan (AGALAROVA, 1967), Serbia (KRSTIĆ, 1973), Croatia (southwestern Pannonian Basin) (SOKAČ, 1967, 1972)

Euxinocythere (Euxinocythere) praebosqueti (SUZIN, 1956)
Pl. 3, Figs 2–5.

1956. *Leptocythere praebosqueti* n. sp. – SUZIN, p. 83, pl. III, figs 2–4.
1972. *Euxinocythere (E.) praebosqueti praebosqueti* (SUSIN) – STANCHEVA, pl. I, fig 1.
1972. *Euxinocythere (E.) praebosqueti traessae* (SUSIN) – STANCHEVA, pl. II, figs 12–13.
1990. *Euxinocythere (Euxinocythere) praebosqueti praebosqueti* (SUZIN) – STANCHEVA, p. 70–71, pl. XXIII, figs 9–10.
1990. *Euxinocythere (Euxinocythere) praebosqueti traessae* (SUZIN) – STANCHEVA, p. 73, pl. XXVI, figs 1,2.

Material: Mány–22: 8 RV, 11 LV (mainly adults), Perbál–5: 1 carapaces, 9 RV, 11 LV (mainly adults), Mány–17: 23 carapaces, 351 RV, 445 LV (82 juveniles, 737 adults).
Dimensions (in mm): L= 0,49–0,5 mm, H= 0,2–0,26 mm, L/H= 1,9–2,1.
Description: The outline of valves elongated and bean-shaped in lateral view; anterior outline broadly asimmetrically rounded; dorsal outline nearly straight; posterior margin broadly rounded and indistinctly truncated in its upper part; ventral outline gently sinuous in front of the mid-length of the valve; maximum height located near the anterior end; eye tubercle well developed.

Ornamentation: irregularly reticulation and irregularly running numerous ribs; the most characteristic the posterior prominent rib parallel and close to the posterior margin as well as proximally running less distinct rib attending the weakly developed adventral rib; both are joining together at the dorsal margin; two weakly ribs also occur along the hinge margin, moreover rather well developed rib situated obliquely below the eye-tubercle. Thiny rib runs parallely to the latest one.

Sexual dimorphism: The male forms are more elongated than females.
Variability: The degree of ornamentation varies, mainly the distinctness of ribs.
Remarks: The most characteristic features of the studied specimens are very related to the holotype described by SUZIN (1956) despite of the inaccuracy of the original drawing.
S*ratigraphical and geographical distribution:* Sarmatian: northern Bulgaria (STANCHEVA, 1972, 1990), Upper Sarmatian: Hungary (Zsámbék Basin) (this work), Bessarabian: Russia (Caucasus) (SUZIN, 1956).

Family Cytherideidae SARS, 1925
Subfamily Cytherideinae SARS, 1925
Genus *Cyamocytheridea* OERTLI, 1956

Cyamocytheridea derii (ZALÁNYI, 1913)
Pl. 4, Fig. 5.

1913. *Cytheridea dérii* n. sp. – ZALÁNYI, p. 103–105, pl. VI, figs 12–14, fig. 18.
1958. *Cyamocytheridea derii* (ZALÁNYI) – KOLLMANN, p. 155, pl. X, figs 9–10, 17–25.
1967. *Cyamocytheridea derii* (ZALÁNYI) – KHEIL, p. 216, pl. 1c, fig. 2.
1998. *Cyamocytheridea derii* (ZALÁNYI) – ZORN, p. 187, pl. III, figs 1–3, pl. XV, fig. 3.
2003. *Cyamocytheridea derii* (ZALÁNYI) – ZORN, pl. II, fig. 4.

2004. *Cyamocytheridea derii* (ZALÁNYI) – ZORN, p. 183, pl. II, figs 10–11.

Material: Mány–22: 2 LV, Mány–17: 2 LV (adults).
Dimensions (in mm): L= 0,92 mm, H= 0,56 mm, L/H= 1,64.
Description: the outline of valve subovate in lateral view; anterior outline is widely, almost symmetrically rounded; dorsal margin gently arched; posterior outline rather narrowly and also symmetrically rounded; ventral margin nearly straight, slightly sinuous in front of the mid-length; greatest height situated approximately centrally; eye-spot absent.

Ornamentation: the valve surface distinctly and rather densely pitted.
Remarks: The specimens of the Zsámbék Basin are very related to the original description from Hungary (ZALÁNYI, 1913).
Stratigraphical and geographical distribution: Karpatian: Lower Austria (ZORN, 1998, 2003), Eastern Austria (KOLLMANN, 1958), Czech Republic (KHEIL, 1967), Lower Badenian: Lower Austria (ZORN, 2004), Eastern Austria (KOLLMANN, 1958), Upper Sarmatian: Hungary (ZALÁNYI, 1913, this work).

Cyamocytheridea leptostigma leptostigma (REUSS, 1850)
Pl. 4, Figs 1–4, 6.

1850. *Cytherina leptostigma* n. sp. – REUSS, p. 57, pl. VIII, fig. 28.
1958. *Cyamocytheridea leptostigma leptostigma* (REUSS) – KOLLMANN, p. 157, pl. X, figs 11–12.
1963. *Cyamocytheridea leptostigma leptostigma* (REUSS) – DORNIČ, KHEIL, pl. III, figs 3–4.
1969. *Cyamocytheridea leptostigma leptostigma* (REUSS) – BURYNDINA, p. 63, pl. I, figs 5–7.
1974. *Cyamocytheridea leptostigma leptostigma* (REUSS) – CERNAJSEK, p. 471–472, pl. II, figs 3–4.
1990. *Cyamocytheridea leptostigma leptostigma* (REUSS) – STANCHEVA, p. 36–37, pl. X, fig. 10.
2004. *Cyamocytheridea leptostigma* (REUSS) – AIELLO, SZCZECHURA, p. 23, pl. II, fig. 7.

Material: Mány–22: 6 RV, 1 LV (1 juvenile, 6 adults), Perbál–5: 260 RV, 244 LV (82 juveniles, 422 adults), Mány–17: 5 RV, 4 LV (adults).
Dimensions (in mm): L= 0,72–0,75 mm, H= 0,4–0,43 mm, L/H= 1,74–1,8.
Description: the outline of valves elongated subovate in lateral view; anterior outline almost symmetrically and narrowly rounded; dorsal outline weakly arched; posterior margin gently asymmetrically rounded; ventral outline nearly straight, slightly sinuous in front of the the mid-length (in the left valve is less incised than in the right valve); maximum height situated nearly centrally; eye spot absent.

Ornamentation: the valve surface coarsely and sparsely pitted.
Variability: Juveniles have a more triangular in outline than adults.
Remarks: Mostly adult forms (few juveniles) of this subspecies can be found in the Upper Sarmatian beds. They are very similar to those of *Cyamocytheridea dérii* (Zalányi, 1913), but they differ in some details of ornamentation mostly its distinctness and number of the pits as well as the dorsal outline in lateral view.
Stratigraphical and geographical distribution: Upper Badenian: Poland (Silesian Basin) (AIELLO, SZCZECHURA, 2004), Sarmatian: Slovakia (Vienna Basin) (DORNIČ,

KHEIL, 1963), southwestern Ukraine (BURYNDINA, 1969), Bulgaria (the northwestern region) (STANCHEVA, 1990). Upper Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974), Eastern Austria (KOLLMANN, 1958), Hungary (Zsámbék Basin) (this work).

Genus *Hemicyprideis* SARS, 1925

Hemicyprideis dacica dacica (HÉJJAS, 1895)
Pl. 4, Figs 7,8.

1895. *Cytheridea dacica* n. sp. – HÉJJAS, p. 59–60, 103, pl. IV, fig. 10a–c.
1913. *Cytheridea dacica* HÉJJAS – ZALÁNYI, p. 97–99, textfig. 15.
1929. *Cytheridea dacica* HÉJJAS – ZALÁNYI, p. 107–112, pl. I, fig. 1, textfigs 47–48.
1953. *Haplocytheridea dacica dacica* (HÉJJAS) – GOERLICH, p. 138–139, pl. 6, fig. 43–49.
1956. *Haplocytheridea dacica dacica* (HÉJJAS) – OERTLI, p. 45–46, pl. 4, figs 94–103.
1958. *Haplocytheridea dacica dacica* (HÉJJAS) – KOLLMANN, p. 140, pl. 2, fig. 3, pl. 9, figs 7–17.
1963. *Haplocytheridea dacica dacica* (HÉJJAS) – DORNIČ, KHEIL, pl. 3, fig. 5.
1963. *Haplocytheridea dacica* (HÉJJAS) – STANCHEVA, p. 13, pl. II, fig. 11.
1969. *Haplocytheridea dacica dacica* (HÉJJAS) – CARBONNEL, p. 86–87, textfig. 8, pl. 4, fig. 19–20.
1973. *Haplocytheridea dacica dacica* (HÉJJAS) – IONESI, CHINTĂUAN, p. 95–96, pl. I, fig. 5, pl. III, fig. 3.
1974. *Haplocytheridea dacica dacica* HÉJJAS – CERNAJSEK, p. 472–473.
1975. *Haplocytheridea dacica dacica* (HEJJAS) – IONESI, CHINTĂUAN, pl. 1, fig. 6.
1975. *Hemicyprideis dacica dacica* (HÉJJAS) – BRESTENSKÁ, p. 397. pl. 2, fig. 15–16.
1976. *Haplocytheridea dacica dacica* (HÉJJAS) – CHINTĂUAN, NICORICI, p. 13, pl. II, figs 7–9.
1979. *Hemicyprideis dacica dacica* (HÉJJAS) – BASSIOUNI, p. 58–59, pl. 13, fig. 11–12.
1985. *Hemicyprideis dacica dacica* (HÉJJAS) – MÜLLER, p. 22–24, pl. 3, figs 15–17, pl. 4., figs 1–4, non pl. 3, figs 10–14.
non 1985. *Hemicyprideis dacica* (HÉJJAS) – CARBONNEL *et al*, p. 224, Pl. II, fig. 10–12.
1990. *Haplocytheridea dacica* (HÉJJAS) – STANCHEVA, p. 37–38, pl. XI, fig. 10.
non 1992. *Hemicyprideis dacica dacica* (HÉJJAS) – APOSTOLESCU, GUERNET, p. 108–109, pl. 2, Fig. 10.
1995. *Hemicyprideis dacica* (HÉJJAS) – ZLINSKÁ, FORDINÁL, pl. XXVIII, fig. 2.
2004. *Hemicyprideis dacica* (HÉJJAS) – ZORN, p. 183, pl. II, fig. 9.
2004. *Hemicyprideis dacica dacica* (HÉJJAS) – TÓTH, p. 135–136, pl. II, figs 4–8.

Material: Mány–22: 24 carapaces, 185 RV, 87 LV (60 juveniles, 236 adults), Mány–17: 30 carapaces, 222 RV, 118 LV (74 juveniles, 296 adults).
Dimensions (in mm): L= 0,81–0,85 mm; H= 0,45–0,48 mm; L/H= 1,69–1,88.
Sexual dimorphism: Male forms are more elongated than females. The dorsal outline of males is slightly rounded on the left valve opposite to the dorsal outline of females.
Juveniles: The carapace of the juveniles are more acute in the posterior part and more triangular in lateral view.
Remarks: The specimens of the Zsámbék Basin are very related to the original description (HÉJJAS, 1895).
Stratigraphical and geographical distribution: Upper Oligocene: Slovakia (BRESTENSKÁ, 1975), Switzerland (Swiss Molasse) (OERTLI, 1956), Germany (north-alpine Molasse) (GOERLICH, 1953; MÜLLER, 1985), Hungary (ZALÁNYI, 1929), Lower

Miocene: Slovakia (BRESTENSKÁ, 1975), Turkey (BASSIOUNI, 1979), Karpatian: eastern Austria (KOLLMANN, 1958), Badenian: Romania (Transylvania) (CHINTĂUAN, NICORICI, 1976), Hungary (ZALÁNYI, 1913), Lower Badenian: Lower Austria (Molasse Basin) (KOLLMANN, 1958), Serravallian: France (Rhone Basin) (CARBONNEL, 1969), Sarmatian: Slovakia (Vienna Basin) (DORNIČ, Kheil, 1963), eastern Austria (KOLLMANN, 1958), Switzerland (Vienna Basin) (OERTLI, 1956), Bulgaria (STANCHEVA, 1963, 1990), Hungary (ZALÁNYI, 1913, this work), Lower Sarmatian: eastern Slovakia (ZLINSKÁ, FORDINÁL, 1995), Bosnia-Hercegovina (ZALÁNYI, 1913), Romania (Moldavian Platform) (IONESI, CHINTĂUAN, 1973, 1975).

Genus *Cytheridea* BOSQUET, 1852

Cytheridea hungarica ZALÁNYI, 1913
Pl. 5, Figs 1–4.

1913. *Cytheridea hungarica* n. sp.– ZALÁNYI, p. 92–94, pl. V, fig. 11–14, textfigs 3. et 11.
1941. *Cytheridea hungarica* ZALÁNYI – MÉHES, p. 74–75, pl. III, figs 1–2, textfigs 99, 100, 141.
1958. *Cytheridea hungarica* ZALÁNYI – KOLLMANN, p. 150, pl. 1, fig. 1, pl. 6, figs 17–18, pl. 8, fig. 1–9.
1959. *Cytheridea hungarica* ZALÁNYI – KRSTIĆ, p. 203–204, pl. I, fig. 1–3.
1963. *Cytheridea hungarica* ZALÁNYI – SZÉLES, pl. IV, fig. 5.
1974. *Cytheridea hungarica* ZALÁNYI – CERNAJSEK, p. 470– 471, pl. II, fig. 1–2.
1983. *Cytheridea hungarica* ZALÁNYI – JIŘIČEK, pl. IV, fig. 20.
1989. *Cytheridea hungarica* ZALÁNYI – ZELENKA, pl. 1, fig. 1.
1994. *Cytheridea hungarica* (ZAL.) – FORDINÁL, ZLINSKÁ, pl. XIV, fig. 8–9.
1995. *Cytheridea hungarica* ZAL. – ZLINSKÁ, FORDINÁL, pl. XXVIII, fig. 1.
2001. *Cytheridea hungarica* (ZALÁNYI) – SZUROMI–KORECZ, SZEGŐ, pl. V, fig 1.
2004. *Cytheridea hungarica* ZALÁNYI – TÓTH, p. 136–137, pl. III, figs 1–6.
2005. *Cytheridea hungarica* ZALÁNYI – JANZ, VENNEMANN, pl. I, fig. 5.
2006. *Cytheridea hungarica* ZALÁNYI – FORDINÁL et al., p. 127, fig. 4/1–2.

Material: Mány–22: 158 carapaces, 563 RV, 432 LV, Perbál–5: 64 carapaces, 225 RV, 173 LV, Mány–17: 76 carapaces, 270 RV, 207 LV (mainly adults).
Dimensions (in mm): H= 0,53–0,6 mm, L= 0,98–1,01mm, L/H= 1,63–1,91.
Variability: Some specimens from the Zsámbék Basin are more pointed, more triangular in their lateral posterior outline than others (sexual dimorphism?). The degree of ornamentation (the density of the pits) also varies.
Remarks: The specimens of the Zsámbék Basin are very related to the original description from Hungary (ZALÁNYI, 1913).
Stratigraphical and geographical distribution: Lower Sarmatian: Slovakia (the eastern region, Danube Basin, Transcarpathian Basin) (ZLINSKÁ, FORDINÁL, 1995; FORDINÁL, ZLINSKÁ, 1994, FORDINÁL et al., 2006, JIŘIČEK, 1983), Austria (Vienna Basin) (CERNAJSEK, 1974, JANZ, VENNEMANN, 2005, KOLLMANN, 1958), Czech Republic (ZELENKA, 1989), Serbia (KRISTIĆ, 1959) and western Romania (ZALÁNYI, 1913), Hungary (ZALÁNYI, 1913; Széles, 1963; SZUROMI-KORECZ, SZEGŐ, 2001; this work).

Genus *Miocyprideis* KOLLMANN,1960

Miocyprideis janoscheki KOLLMANN, 1958
Pl. 5, Figs 5,6.

1958. *Miocyprideis janoscheki* n. sp. – KOLLMANN, p. 178, pl. III, fig. 3, pl. XII, figs 6–7, pl. XVIII, figs 1–6, 9–11, 14–17, pl. XIX, fig. 18, pl. XX, fig. 14.
1963. *Miocyprideis janoscheki* KOLLMANN – DORNIČ, KHEIL, pl. III, fig. 6.
1963. *Miocyprideis janoscheki* KOLLMANN – SZÉLES, pl. IV, fig. 6.
1969. *Miocyprideis janoscheki* KOLLMANN – BURYNDINA, p. 65–66, pl. II, figs 1–3.
1970. *Miocyprideis janoscheki* KOLLMANN – TRELEA-PAGHIDA et al., p. 112, pl. III, figs 11a–c.
1974. *Miocyprideis janoscheki* KOLLMANN – JIŘIČEK, p. 438, pl. IV, figs 5–6.
1974. *Miocyprideis kollmanni* n. sp. – JIŘIČEK, p. 438, pl. IV, figs 7–8.
1978. *Neocyprideis (Miocyprideis) sarmatica elongata* JIŘIČEK – BRESTENSKÁ, JIŘIČEK, p. 417–418, pl. III, figs 4–6.
1983. *Neocyprideis (Miocyprideis) sarmatica elongata* JIŘIČEK – JIŘIČEK, pl. III, fig. 17.
?1983. *Neocyprideis (Miocyprideis) janoscheki* KOLLMANN – JIŘIČEK, pl. V, fig. 25.
1990. *Miocyprideis janoscheki* KOLLMANN – ZELENKA, pl. II, figs 8–9.
1995. *Miocyprideis* sp. – ZLINSKÁ, FORDINÁL, pl. XXVIII, fig. 7.

Material: Mány–22: 8 RV, 4 LV (1 juveniles, 11 adults), Perbál–5: 7 RV, 8 LV, (3 juveniles, 12 adults), Mány–17: 6 RV (adults).
Dimensions (in mm): L= 0,67–0,8 mm, H= 0,4–0,48 mm, L/H= 1,66–1,78.
Description: The outline of valves subrectangular in lateral view; anterior outline almost symmetrical and broadly rounded; dorsal outline slightly and evenly convex; posterior outline broadly and asymmetrically rounded in the right valve while nearly symmetrically rounded in the left valve; ventral outline nearly straight; maximum height behind the mid-length; subcentral vertical sulcus weakly marked; eye spot absent.

Ornamentation: the valve surface coarsely and densely pitted except the admarginal parts where they are arranged concentrically; anterior and posterior margins with marginal denticulations.
Variability: The degree of ornamentation and the size as well as the number of denticles along the anterior and posterior margins are varying.
Remarks: In comparison with the holotype of this species (KOLLMANN, 1958) and the studied specimens, the form described and illustrated by JIŘIČEK (1983) as *Neocyprideis (Miocyprideis) janoscheki* KOLLMANN has more reduced ornamentation, as it is pitted only anteriorly.
Stratigraphical and geographical distribution: Upper Badenian: Slovakia (Vienna Basin, Danube Basin) (BRESTENSKÁ, JIŘIČEK, 1978; DORNIČ, KHEIL, 1963; JIŘIČEK, 1983), Sarmatian: eastern Austria (KOLLMANN, 1958), eastern Romania (TRELEA-PAGHIDA *et al*, 1970) and southwestern Ukraine (BURYNDINA, 1969), Lower Sarmatian: Slovakia (Zlinská, FORDINÁL, 1995), Upper Sarmatian: Slovakia (the eastern region, Vienna Basin) (JIŘIČEK, 1974; ZELENKA, 1990), Hungary (SZÉles, 1963, this work).

Miocyprideis sarmatica (ZALÁNYI, 1913)
Pl 6., Fig. 1.

1913. *Cytheridea punctillata* G. S. Brady var. sarmatica n. var. – ZALÁNYI, p. 101–102, pl. VI, figs 9–11, textfig.16.
1974. *Miocyprideis sarmatica* (ZALÁNYI) – JIŘIČEK, p. 436–137, pl. 4, figs 3–4.
1980. *Miocyprideis sarmatica* (ZALANYI) – KRSTIĆ, pl. III, fig. 1–4, 14, 16, pl. V, fig. 6–8.
1985. *Miocyprideis sarmatica* (ZALÁNYI) – IONESI, CHINTĂUAN, pl. I, fig. 1.
1990. *Miocyprideis sarmatica* (ZALÁNYI) – ZELENKA, pl. II, figs 9–10.
1994. *Miocyprideis* sp. – FORDINÁL, ZLINSKÁ, pl. XV, fig. 5–6.
2004. *Miocyprideis sarmatica* (ZALÁNYI). – TÓTH, p. 136–137, pl. III, figs 7–8.

Material: Mány–22: 1 RV, 3 LV (1 juvenile, 3 adults), Mány–17: 33 RV, 55 LV (11 juveniles, 77 adults).
Dimensions (in mm): L= 0,77–0,81 mm, H= 0,46–0,48 mm, L/H= 1,67–1,69.
Variability: The degree of ornamentation is varying. The marginal part of the valve surface is smooth or finely pitted.
Remarks: The specimens of the Zsámbék Basin are very related to the original description from Hungary (ZALÁNYI, 1913).
S*ratigraphical and geographical distribution:* Lower Sarmatian: Slovakia (Vienna Basin and the eastern region) (ZALÁNYI, 1913; JIŘIČEK, 1974; ZELENKA, 1990; FORDINÁL, ZLINSKÁ, 1994), Serbia (KRISTIĆ, 1980), Romania (Dobrogea) (IONESI, CHINTĂUAN, 1985), Hungary (Zsámbék Basin) (this work).

Family Hemicytheridae PURI, 1953
Subfamily Hemicytherinae PURI, 1953
Genus Hemicytheria POKORNÝ, 1952

Hemicytheria omphalodes (REUSS, 1850)
Pl. 6, Figs 2–6.

1850. *Cypridina omphalodes* n. sp. – REUSS, p. 75, pl. 10, fig. 7.
1972. *Hemicytheria omphalodes* (REUSS) – SOKAČ, p. 73, pl. XXXIII, fig. 1–5.
1974. *Hemicytheria omphalodes* (REUSS) – JIŘIČEK, pl. 1, fig. 3–4.
1974. *Hemicytheria omphalodes omphalodes* (REUSS) – CERNAJSEK, p. 468– 470, pl. I, fig. 7–8.
1985. *Hemicytheria omphalodes* (REUSS) – JIŘIČEK, pl. 56, fig. 7–9.
1990. *Hemicytheria omphalodes* (REUSS) – ZELENKA, pl. I, fig. 3–4.
1994. *Hemicytheria omphalodes omphalodes* (REUSS) – FORDINÁL; ZLINSKÁ, pl. XV, fig. 1.
1995. *Hemicytheria omphalodes* (REUSS) – ZLINSKÁ; FORDINÁL, pl. XXVIII, fig. 5.
2001. *Hemicytheria omphalodes* (REUSS) – OLTEANU, pp. 94, 97, 100, pl. VII, fig. 7–8.
2004. *Hemicytheria omphalodes* (REUSS) – TÓTH, p. 137–138, pl. IV, fig. 1–3
?2006. *Hemicytheria omphalodes omphalodes* (REUSS) – FORDINÁL et al., p. 127, fig. 4/6.

Material: Mány–22: 19 carapaces, 27 RV, 50 LV (34 juveniles, 62 adults) Perbál–5: 134 carapaces, 193 RV, 356 LV (240 juveniles, 443 adults), Mány–17: 14 carapaces, 21 RV, 38 LV (25 juveniles, 48 adults).

Dimensions (in mm): L= 0,8–0,82 mm, H= 0,47–0,48 mm, L/H= 1,7–1,73.
Description: The lateral outline of valves ear-shaped; anterior outline asymmetrically rounded, slightly oblique in the anterodorsal part; dorsal outline slightly convex (that of right valve more convex than of the left valve) and declined towards the posterior end; upper part of the posterior end slightly concave while lower part obliquely truncated; ventral margin sinuous in front of the mid-length; maximum height near the anterior end; smooth eye tubercle in the anterodorsal corner.

Ornamentation: prominent reticulation on the entire valve surface (except the muscle scars field) which tend to be arranged in rows along the ventral and posterior parts; two ribs running along the anterodorsal and ventral margins; an anterodorsal rib attaining the eye tubercle; small ribs (up to six) extending almost radially behind the muscle scar field, less distinct and short ribs in front of the muscle scar field seem the most characteristic.
Sexual dimorphism: Male forms are more elongated than females.
Juveniles: The valves of the juveniles are more acute posteriorly and more triangular in lateral view. The ornamentation of juveniles is less distinct.
Variability: Ornamentation of some specimens is not well expressed.
Remarks: It might be possible that specimens described by the author (TÓTH, 2004) from Budapest are juveniles. Adult specimens occuring in the Zsámbék Basin are similar to the the specimens illustrated and described by JIŘIČEK (1974) and CERNAJSEK (1974). The specimens published by SOKAČ (1972) are likely larval forms. The form illustrated by FORDINÁL et al. (2006) is more elongated than forms studied by the author. It is possible that specimen illustrated by FORDINÁL et al. (2006) represents male form.
Stratigraphical and geographical distribution: Upper Badenian: Romania (Transylvanian Basin) (OLTEANU, 2001), Sarmatian: Slovakia (Vienna Basin) (JIŘIČEK, 1974, ZELENKA, 1990), Hungary (Zsámbék Basin) (this work), Lower Sarmatian: Slovakia (Danube Basin and the eastern region) (FORDINÁL et al., 2006; FORDINÁL, ZLINSKÁ, 1994, 1995), Upper Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974), Pannonian: Romania (Transylvanian Basin) (OLTEANU, 2001), Croatia (Pannonian Basin) (Sokač, 1972).

Genus *Aurila* POKORNÝ, 1955

Aurila mehesi (ZALÁNYI, 1913)
Pl. 7, Figs 5–7.

1913. *Cythereis méhesi* n. sp. – ZALÁNYI, p. 109–111, pl. VII, figs 4–10, textfig. 2., 22.
1913. *Cythereis sarmatica* n. sp. – ZALÁNYI, p. 112–113, pl. IX, figs 9–11.
1939. *Cythereis sarmatica* ZALÁNY – SCHNEIDER, p. 198, pl. IV, fig. 3.
1949. *Cythereis sarmatica* ZALÁNYI – SCHNEIDER, p. 163–164, pl. IX, fig. 4.a,b
1956. *Cythereis méhesi* ZALÁNYI – CHOCZEWSKI, p. 70–71, pl. II, fig. 14.a,b
1956. *Cythereis sarmatica* ZALÁNYI – CHOCZEWSKI, p. 72–73, pl. III, fig. 4.a,b
?1956. *Cythereis sarmatica* ZALANYI – SUZIN, p. 150–151, pl. VII, fig. 18.
1959. *Hemicytheria mehesi* (ZALÁNYI) – KRSTIĆ, p. 204, pl. I, figs 4–6.
?1962. *Mutilus (Aurila) mehesi* (ZALÁNYI) – STANCHEVA, p. 37, pl. IV, fig. 6.
1963. *Mutilus (Aurila)?* aff. *mehesi* (ZALÁNYI) – STANCHEVA, p. 31, pl. IV, fig. 3.

1974. *Aurila mehesi* (ZALÁNYI) – CERNAJSEK, p. 465– 466, pl. I, fig. 3.
1974. *Aurila kollmanni* n. sp. – CERNAJSEK, p. 463– 465, pl. I, fig. 2.
1980. *Aurila mehesi* (ZALÁNYI) – IONESI, CHINTĂUAN, pl. 2, fig. 3.
1983. *Aurila mehesi* (ZALÁNYI) – JIŘIČEK, pl. IV, fig. 21.
1983. *Aurila sarmatica* (ZALÁNYI) – JIŘIČEK, pl. IV, fig. 22.
1990. *Aurila mehesi* (ZALÁNYI) – STANCHEVA, p. 42, pl. XIII, fig. 10.
1990. *Aurila kollmanni* (ZALÁNYI) – STANCHEVA, p. 41, pl. XIV, figs 1–2.
2000. *Aurila mehesi* (ZALÁNYI) – SZCZECHURA, pl. VIII, fig. 13.
1994. *Aurila mehesi* (ZAL.) – FORDINÁL, ZLINSKÁ, pl. XV, fig. 2.
2004. *Aurila méhesi* (ZALÁNYI). – TÓTH, p. 138–139, pl. IV, figs 4–7.
2005. *Aurila kollmanni* CERNAJSEK – JANZ, VENNEMANN, pl. II, fig. 3.
2006. *Aurila mehesi* (ZALÁNYI) – FORDINÁL et al., p. 127, fig. 4/3.

Material: Mány–22: 501 carapaces, 3721 RV, 2862 LV (3435 juveniles, 3148 adults), Perbál–5: 20 carapaces, 147 RV, 113 LV (135 juveniles, 147 adults), Mány–17: 191 carapaces, 1424 RV, 1095 LV (1314 juveniles, 1396 adults).
Dimensions (in mm): L= 0,92–1,21 mm, H= 0,57–0,75 mm, L/H= 1,6–1,62.
Variability: Adult forms show great variation of size. Juveniles are abundant and have a more triangular shape.
Remarks: In my opinion the species *Aurila kollmanni* described by CERNAJSEK (1974) seems identical with the holotype of this species (ZALÁNYI, 1913) because only their size of adults are different. Both forms occur in the studied samples.
Stratigraphical and geographical distribution: Lower Sarmatian: Slovakia (the eastern region, Transcarpathian Basin and Danube Basin, Vienna Basin) (FORDINÁL, ZLINSKÁ, 1994; JIŘIČEK, 1983; FORDINÁL et al., 2006; JIŘIČEK, 1974), Hungary (ZALÁNYI, 1913; TÓTH, 2004, this work), Bosnia-Hercegovina (ZALÁNYI, 1913), Serbia (ZALÁNYI, 1913; KRISTIĆ, 1959), Poland (the southeastern region) (CHOCZEWSKI, 1956; SZCZECHURA, 2000), Austria (Vienna Basin) (CERNAJSEK, 1974; JANZ, VENNEMANN, 2005), Bulgaria (STANCHEVA, 1963, 1990), Romania (Moldavian Platform) (IONESI, CHINTĂUAN, 1980), (Russia) Caucasus (SCHNEIDER, 1939, 1949).

Aurila merita (ZALÁNYI, 1913)
Pl. 8, Figs 1,2.

1913. *Cythereis merita* n. sp. – ZALÁNYI, p. 117–118, pl. VII, fig. 4–10, textfig 2, 22.
1956. *Cythereis merita* (ZALÁNYI) – CHOCZEWSKI, p. 75, pl. III, fig. 8.
1974. *Aurila merita* (ZALÁNYI) – CERNAJSEK, p. 466– 467, pl. I, fig. 4.
1989. *Aurila merita* (ZALÁNYI) – ZELENKA, pl. II, fig. 1.
1990. *Aurila merita* (ZALÁNYI) – ZELENKA, pl. I, fig. 5.
2001. *Aurila merita* (ZALÁNYI) – SZUROMI-KORECZ, SZEGŐ, pl. IV, fig 2.
?2006. *Aurila merita* (ZALÁNYI) – FORDINÁL et al., p. 127, fig. 4/4.
2006. *Aurila (Aurila?) merita* (ZALÁNYI) – GROSS, PILLER, p. 50–51, pl. XXIII, figs 1–13.

Material: Mány–22: 4 RV, 7 LV (8 juveniles, 3 adults), Perbál–5: 3 LV (adults), Mány–17: 19 carapaces, 105 RV, 115 LV (163 juveniles, 76 adults).
Dimensions (in mm): L= 0,86–1,04 mm, H= 0,52–0,67 mm, L/H= 1,56–1,65.
Description: The outline of valves ear-shaped or subtrapezoidal in lateral view; anterior outline almost asymmetrically rounded; dorsal outline slightly convex and slightly

sloping towards the posterior end; upper part of the posterior end oblique or slightly concave while adventral part rounded and pointed in its most distal part; ventral margin moderately sinuous in front of the mid-length; maximum height anteriorly; well marked eye tubercle in the anterodorsal corner.

Ornamentation: the valve surface densely and coarsely pitted; the anteroventral and posteroventral margins decorated by radial striae.

Variability: The species shows a great variation of ornamentation, which is sometimes less distinct near the muscle-scars field.

Remarks: the specimens studied by the author are less elongated than the form illustrated by FORDINÁL et al. (2006). It is possible that the specimen illustrated by FORDINÁL et al (2006) represents male form.

Stratigraphical and geographical distribution: Lower Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974; GROSS, PILLER, 2006), Slovakia (Vienna Basin, Danube Basin) (ZELENKA, 1989, 1990; FORDINÁL *et al*, 2006), Poland (the southeastern region) (CHOCZEWSKI, 1956), Romania (the southwestern region) (ZALÁNYI, 1913), Hungary (SZUROMI-KORECZ, SZEGŐ, 2001; this work).

Aurila notata (REUSS, 1850)
Pl. 8, Figs 3–7.

1850. *Cypridina notata* n. sp. – REUSS, pl. IX, fig. 16.
1956. *Cythereis notata* (REUSS) – SUZIN, p. 149–150, pl. VII, fig. 16.
?1974. *Aurila notata* (REUSS) – CERNAJSEK, p. 467– 468, pl. I, figs 5–6.
1983. *Aurila notata* (REUSS) – JIŘIČEK, pl. IV, fig. 23.
1990. *Aurila notata* (REUSS) – ZELENKA, p. 266, pl. I, fig. 12.
1990. *Aurila notata* (REUSS) – STANCHEVA, p. 43, pl. XII, figs 1–6.
2005. *Aurila notata* (REUSS) – JANZ, VENNEMANN, pl. II, fig. 4.
2006. *Aurila (Euaurila?) notata* (REUSS) – GROSS, PILLER, p. 54–55, pl. XXIX, figs 1–9.

Material: Mány–22: 5 carapaces, 146 RV, 132 LV (121 juveniles, 162 adults), Perbál–5: 6 carapaces, 182 RV, 164 LV (150 juveniles, 202 adults) Mány–17: 81 carapaces, 2219 RV, 2002 LV (1840 juveniles, 2462 adults).

Dimensions (in mm): L= 0,9–0,95 mm, H= 0,54–0,58 mm, L/H= 1,6–1,7.

Description: The lateral outline of valves ear-shaped; anterior outline asymmetrically rounded, dorsal outline slightly convex and very slightly sloping towards the posterior end; upper part of posterior end obliquely truncated while its lower part rounded attaining the pointed or narrowly rounded caudal process; ventral margin moderately sinuous in front of the mid-length; maximum height anteriorly; smooth and distinct eye tubercle in the anterodorsal corner.

Ornamentation: the valve surface densely and coarsely pitted.

Sexual dimorphism: Male forms are more elongated than females.

Variability: Juveniles are more triangular in lateral outline than adults.

Remarks: The studied specimens are less rectangular in lateral view than the specimens described by CERNAJSEK (1974) from the Vienna Basin.

Stratigraphical and geographical distribution: Upper Sarmatian: Slovakia (Vienna Basin, Transcarpathian Basin) (ZELENKA, 1990; JIŘIČEK, 1983); Austria (Vienna Basin)

(CERNAJSEK, 1974; JANZ, VENNEMANN, 2005; GROSS, PILLER, 2006), Hungary (Zsámbék Basin) (this work); Russia (Caucasus) (SUZIN, 1956).

Genus *Senesia* JIŘIČEK, 1974

Senesia vadaszi (ZALÁNYI, 1913)
Pl. 7, Figs 1–4.

1913. *Cythereis vadaszi* n. sp. – ZALÁNYI, p. 123–124, pl. VIII, figs 16–18, textfigs 4.e, 30.
1956. *Cythereis vadaszi* ZALÁNYI – CHOCZEWSKI, p. 72, pl. III, fig. 3.
1963. *Mutilus (Aurila) vadaszi* (ZALÁNYI) – STANCHEVA, p. 29, pl. IV, fig. 8.
1974. *Senesia vadaszi* (ZALÁNYI) – JIŘIČEK, p. 446, pl 1, figs 7–8.
1976. *Aurila vadaszi* (ZALÁNYI) – CHINTĂUAN, NICORICI, p. 17, pl. V, fig. 6.
1978. *Senesia vadaszi* (ZALÁNYI) – BRESTENSKÁ, JIŘIČEK, pl. 8, fig. 12.
1983. *Senesia vadaszi* (ZALÁNYI) – JIŘIČEK, pl. II, fig. 7.
1984. *Senesia limpida* n. sp. – STANCHEVA, p. 38–40, pl. 2, fig. 5.
1990. *Senesia vadaszi* (ZALÁNYI) – ZELENKA, pl. I, figs 6–7.
1990. *Senesia vadaszi* (ZALÁNYI) – STANCHEVA, pl. XIII, figs 6–7.
1990. *Senesia limpida* (STANCHEVA) – STANCHEVA, pl. XIII, fig. 9.
1995. *Senesia vadaszi* (ZAL.) – ZLINSKÁ, FORDINÁL, pl. XXVIII, figs 3–4.
2001. *Senesia vadaszi* (ZALÁNYI) – SZUROMI-KORECZ, SZEGŐ, pl. IV, fig 4.
2004. *Senesia vadaszi* (ZALÁNYI) – ZORN, p. 187, pl. IV, fig. 7.
2004. *Senesia vadaszi* (ZALÁNYI) – AIELLO, SZCZECHURA, p. 31, pl. V, figs 9–10.
2004. *Senesia vadászi* (ZALÁNYI) – TÓTH, p. 138–139, pl. V, figs 3–6.
2006. *Senesia vadaszi* (ZALÁNYI) – GROSS, PILLER, p. 59–60, pl. XXXII, figs 6–10.

Material: Mány–22: 978 carapaces, 489 RV, 768 LV (209 juveniles, 2026 adults), Perbál–5: 18 carapaces, 9 RV, 14 LV (4 juveniles, 37 adults), Mány–17: 322 carapaces, 161 RV, 253 LV (69 juveniles, 667 adults).
Méret (mm): L= 0,91–0,96 mm, H= 0,57–0,59 mm, H/L= 1,6–1,63.
Variability: The degree of ornamentation varies; in some specimens it is less distinct.
Remarks: In my opinion the specimens described and illustrated by STANCHEVA (1984) are probably juvenile forms of this species.
Stratigraphical and geographical distribution: Karpatian: Slovakia (Vienna Basin) (JIŘIČEK, 1983), Badenian: Czech Republic (BRESTENSKÁ, JIŘIČEK, 1978); Romania (Transylvania) (CHINTĂUAN, NICOROCI, 1976), Lower Badenian: Lower Austria (ZORN, 2004), Upper Badenian: Poland (Upper Silesia) (AIELLO, SZCZECHURA, 2004), Lower Sarmatian: Poland (the southeastern region) (CHOCZEWSKI, 1956); Slovakia (the eastern region, Vienna Basin) (ZLINSKÁ, FORDINÁL, 1995; JIŘIČEK, 1974, ZELENKA, 1990); Austria (Vienna Basin) (GROSS, PILLER, 2006), Bulgaria (STANCHEVA, 1963, 1984, 1990); Hungary (SZUROMI-KORECZ, SZEGŐ, 2001; TÓTH, 2004, this work).

Family Loxoconchidae SARS, 1925
Genus *Loxoconcha* SARS, 1866

Loxoconcha kochi MÉHES, 1908
Pl. 9, Fig. 6.

1908. *Loxoconcha kochi* n. sp. – MÉHES, p. 543–544, pl. IX, figs 5–9.
?1972. *Loxoconcha kochi* MÉHES, 1908 – KRSTIĆ, p. 252–253, pl. I, fig. 9, pl. 5, fig. 4, pl. 7, figs 7–9.
1974. *Loxoconcha kochi* MÉHES, 1908 – CERNAJSEK, p. 478, pl. II, figs 10–11.
1978. *Loxoconcha kochi* MÉHES, 1908 – CARBONNEL, p. 114, pl. I, figs 5, 9– 10.
1985. *Loxoconcha kochi* MÉHES, 1908 – IONESI, CHINTĂUAN, pl. II, fig. 3.

Material: Mány–22: 4 RV, 3 LV, Perbál–5: 1 RV, Mány–17: 12 RV, 9 LV (adults).
Dimensions (in mm): L= 0,64–0,85 mm, H= 0,4–0,5 mm, L/H=1,58–1,75.
Description: The lateral outline of valves oblong-rhomboideal; anterior outline asymmetrically rounded, somewhat truncated in its upper part; dorsal outline nearly straight; upper part of the posterior end obliquely truncated while its lower part rounded; ventral outline sinuous in front of the mid-length; maximum height nearly centrally, eye tubercle smooth and well-developed.

Ornamentation: distinct reticulation arranged in concentric rows on the lateral valve surface.

Stratigraphical and geographical distribution: Sarmatian: Austria (Vienna Basin) (CERNAJSEK, 1974); Romania (Dobrogea) (IONESI, CHINTĂUAN, 1985), Upper Sarmatian: Hungary (Zsámbék Basin) (this work), Lower Pannonian (?): Hungary (MÉHES, 1908), Messinian and Pliocene (?): France (the Rhône Valley, Corsica) (CARBONNEL, 1978).

Loxoconcha porosa MÉHES, 1908
Pl. 9, Figs 3–5.

1908. *Loxoconcha porosa* n. sp. – MÉHES, p. 542–543, pl. VIII, figs 10–14.
1972. *Loxoconcha porosa* MÉHES, 1908 – KRSTIĆ, p. 244–245, pl. I, figs 2–3.
1972. *Loxoconcha porosa* MÉHES, 1908 – SOKAČ, p. 85, pl. XLIV, figs 8–11.
?1980. *Loxoconcha porosa* MÉHES, 1908 – IONESI, CHINTĂUAN, pl. II, fig. 7.
1985. *Loxoconcha porosa* MÉHES, 1908 – IONESI, CHINTĂUAN, pl. I, fig. 4.
1986. *Loxoconcha porosa* MÉHES, 1908 – IONESI, CHINTĂUAN, pl. III, fig. 5.
1990. *Loxoconcha porosa* MÉHES – ZELENKA, pl. I, figs 8–9.

Material: Mány–22: 12 LV (adults), Perbál–5: 3 LV (adults), Mány–17: 189 RV, 237 LV (47 juveniles, 379 adults).
Dimensions (in mm): L= 0,61–0,7 mm, H= 0,42–0,47 mm, L/H= 1,45–1,5.
Description: The lateral outline of valves oblong-rhomboideal; anterior outline asymmetrically rounded, somewhat truncated in its upper part; dorsal outline nearly straight; upper part of the posterior end obliquely truncated while its lower part rounded; ventral outline sinuous in front of the mid-length; maximum height nearly centrally, eye tubercle smooth and well-developed.
Ornamentation: the valve surface densely, coarsely and concentrically pitted in lateral view.
Variability: The degree of the ornamentation is strongly varying (the distinctness of the pits). Numerous specimens is less ornamented.

Remarks: The anterior margin of the specimens described and illustrated by IONESI and CHINTĂUAN (1980) is almost symmetrically rounded contrary to the holotype (MÉHES, 1908) and the studied specimens.
Stratigraphical and geographical distribution: Sarmatian: Serbia (KRSTIĆ, 1972), Romania (Dobrogea) (IONESI, CHINTĂUAN, 1985, 1986), Upper Sarmatian: Slovakia (Vienna Basin) (ZELENKA, 1990), Hungary (Zsámbék Basin) (this work), Lower Pannonian (?): Hungary (MÉHES, 1908), Upper Pannonian: Croatia (Pannonian Basin) (SOKAČ, 1972).

Loxoconcha ex gr. *punctatella* (REUSS, 1850)
Pl. 10, Figs 1,2.

2004. *Loxoconcha* ex gr. *punctatella* (REUSS) – TÓTH, p. 140–141, pl. 6, figs 1–2.
2006. *Loxocorniculum* cf. *punctatella* (REUSS) – SZCZECHURA, fig. 10/3.

Material: Mány–22: 17 carapaces, 17 RV, 68 LV, Perbál–5: 1 carapaces, 2 RV, Mány–17: 8 carapaces, 8 RV, 32 LV (adults).
Dimensions (in mm): L= 0,54–0,57 mm, H= 0,37–0,38 mm, L/H= 1,42–1,54.
Variability: Some specimens are less ornamented in the studied samples.
Remarks: Only the ornamentation of the studied specimens is similar to the those described by DUCASSE and CAHUZAC (1996). The major differences concern the lateral outline of specimens; in the studied specimens the dorsal and ventral margin are less parallel moreover the carapace is more elongated.
Stratigraphical and geographical distribution: Badenian: Poland (Upper Silesia) (SZCZECHURA, 2006), Lower Sarmatian: Hungary (Zsámbék Basin) (this work).

Genus *Loxocorniculum* BENSON and COLEMAN, 1963

Loxocorniculum hastatum (REUSS, 1850)
Pl. 9, Figs 1,2.

1850. *Cytherina hastata* REUSS – REUSS, pl. IX, fig. 26.
1941. *Loxoconcha hastata* (REUSS) – TRIEBEL, pl. VIII, figs 83–84.
1962. *Loxoconcha hastata* (REUSS) – STANCHEVA, p. 43–44, pl. VI, fig. 5.
1967. *Loxoconcha hastata* (REUSS) – KHEIL, p. 225–226, pl. XX, fig. 9.
1969. *Loxoconcha hastata* (REUSS) – CARBONNEL, p. 171–172, pl. VIII, figs 14–15.
1971. *Loxoconcha* aff. *hastata* (REUSS) – KOLLMANN, p. 653–654, pl. XV, figs 1–7.
1974. *Loxoconcha hastata* (REUSS) – CERNAJSEK, p. 463– 465, pl. III, figs 1–2.
1978. *Loxoconcha hastata* (REUSS) – BRESTENSKÁ, JIŘIČEK, tabl. 9, fig. 10.
1985. *Loxoconcha hastata* (REUSS) – ZELENKA, pl. III, fig. 5–6.
1991. *Loxocorniculum hastata* (REUSS), morphe "crêtée" – BEKAERT et al., pl. II, fig. 9.
1991. *Loxocorniculum hastata* (REUSS), morphe "crêtée" – DUCASSE et ali, p. 451–452, pl. III, fig. 1–5.
1992. *Loxoconcha hastata* (REUSS) – PARUCH-KULCZYCKA, p. 268, pl. IV, fig. 1.
1996. *Loxocorniculum hastata* (REUSS) – DUCASSE, CAHUZAC, pl. I, fig. 8.
1998. *Loxocorniculum hastata* (REUSS) – ZORN, p. 206–207, pl. IX, figs 9–11.
2001. *Loxoconcha hastata* (REUSS) – SZUROMI-KORECZ, SZEGŐ, pl. IV, fig 1.
2003. *Loxocorniculum hastatum* (REUSS) – ZORN, pl. I, fig. 13.

2004. *Loxocorniculum hastatum* (REUSS) – ZORN, p. 187, pl. V, fig. 4.
2004. *Loxocorniculum hastata* (REUSS) – TÓTH, p. 141–142, pl. 6, figs 3–7.
2004. *Loxocorniculum hastatum* (REUSS) – AIELLO, SZCZECHURA, p. 35–36, pl. 7, figs 4–5.
2005. *Loxocorniculum hastatum* (REUSS) – JANZ, VENNEMANN, pl. II, fig. 8.
2006. *Loxocorniculum* cf. *hastatum* (REUSS) – SZCZECHURA, figs 10/13–15.

Material: Mány–22: 2 RV, 1 LV, Perbál–5: 8 RV, 15 LV, Mány–17: 61 RV, 31 LV (adults).
Dimensions (in mm): L= 0,62–0,64 mm, H= 0,39–0,41 mm, L/H= 1,51–1,64.
Stratigraphical and geographical distribution: Oligocene to Miocene (Aquitanian, Burdigalian, Langhian): France (Aquitaine Basin), (DUCASSE et al, 1991; BEKAERT et al., 1991; DUCASSE, CAHUZAC, 1996), Burdigalian: France (Rhône Basin) (CARBONNEL, 1969), Eggenburgian: Lower Austria (KOLLMANN, 1971), Karpatian: Czech Republic (KHEIL, 1967, ZORN, 2003), Lower Austria (Molasse Basin) (ZORN, 1998, 2003, 2004),
Badenian: Lower Austria (Molasse Basin) (ZORN, 1998, 2004), Poland (the southwestern region) (PARUCH-KULCZYCKA, 1992, SZCZECHURA, 2006), Austria (Vienna Basin) (CERNAJSEK, 1974; BRESTENSKÁ, JIRICEK, 1978; JANZ, VENNEMANN, 2005), Czech Republic (ZELENKA, 1985), Bulgaria (STANCHEVA, 1962), Upper Badenian: Poland (Upper Silesia) (AIELLO, SZCZECHURA, 2004), Sarmatian: Hungary (SZUROMI-KORECZ, SZEGŐ, 2001; this work).

Family Xestoleberididae SARS, 1928
Genus *Xestoleberis* SARS, 1866

Xestoleberis fuscata SCHNEIDER, 1953
Pl. 10, Figs 3–5.

1953. *Xestoleberis fuscata* SCHNEIDER – SCHNEIDER, p. 108–109, pl. IV, fig. 7.
non 1956. *Xestoleberis fuscata* SCHNEIDER – POBEDINA, p. 150, pl. XXI, fig. 11.
1963. *Xestoleberis fuscata* SCHNEIDER – STANCHEVA, p. 38–39, pl. VI, fig. 5.
2004. *Xestoleberis* sp. – ZORN, p. 187, pl. V, figs 14–15.
2004. *Xestoleberis fuscata* SCHNEIDER – TÓTH, p. 142–143, pl. 7, figs 3–5. cum. syn.

Material: Mány–22: 2 RV, 1 LV (juveniles), Perbál–5: 3 carapaces, 20 RV, 9 LV (27 juveniles, 5 adults), Mány–17: 74 carapaces, 611 RV, 268 LV (761 juveniles, 192 adults).
Dimensions (in mm): L= 0,57–0,71 mm, H= 0,33–0,41 mm, L/H=1,72–1,73.
Remarks: The specimens of the Zsámbék Basin are very related to the original description (SCHNEIDER, 1953).
Stratigraphical and geographical distribution: Lower Badenian: Lower Austria (ZORN, 2004), Sarmatian: Russia (Caucasus) (SCHNEIDER, 1953), Bulgaria (STANCHEVA, 1963), Hungary (Zsámbék Basin) (this work).

References

AGALAROVA, D. A. (1961): Ostrakodii miocenovih i postmiocenovih otlozeni Azerbaidana, Baku: 1–125

AGALAROVA, D. A. (1967): Mikrofauna ponticeskih otlozeni Azerbaidana i Sopregelunih Rajonov. Nedra, Leningrad: 1–420

APOSTOLESCU, V, GUERNET, C. (1992): Les ostracodes Oligocenes de la region Forucalquier-Manosque (Bassin continental d'Apt, Haute-Provence). – Rev. Micropal, 35(2):91–115

AIELLO, G, SZCZECHURA, J. (2004): Middle miocene ostracods of the Fore-Carpathian Depression (Central-Paratethys, southwestern Poland). – Boll. Soc. Pal. Italiana 43(1–2):11–70

BASSIOUNI, M. A. (1979): Brakische und marine Ostrakoden (Cytherideinae, Hemicytherinae, Trachyleberidinae) aus dem Oligozän und Neogen der Türkei. – Geol. Jahr., B(31):1–200

BEKAERT, O, CAHUZAC, B, DUCASSE, O, ROUSSELLE, L. (1991): Espèces et populations d'ostracodes a la limite Oligo-Miocéne en Aquitaine: strategie de réponse, microévolution, dans le cadre stratigraphique regional. – Rev. Paleobiol, 10(2):217–227

BRESTENSKÁ, E. (1975): Ostracoden des Egerien. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Ed: E. Brestenská Bd.V. :377–411

BRESTENSKÁ, E, JIŘIČEK, R. (1978): Ostrakoden des Badenien der Zentralen Paratethys. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Ed: Brestenská, E, Bd.VI.:405–439

BURYNDINA, L. V. (1969): Sarmatskie ostrakodii iz semejstvo Polycopidae i Cytheridae Zakarpatja. – Paleont. Sborn., 6/2:62–67

CARBONNEL, G. (1969): Les ostracodes du Miocéne Rhodanien. – Doc. Lab. Géol. Fac. Sci. de Lyon., 32(1,2):1–469

CARBONNEL, G. (1978): L'espéce *Cyprideis pannonica* MEHES, 1908 dans la Téthys au Messinien (Miocéne). – Doc. Lab. Géol. Fac. Sci. Lyon, 72:79–97

CARBONNEL, G, WEIDMANN, M, BERGER, J.- P. (1985): Les ostracodes lacustres et Saumatres de la molasse de Suisse occidentale. – Rev. Paleobiol, 4(2):215–251

CERNAJSEK, T. (1971): Die Entwicklung und Abgrenzung der Gattung *Aurila* POKORNY,1955 im Neogen Österreichs (Vorbericht). – Verh. Geol. B.-A, 1971/3:571–575

CERNAJSEK, T. (1972): Zur Palökologie der Ostrakodenfaunan am Westrand des Wiener Beckens. – Verh. Geol. B.-A, 1972/2:237–246

CERNAJSEK, T. (1974): Die Ostracodenfaunen der Sarmatischen Schichten in Österreich. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Ed: BRESTENSKÁ, E, Bd. IV.:458–491

CHINTĂUAN, I. NICOROCI, E. (1976): Ostracodele miocene din sudul bazinului simleu. – Dări seamă şedinţ. Inst. Geol. si Geofiz. Paleont. (1974/75) 62:3–23

CHOCZEWSKI, J. (1956): Ostracoda of Lower Sarmat at Dwikozy near Sandomierz. – Rocz. Pol. Tow. Geol., 25:55–87

DORNIČ, J, KHEIL, J. (1963): Ein Beitrag zur Mikrobiostratigraphie und Tektonik der NW-Randteile des Wiener Beckens und des sog. Uherské Hradiště-Grabens. – Sbor. Geol. Věd, Geologie 3:85–107

DUCASSE, O, BEKAERT, O, ROUSSELLE, L. (1991): Les Loxoconchidae (Ostracodes) a la limite Oligo-Miocéne en Aquitaine: évolution, adaptation et biostratigraphie. – Geobios, 24(4):435–462

DUCASSE, O, CAHUZAC, B. (1996): Évolution de la faune d'ostracodes dans un cadre paléogéographique et interprétation des paléoenviroments au Langhien en Aquitaine. – Rev. Micropal., 39(4):247–260

FORDINÁL, K, ZLINSKÁ, A. (1994): Sarmatian Fauna from the Stretava and Kochanovce Formations in the Sečovce Area (Albinovská horka, Eastern Slovakian Basin). – Geol. práce, Správy 99: 77–82

FORDINÁL, K, ZÁGORSEK, K, ZLINSKÁ, A. (2006): Early Sarmatian biota in the northern part of the Danube Basin (Slovakia). – Geol. Carpath. 57(2): 123–130

GOERLICH, F. (1953): Ostrakoden der Cytherideinae aus der Tertiären Molasse Bayerns. – Senckenbergiana 34(1–3):117–148

GÖRÖG, Á. (1992): Sarmatian foraminifera of the Zsámbék Basin, Hungary. – Ann. Univers. Sci. Budapestinensis de Rolando Eötvös Nominate, Sectio Geologica. 29:31–153

GROSS, M, PILLER, E. W. (2006): Mittelmiozäne Ostracoden aus dem Wiener Becken (Badenium/Sarmatium, Österreich). – Österreichische Akademie der Wissenschaften Schriftenreihe der Erdwissenschaftlichen Komissionen. Sonderband 1: 378–425

HÁMOR, G. (1997): Kozárd Formation. – in: Basic Litostratigraphic Units of Hungary. Ed: CSÁSZÁR Géza, Budapest:76

HÁMOR, G, IVANCSICS, J. (1997): Tinnye Formation.– in: Basic Litostratigraphic Units of Hungary. Ed: Császár Géza, Budapest:76

HANGANU, E. (1974): Observations sur l'ostracofaune pontienne de la region comprise entre la vallée du Danube et la vallée du Motru. – Rev. Españ. Micropaleont. 6(3):335–345

HARTMANN, G, PURI, H. S. (1974): Summary of Neontological and Paleontological Classification of Ostracoda. – Mitt. Hamburg. Zool. Mus. Inst. 70:7–73

HÉJJAS, I. (1895): Új adatok Erdély fossil Ostracodafaunájához. – Erdélyi Múzeum-Egylet, Értesítő, Orvos-természettudományi szakosztályából, II. Természettudományi szak, Kolozsvár, 19 évf. 16(1):35–68, 99–112

IONESI, B. et CHINTAUĂN, I. (1973): Studiul ostracodelor din depositele bugloviene de pe platforma moldovenească (regiunea dintre valea siretului şi valea Sucevei). – Dări seamă şedinţ. Inst. Geol., Strat. 1972–1973 (1974), 60:89–113

IONESI, B, CHINTĂUAN, I. (1975): Studiul ostracodelor din depositele Volhiniene de pe Platforma Moldovenească (sectorul dintre valea siretului şi valea Moldovei). – Dări seamă şedinţ. Inst. Geol. Strat. (1973–1974) 61:3–14

IONESI, B, CHINTĂUAN, I. (1980): Contributii la cunoaşterea faunei de ostracode din Basarabianul Platformei a Moldovaneşti (Regiunea dintre Siret si Moldova). – An. Şti. Univ. Iaşi. 26(2b):59–66

IONESI, B, CHINTĂUAN, I. (1985): Ostracofaune des dépôts Besarabiens de la région Văleni (Dobrogea du sud). – An. Şti. Univ. Iaşi. Geol. Geogr. 31(2b):32–36

IONESI, B, CHINTĂUAN, I. (1986): Contributions à la connaissance d'ostracofaune du Volhynien (Dobrogea du sud). – An. Şti. Univ. Iaşi. Geol. Geogr. 31(2b):32–36

JANZ, H, VENNEMANN, T. W. (2005): Isotopic composition (O, C, Sr, and Nd) and trace element ratios (Sr/Ca, Mg/Ca) of Miocene marine and brackish ostracods from North Alpine Foreland deposits (Germany and Austria) as indicatos for palaeoclimate. – Palaeogeography, Palaeoclimatology, Palaeoecology 225: 216–247

JIŘIČEK, R. (1974): Biostratigraphische Bedeutung der Ostracoden des Sarmats s. str. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Ed: E. BRESTENSKÁ Bd. IV.:434–458

JIŘIČEK, R. (1983): Redefinition of the Oligocene and Neogene ostracod zonation of the Paratethys. – Misc. Micropalaentol. Mem. Vol. 18th Eur. Colloq. Micropaleontol., Bratislava-Praha:195–236

JIŘIČEK, R. (1985): Die Ostracoden des Pannonien. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Bd. VII. M^6. Pannonien (Slavonien und Serbien): 378–425

JIŘIČEK, R, RIHA, J. (1991): Correlation of Ostracod Zones in the Paratethys and Tethys. – Saito Ho–on Kai Special Publications (Proceedings of Shallow Tethys) 3: 435–457.

KHEIL, J. (1967): Die Ostracoden der Karpatischen Serie. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Bd. IV. M^3. Die Karpatische Serie und ihr Stratotypus:213–230

KOLLMANN, K. (1958): Cytherideinae und Schulerideinae n. subfam. (Ostracoda) aus dem Neogen des östlichen Österreich. – Mitteil. Geol. Gesell, Wien 51(1958):28–195

KOLLMANN, K. (1971): Die Ostracoden der Eggenburger Schichtengruppe Niederösterreichs. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Ed: E. Brestenská Bd. II. M^1:605–717

KRSTIĆ, N. (1959): Zur Kenntniss der Sarmatischen Ostracoda Serbiens. – Ann. géol. Pén. Balkan. 26:203–204

KRSTIĆ, N. (1972): Ostrakodi kongeriskih slojeva: 10. Loxoconcha. – Bull. Mus. Hist. Nat. Belgrade, ser. A, 27:243–275

KRSTIĆ, N. (1973): Ostrakodi kongeriskih slojeva: 11. – Rad. Geol-rud. Istraz. I. Ispit. Nukl. I mineral. sirov, 8(8):53–99

KRSTIĆ, N. (1980): Some Miocene ostracods ALEKSINAC's Pomoravlje. – Rad. Geoinst., knjiga 14:116–124

KRSTIĆ, N. (1985): Ostracoden im Pannonien der Umgebung von Belgrad. – in: Chronostratigraphie und Neostratotypen Miozän der Zentralen Paratethys. Bd. VII. M^6 Pannonien (Slavonien und Serbien):103–143

MANDELSTAM, M. I, SCHNEIDER, G. F. (1963): Iskopaemye ostracodi USSR sem. Cyprididae. – Trudy VNIGRI, 1963:331

MÉHES, Gy. (1908): Adatok Magyarország pliocén Ostracodáinak ismeretéhez II. Az alsópannóniai emelet Darwinulidae-i és Cytheridae-i. – Bull. Hung. Geol. Soc, 38:61–65

MITROVIĆ, S, RUNDIĆ, L. (1991): A contribution to the study of the Sarmatian in Belgrade area. – Ann. Geol. Penins. Balk. 55(2):59–73.

MORKHOVEN, F. P. C. M. (1962): Post- Palaeozoic Ostracoda, Vol. I. Elsevier Publishing Company, Amsterdam, London, New York:3–197

MÜLLER, D. (1985): Biostratigraphische Untersuchungen in der subalpinen Unteren Süsswassermolasse zwischen Inn und Lech anhand von Ostrakoden. – Paleontogr., Abh. A, 187(1–3):1–57

OERTLI, H. (1956): Ostracoden aus der oligozänen und miozänen Molasse der Schweiz. – Schweiz. Paläont. Abh., 74:1–118

OLTEANU, R. (1998): Orthogenesis and orthoselection, Leptocythere lineages in brackish-water Neogene (Ostracoda). – Rev. Roum. Géol, 42:141–153.

OLTEANU, R. (2001): Hemicytherinae subfamily (Ostracoda, Crustacea) and ist species in Paratethys brackish-water facieses (Neogene, Carpathian areas). Their morphology and taxonomy. – St. cerc. geologie, 46:71–110

PARUCH-KULCZYCKA, J. (1992): Malzoraczki srodkowego miocenu (badenu) z otwour Broniszowice (SW Polska). – Kwartalnik Geologiczny 36(2):259–280

PIETRZENIUK, E. (1973): Neue *Callistocythere*-Arten (Ostracoda) aus dem Unteren Sarmat des Tokajer Gebirges (Nördliche Ungarische VR). – Z. geol. Wiss. 1(1973):703–733

POBEDINA, V. M. (1956): Spravotnik pa mikrofaune stedne y verhne. – Miotsenovih Otlozheny Azerbaidana:150

POPOV, S.V, RÖGL, R, ROZANOV, A.Y, STEININGER, F.R, SHCHERBA, I.G, KOVAC, M. (Eds), (2004): Lithological-Paleogeographic maps of Paratethys. 10 maps Late Eocene to Pliocene. – Cour. Forsch. Senckenberg, 250:1–46

REUSS, A. E. (1850): Die fossilen Entomostraceen des österreichischen Tertiärbecken. – Haidingers Naturw. Abhandl. 31:1–92

SAS, E. (1977): A Mányi kutatási terület összefoglaló földtani zárójelentés. Várpalota. MÁFI Adattár. (Manuscript)

SCHEIDAJEVA-KULCEVA, H. M. (1966): Ostracodi ponticeskovo jarusa vastrenova Azerbaidana. Izg. Ak. N. Azerb. SSR, Baku: 1–127

SCHNEIDER, G. F. (1939): Ostracodi miotsena Krimsko- Kaukazskhocho Basseina. – Problemy Paleontologii, 5:177–208

SCHNEIDER, G. F. (1949): Miotsenovaia fauna ostracod Kavkaza y Krima. – Mikrofauna neft. mestor. USSR Sb. II, Trudy VNIGRI, n. s. vyp. 34, M–L.:89–189

SISSINGH, W. (1972): Late Cenozoic Ostracoda of the South Aegean Island Arc. – Utrecht Micropaleont. Bull., 6:187

SCHNEIDER, G. F. (1953): Fauna ostracod iz Miotsenovih otlozeni zapadnoi Chasti Ukrainy. – Geol. sb., VNIGRI II(V.):108–109

SOKAČ, A. (1967): Pannonische und Pontische Ostracoden fauna des südwestlichen Teiles des Pannonischen Becken. – Carpatho-Balkan Geol. Ass., 8th Congr. Belgrade, Rep. Stratigr.:445–453

SOKAČ, A. (1972): Pannonian and Pontian Ostracoda Fauna of Mt. Medvednica. – Jugosl. Akad. Znan. Umj., Palaentologia Jugoslavica 11:73

STANCHEVA, M. (1962): Ostracodna fauna ot neogena v severozapadna Bulgariia. I. tortonskii ostracodi. – Tr. geol. Bulgariia , Ser. pal., 4, Sofia:5–75

STANCHEVA, M. (1963): Ostracodna fauna ot neogena v severozapadna Bulgariia. II: sarmatskii ostracodi. – Tr. geol. ma Bulgariia , Ser. pal. 5:1–75

STANCHEVA, M. (1965): Ostracodna fauna ot neogena v severozapadna Bulgariia. V: razvitie na neogenskite ostrakodi i tjaahnoto stratirafsko značenie. – Tr. geol. ma Bulgariia , Ser. pal. 7:1–75

STANCHEVA, M. (1972): Sarmatian ostracods from north-eastern Bulgaria. – Bull. Geol. Inst. Ser. Pal, 21:103–128

STANCHEVA, M. (1984): Some new Upper Miocene Ostracod's taxa from North Bulgaria. – Palaeontology, Stratigraphy and Lithology, 19:35–42

STANCHEVA, M. (1990): Upper Miocene ostracods from northern Bulgaria – Geologica Balcanica series operum singulorum, 5:7–102

SUZIN, A. V. (1956): Ostracodi tretichnih otlozhenii Severnava Predkavkazia. Groznemsk. ordena Krasnaveznameni neft. in-t., Gostoptechnizdat: 1–184

SZCZECHURA, J. (2000): Age and evolution of depositional enviroments of the supra-evaporitic deposits in the northern, marginal part of the Carpathian Foredeep: micropaleontological evidence. – Geol. Quarterly 44(1):81–100

SZCZECHURA, J. (2006): Middle Miocene (Badenian) ostracods and green algae (Chlorophyta) from Kamienica Nawojowska, Nowy Sacz Basin (Western Carpathians, Poland). – Geol. Carpath. 57(2): 103–122

SZÉLES, M. (1963): Szarmáciai és pannóniai korú kagylósrákfauna a Duna-Tisza közi sekély- és mélyfúrásokból.– Bull. Hung. Geol. Soc, 93(1):108–116

SZÉLES, M. (1977): A kecskeméti Ke–3.sz. mélyfúrás pannóniai korú faunája. – Ann. Report Hung. Geol Inst. of 1975:163–186

SZÉLES, M. (1982): Pannonian ostracoda fauna from the borehole Tengelic 2. – Ann. Hung. Geol. Inst, Budapest, 65:235–289

SZUROMI-KORECZ, A, SZEGŐ, É. (2001): Data for knowledge of foraminifera and ostracoda microfauna of Kovácsszénája (SW-Hungary) – Folia Somloensis 10: 51–74

TÓTH, E. (2004): Sarmatian ostracods from Budapest (Hungary).– Hantkeniana 4, Shallow Tethys 6 Symposium proceedings, 25–29 August 2003: 129–159.

TRELEA-PAGHIDA, N, SIMIONESCU, T, COSTESCHI, G. (1970): Ostracodele miocene din podişul Moldovenesc. – An. Şti. Univ. Iaşi, Sec. Zb. 16: 107–120

TRIEBEL, E. (1941): Zur Morphologie und Ökologie der fossilen Ostracoden. – Senckenbergiana, 23(6):294–327

ZALÁNYI, B. (1913): Magyarországi miocén ostracodák. – A M. Kir. Földt. Int. Évkönyve 21(4):75–133

ZALÁNYI, B. (1929): Morpho-systematische Studien über fossilen Muschelkrebse. – Geol. Hung., Ser. Pal. 5(18):1–152

ZALÁNYI, B. (1956): Magyarországi kagylósrák- (Ostracoda)-faunák rétegtani értékelése. – A Magyar Állami Földtani Intézet Évi Jelentése az 1954. évről: 187–215

ZALÁNYI, B. (1959): Magyarországi kagylósrák– (Ostracoda)-faunák rétegtani értékelése. – A Magyar Állami Földtani Intézet Évi Jelentése az 1955–56. évről: 425–444

ZELENKA, J. (1985): Badenien Ostracoda from Podivín (Vienna Basin – southern Moravia). – Věst. Ústř. Geol., 60(4):245–248

ZELENKA, J. (1989): Význam B. Zalányiho pro výzkum neogennich ostrakodů a taxonomiká revize jeho určeni. – Misc. micropal. IV, Knihovnička Zemniho plynu a nafty, 9:149–159

ZELENKA, J. (1990): A review of the Sarmatian ostracoda of the Vienna basin. – In: Ostracoda and Global Events. Ed: Whatley, R, Maybury, C, Chapman and Hall, London, New York, Tokyo, Melbourne, Madras: 263–269

ZLINSKÁ, A, FORDINÁL, K. (1995): A Spodnosarmatská fauna zo stretavského súvrstvia z okolia Slanskej Huty (východoslovenská panva). – Geol. práce, Správy 100:71–75

ZORN, I. (1998): Ostracoda aus dem Karpat (Unter-Miozän) des Korneuburger Beckens (Niederösterreich). – Beitr. Paläont. 23:175–271

ZORN, I. (2003): Ostracods of the Karpatian. – In: The Karpatian. A Lower Miocene stage of the Central Paratethys. Ed: Brzobohatý, R, Cicha, I, Kovač, M, Rögl, F, Masaryk University , Brno: 236–240

ZORN, I. (2004): Ostracoda from the Lower Badenian (Middle Miocene) Grund Formation (Molasse Basin, Lower Austria). – Geol. Carpath. 55(2):179–189

Plate 1

Figs 1–4 *Cnestocythere* aff. *truncata* (REUSS, 1850).

Fig. 1 RV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.
Fig. 2 LV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.
Fig. 3 Hinge of LV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.
Fig. 4 Central muscle scars of RV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 50 µm.

Figs 5–6 *Euxinocythere (Euxinocythere) diafana* (STANCHEVA, 1963).

Fig. 5 RV. Mány–22 borehole, depth 139,2–141,4 m. Scale bar: 200 µm.
Fig. 6 LV. Mány–17 borehole, depth 133–134,2 m. Scale bar: 200 µm.

Fig. 7 *Euxinocythere (Euxinocythere) naca* (MÉHES, 1908).

LV. Mány–22 borehole, depth 84,8–85,1 m. Scale bar: 200 µm.

Plate 1

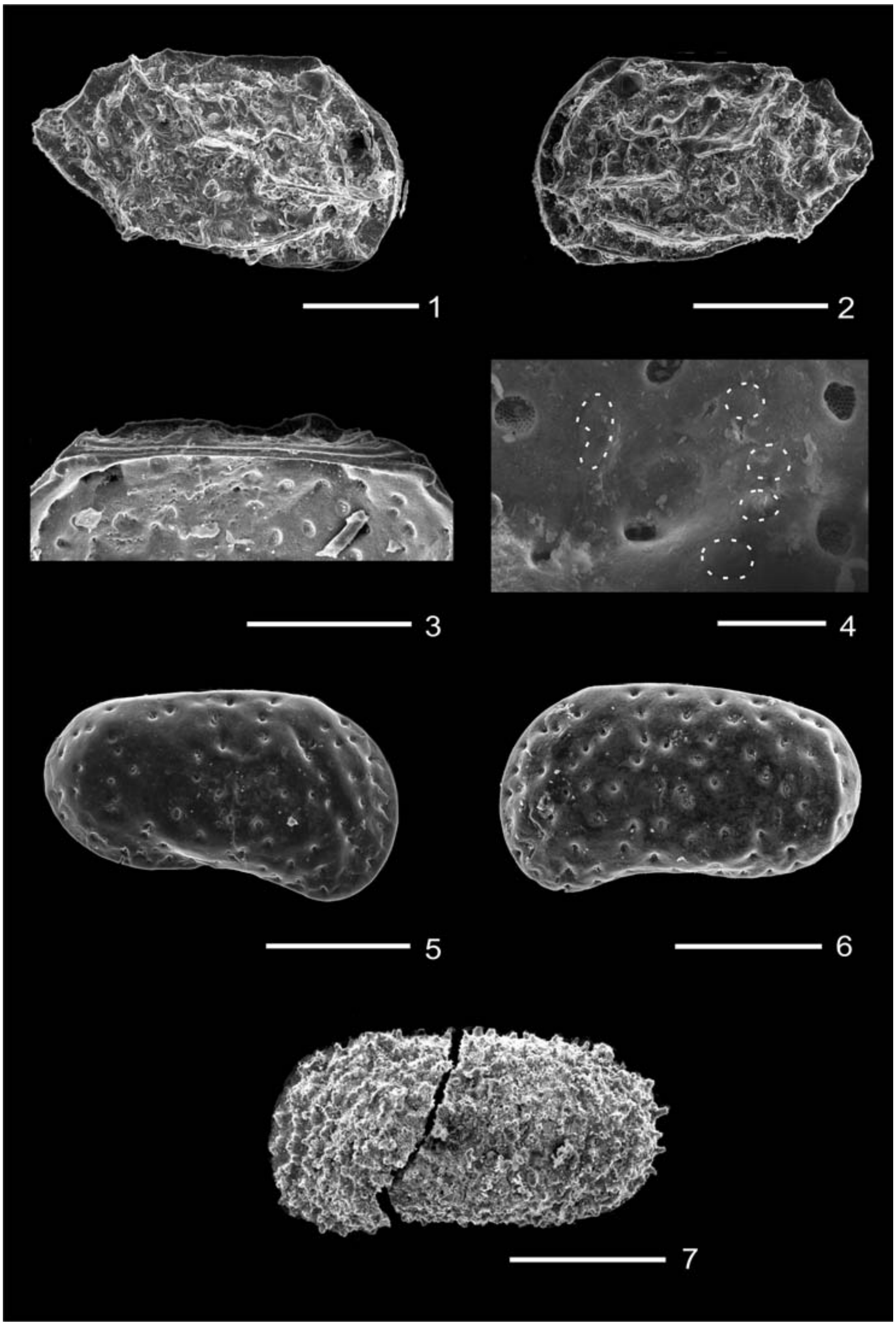


Plate 2

Figs 1–5 *Euxinocythere (Euxinocythere) praebosqueti* (SUZIN, 1956).
Fig. 1 RV. Mány–22 borehole, depth 74–80,2 m. Scale bar: 200 µm.
Fig. 2 LV. Mány–22 borehole, depth 74–80,2 m. Scale bar: 200 µm.
Fig. 3 RV. Mány–17 borehole, depth 81,5–85,3 m. Scale bar: 200 µm.
Fig. 4 LV from inside. Mány–17 borehole, depth 81,5–85,3 m.
Scale bar: 200 µm.
Fig. 5a Central muscle scars of LV. Mány–17 borehole, depth 81,5–85,3 m.
Scale bar: 50 µm.
Fig. 5b Hinge of LV. Mány–17 borehole, depth 81,5–85,3 m.
Scale bar: 200 µm.

Fig 6 *Amnicythere* sp.
LV. Mány–22 borehole, depth 74–80,2 m. Scale bar: 200 µm.

Plate 2

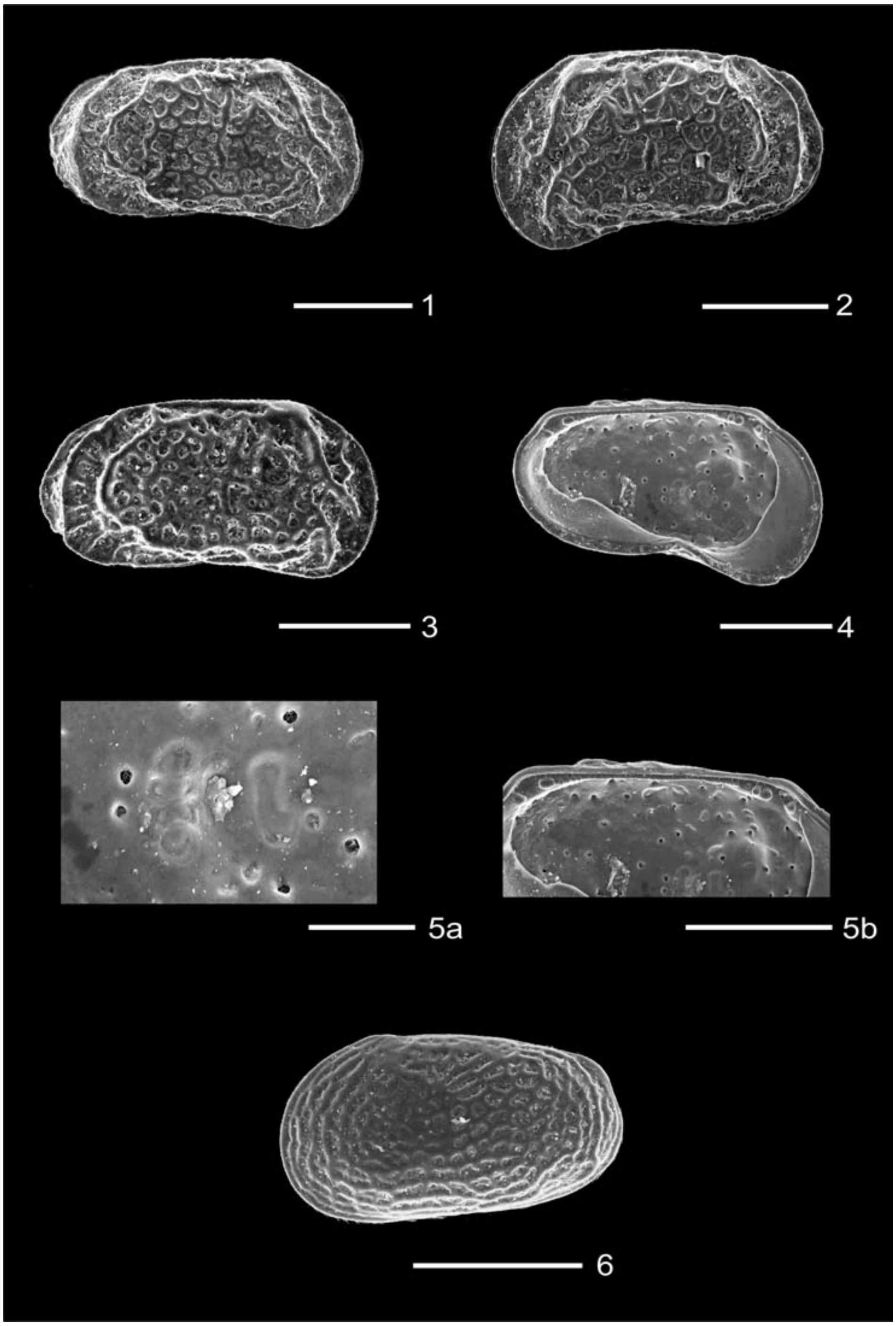


Plate 3

Figs 1–4 *Amnicythere tenuis* (REUSS, 1850).
Fig. 1 RV. Mány–22 borehole, depth 134,6–139,2 m. Scale bar: 200 µm.
Fig. 2 LV. Perbál–5 borehole, depth 104,8–105,8 m. Scale bar: 200 µm.
Fig. 3 RV from inside. Mány–17 borehole, depth 136,7–140,5 m. Scale bar: 200 µm.
Fig. 4 RV. Mány–17 borehole, depth 81,5–85,3 m. Scale bar: 200 µm.

Fig. 5 *Callistocythere egregia* (MÉHES, 1908).
RV. Mány–22 borehole, depth 151,5–153,3 m. Scale bar: 200 µm.

Fig. 6 *Callistocythere postvallata* PIETRZENIUK, 1973.
RV. Mány–22 borehole, depth 139,2–141,4 m. Scale bar: 200 µm.

Figs 7–8 *Callistocythere incostata* PIETRZENIUK, 1973.
Fig. 7 RV. Mány–22 borehole, depth 170,6–173 m. Scale bar: 200 µm.
Fig. 8 LV. Mány–22 borehole, depth 170,6–173 m. Scale bar: 200 µm.

Plate 3

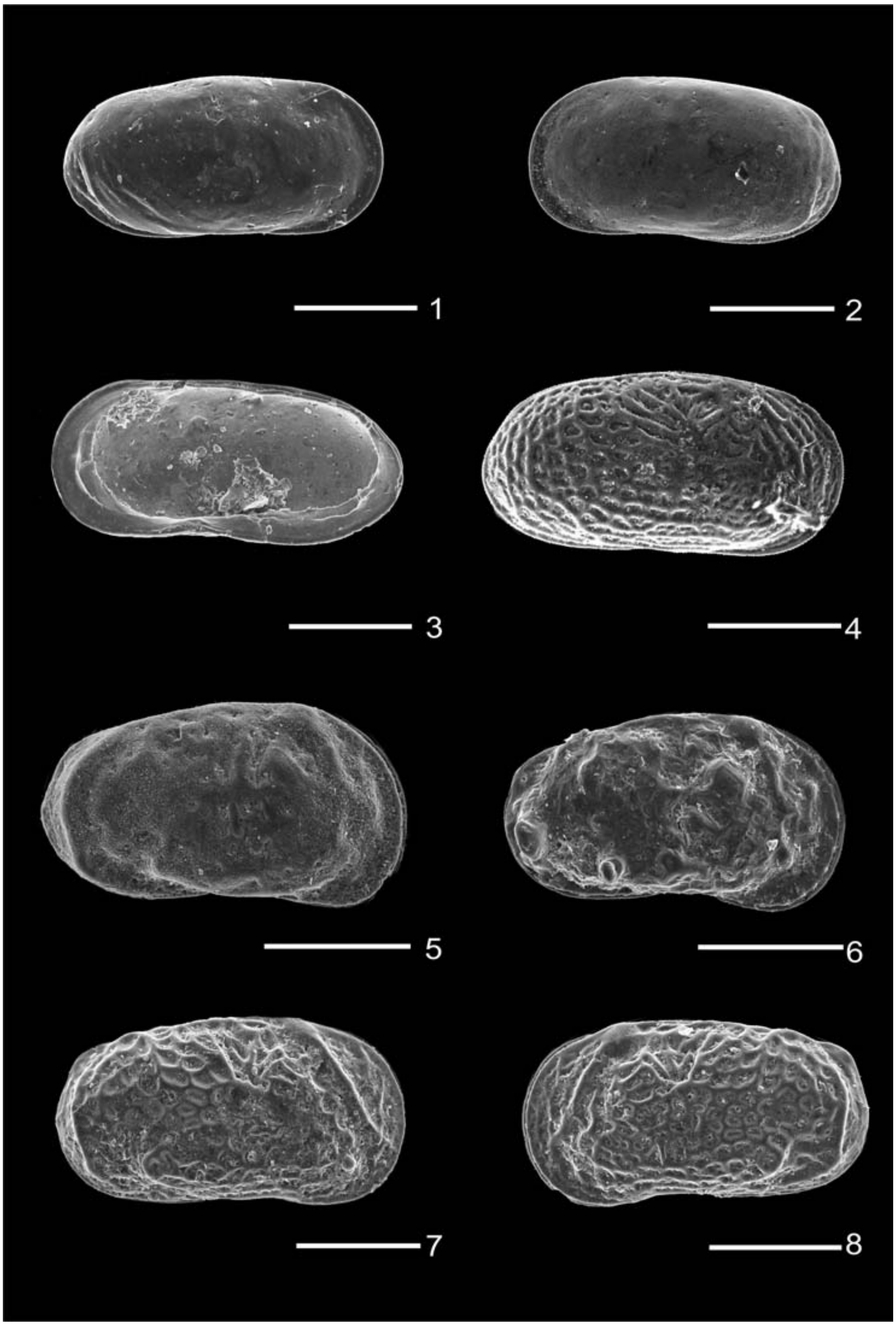


Plate 4

Figs 1–4,6 *Cyamocytheridea leptostigma leptostigma* (REUSS, 1850).
Fig. 1 RV. Mány–22 borehole, depth 62,5–66,5 m. Scale bar: 200 µm.
Fig. 2 LV. Mány–22 borehole, depth 45–52,5 m. Scale bar: 200 µm.
Fig. 3 LV from inside. Mány–22 borehole, depth 45–52,5 m.
Scale bar: 200 µm.
Fig. 4 LV. Juvenile. Mány–22 borehole, depth 45–52,5 m. Scale bar: 200 µm.
Fig. 6 LV from inside. Larval stage. Perbál–5 borehole, depth 73,5–74,4 m.
Scale bar: 200 µm.

Fig. 5 *Cyamocytheridea dérii* (ZALÁNYI, 1913).
RV. Mány–22 borehole, depth 67–70 m. Scale bar: 500 µm.

Figs 7–8 *Hemicyprideis dacica dacica* (HÉJJAS, 1895).
Fig. 7 RV. Mány–22 borehole, depth 162–163 m. Scale bar: 200 µm.
Fig. 8 LV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.

Plate 4

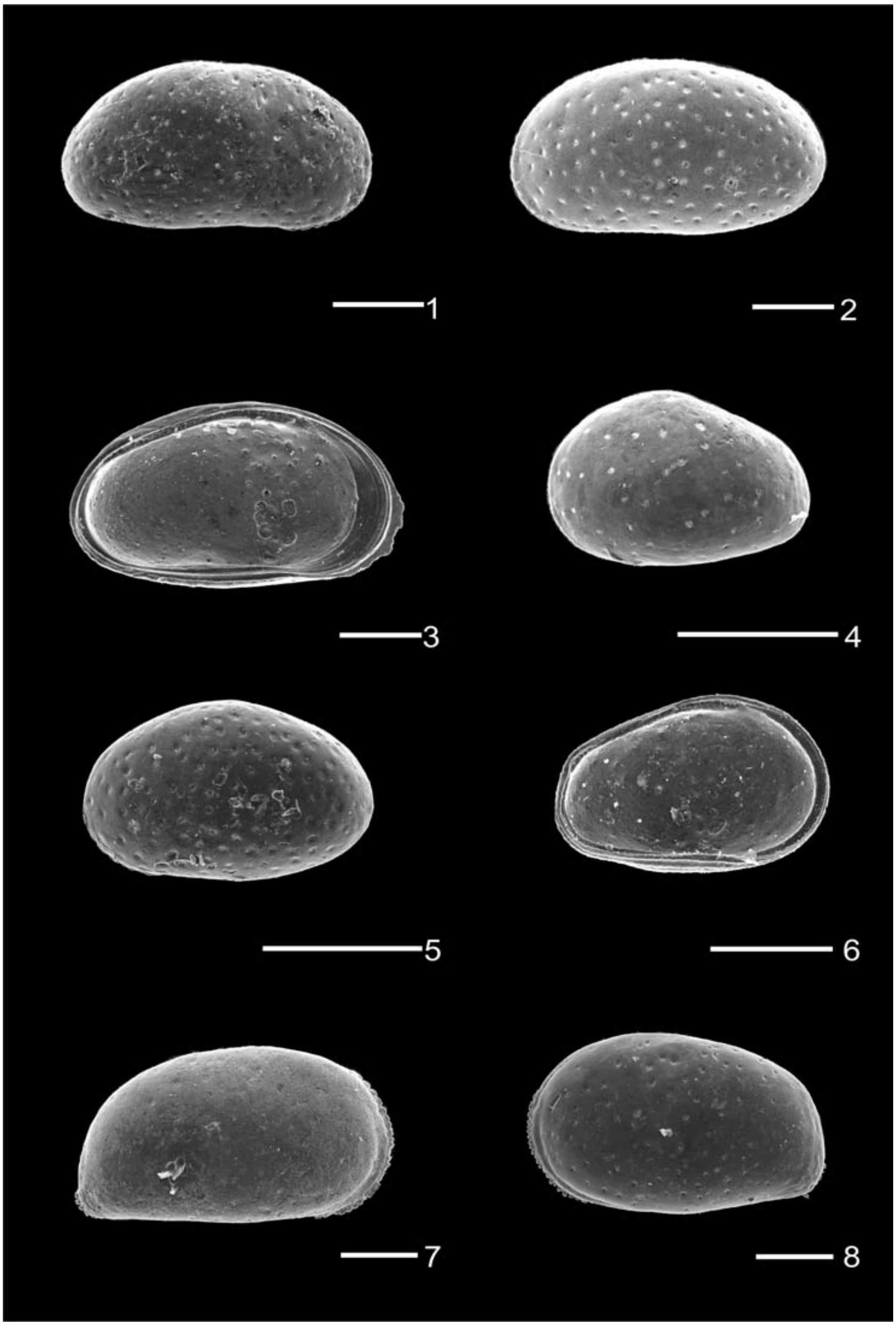


Plate 5

Figs 1–4 *Cytheridea hungarica* ZALÁNYI, 1913.

Fig. 1 RV. Mány–22 borehole, depth 145,2–145,4 m. Scale bar: 500 µm.
Fig. 2 LV. Perbál–5 borehole, depth 147–149,7 m. Scale bar: 500 µm.
Fig. 3 LV from inside. Perbál–5 borehole, depth 149,9–150,3 m.
Scale bar: 500 µm.
Fig. 3a Hinge of LV. Perbál–5 borehole, depth 149,9–150,3 m. Scale bar: 200 µm.
Fig. 4 Central muscle scars of LV. Perbál–5 borehole, depth 149,9–150,3 m.
Scale bar: 100 µm.

Figs 5–6 *Miocyprideis janoscheki* KOLLMANN, 1958.

Fig. 5 RV. Mány–22 borehole, depth 45–52,5 m. Scale bar: 200 µm.
Fig. 6 LV from inside. Mány–22 borehole, depth 39,8–41,1 m.
Scale bar: 500 µm.
Fig. 6a Hinge of LV. Mány–22 borehole, depth 39,8–41,1 m.
Scale bar: 200 µm.
Fig. 6b Central muscle scars of LV. Mány–22 borehole, depth 39,8–41,1 m.
Scale bar: 50 µm.

Plate 5

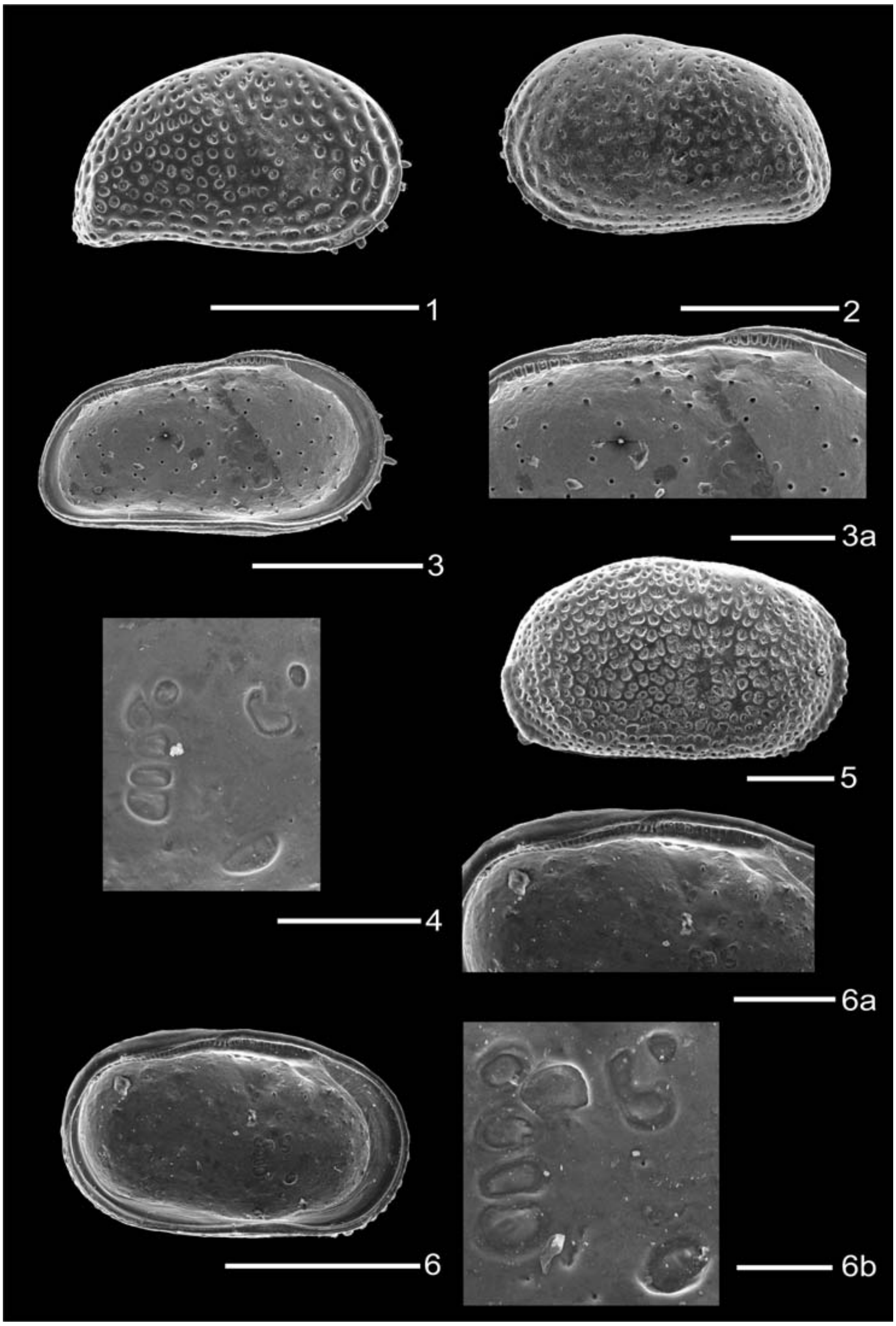


Plate 6

Fig. 1 *Miocyprideis sarmatica* (ZALÁNYI, 1913).
RV. Mány–22 borehole, depth 149,9–150,3 m. Scale bar: 500 µm.

Figs 2–6 *Hemicytheria omphalodes* (REUSS, 1850).
Fig. 2 LV♂. Perbál–5 borehole, depth 118,3–119,1 m. Scale bar: 200 µm.
Fig. 3 RV♀. Perbál–5 borehole, depth 118,3–119,1 m. Scale bar: 200 µm.
Fig. 4 LV♀. Perbál–5 borehole, depth 118,3–119,1 m. Scale bar: 500 µm.
Fig. 5 LV. Juvenile. Perbál–5 borehole, depth 118,3–119,1 m. Scale bar: 200 µm.
Fig. 6 LV♂ from inside. Perbál–5 borehole, depth 118,3–119,1 m.
Scale bar: 500 µm.
Fig. 6a Hinge of LV♂. Perbál–5 borehole, depth 118,3–119,1 m. Scale bar: 200 µm.
Fig. 6b Central muscle scars of LV♂. Perbál–5 borehole, depth 118,3–119,1 m
Scale bar: 100 µm.

Plate 6

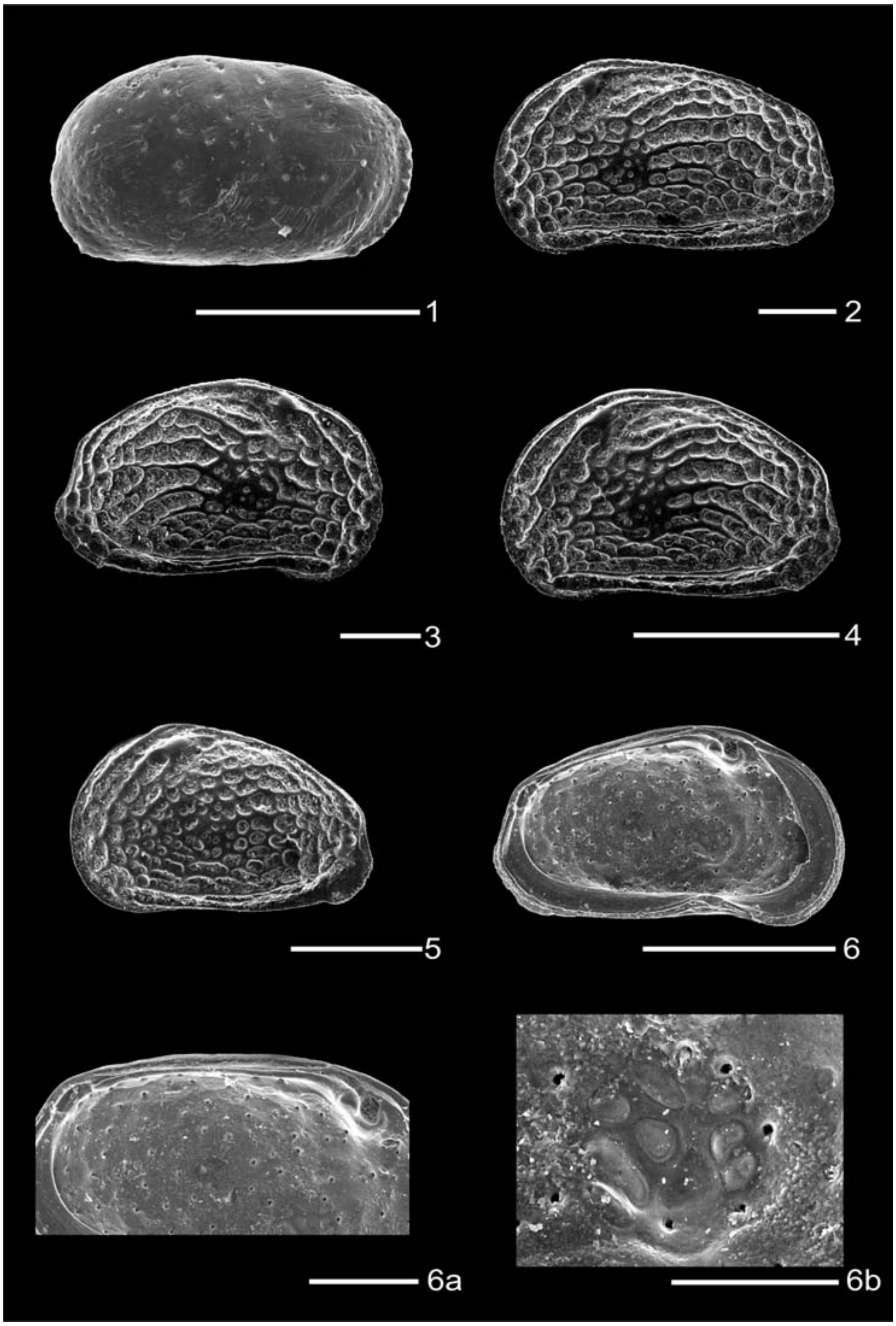


Plate 7

Figs 1–4 *Senesia vadaszi* (ZALÁNYI, 1913).

Fig. 1 RV. Mány–22 borehole, depth 162–163 m. Scale bar: 500 µm.
Fig. 2 LV. Perbál–5 borehole, depth 169,3–172,3 m. Scale bar: 500 µm.
Fig. 3 LV. Juvenile. Mány–22 borehole, depth 162–163 m. Scale bar: 200 µm.
Fig. 4 LV from inside. Mány–22 borehole, depth 155–157,9 m. Scale bar: 500 µm.

Figs 5–7 *Aurila mehesi* (ZALÁNYI, 1913).

Fig. 5 RV. Mány–17 borehole, depth 150,8–151,8 m. Scale bar: 500 µm.
Fig. 6 LV. Mány–22 borehole, depth 143,1–145,1 m. Scale bar: 500 µm.
Fig. 7 RV from Juvenile. Mány–17 borehole, depth 147,6–150,4 m. Scale bar: 500 µm.
Fig. 7a Hinge of RV. Mány–17 borehole, depth 147,6–150,4 m. Scale bar: 200 µm.

Plate 7

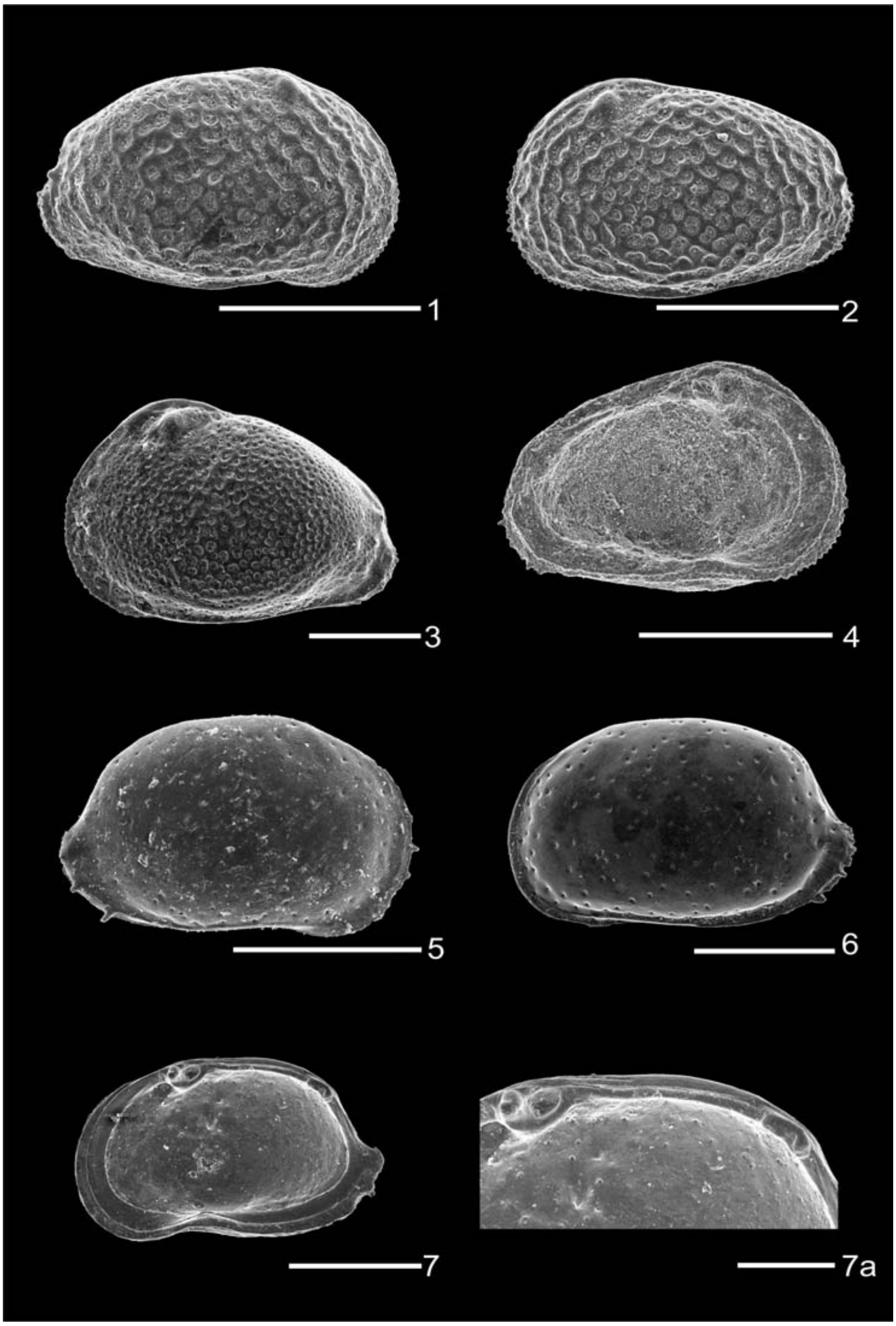


Plate 8

Figs 1–2 *Aurila merita* (ZALÁNYI, 1913).
Fig. 1 RV. Mány–17 borehole, depth 147,1–147,5 m. Scale bar: 200 µm.
Fig. 2 LV. Mány–22 borehole, depth 165,5–167,5 m. Scale bar: 500 µm.

Figs 3–7 *Aurila notata* (REUSS, 1850).
Fig. 3 RV♀. Mány–22 borehole, depth 45–52,5 m. Scale bar: 500 µm.
Fig. 4 LV♀. Mány–22 borehole, depth 70–72 m. Scale bar: 500 µm.
Fig. 5 RV♂. Mány–22 borehole, depth 45–52,5 m. Scale bar: 500 µm.
Fig. 6 LV♂ from inside. Mány–22 borehole, depth 66,5–67 m. Scale bar: 500 µm.
Fig. 6a Hinge of LV♂. Mány–22 borehole, depth 66,5–67 m. Scale bar: 200 µm.
Fig. 7 Central muscle scars of LV. Mány–17 borehole, depth 130–134,2 m. Scale bar: 100 µm.

Plate 8

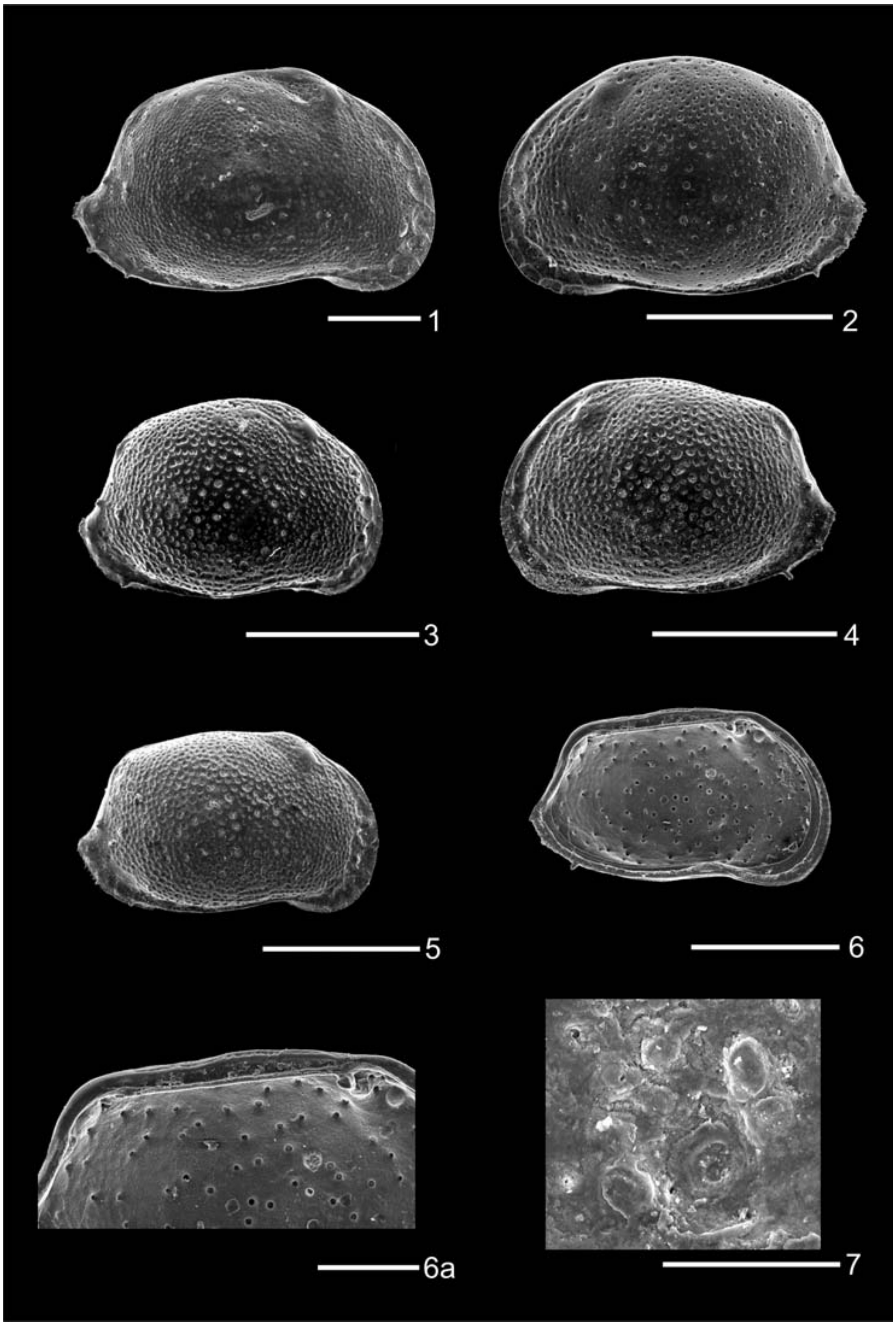


Plate 9

Figs 1–2 *Loxocorniculum hastatum* (REUSS, 1850).
Fig. 1 RV♀. Perbál–5 borehole, depth 177,2–178,2 m. Scale bar: 200 µm.
Fig. 2 LV♀. Perbál–5 borehole, depth 177,2–178,2 m. Scale bar: 200 µm.

Figs 3–5 *Loxoconcha porosa* MÉHES, 1908.
Fig. 3 LV. Mány–22 borehole, depth 45–52,5 m. Scale bar: 200 µm.
Fig. 4 LV. Ecological variation. Mány–22 borehole, depth 70–72 m. Scale bar: 500 µm.
Fig. 5 RV from inside. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.
Fig. 5a Hinge of RV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 200 µm.
Fig. 5b Central muscle scars of RV. Mány–17 borehole, depth 104,5–106 m. Scale bar: 100 µm.

Fig. 6 *Loxoconcha kochi* MÉHES, 1908.
RV. Mány–22 borehole, depth 45–52,5 m. Scale bar: 200 µm.

Plate 9

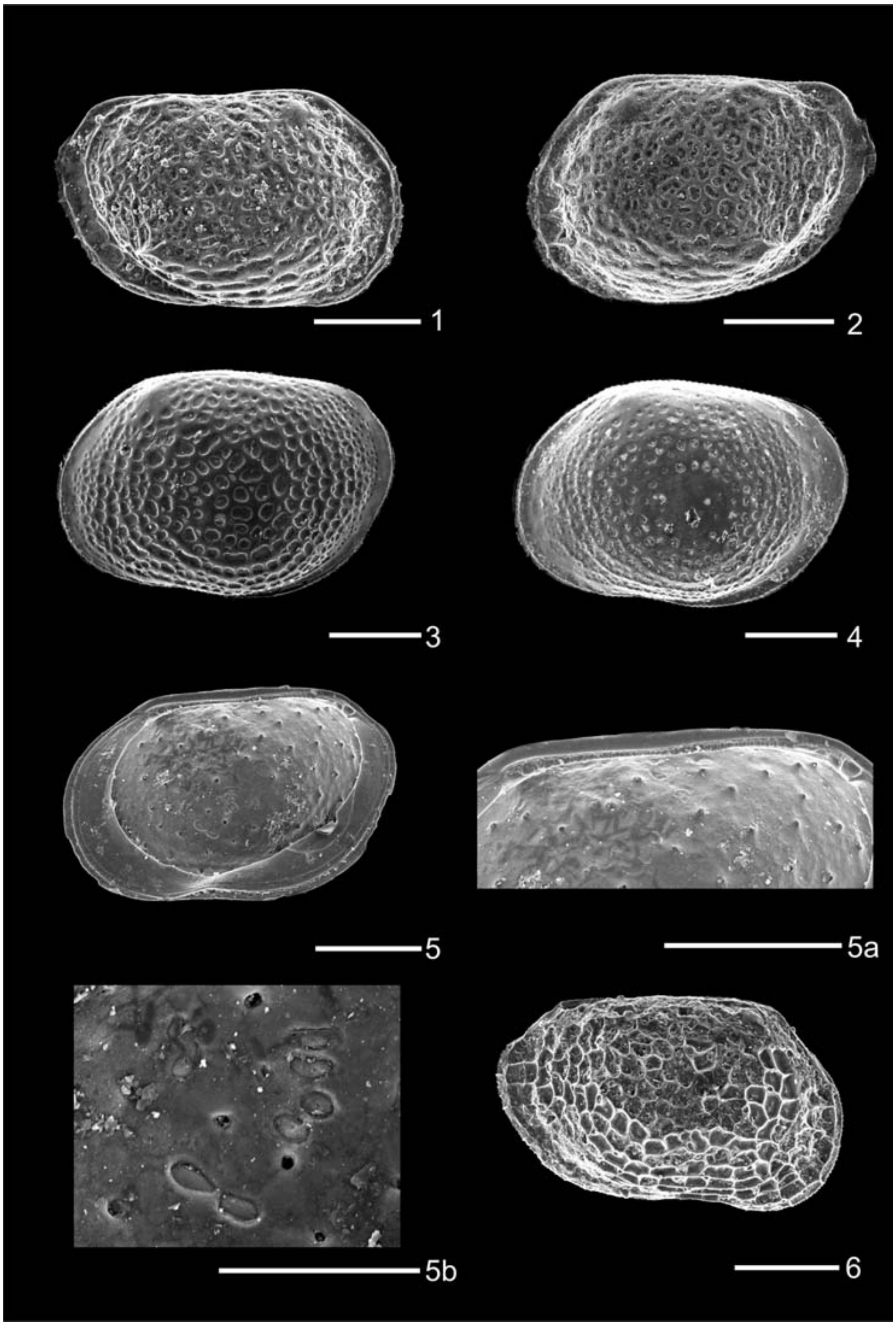
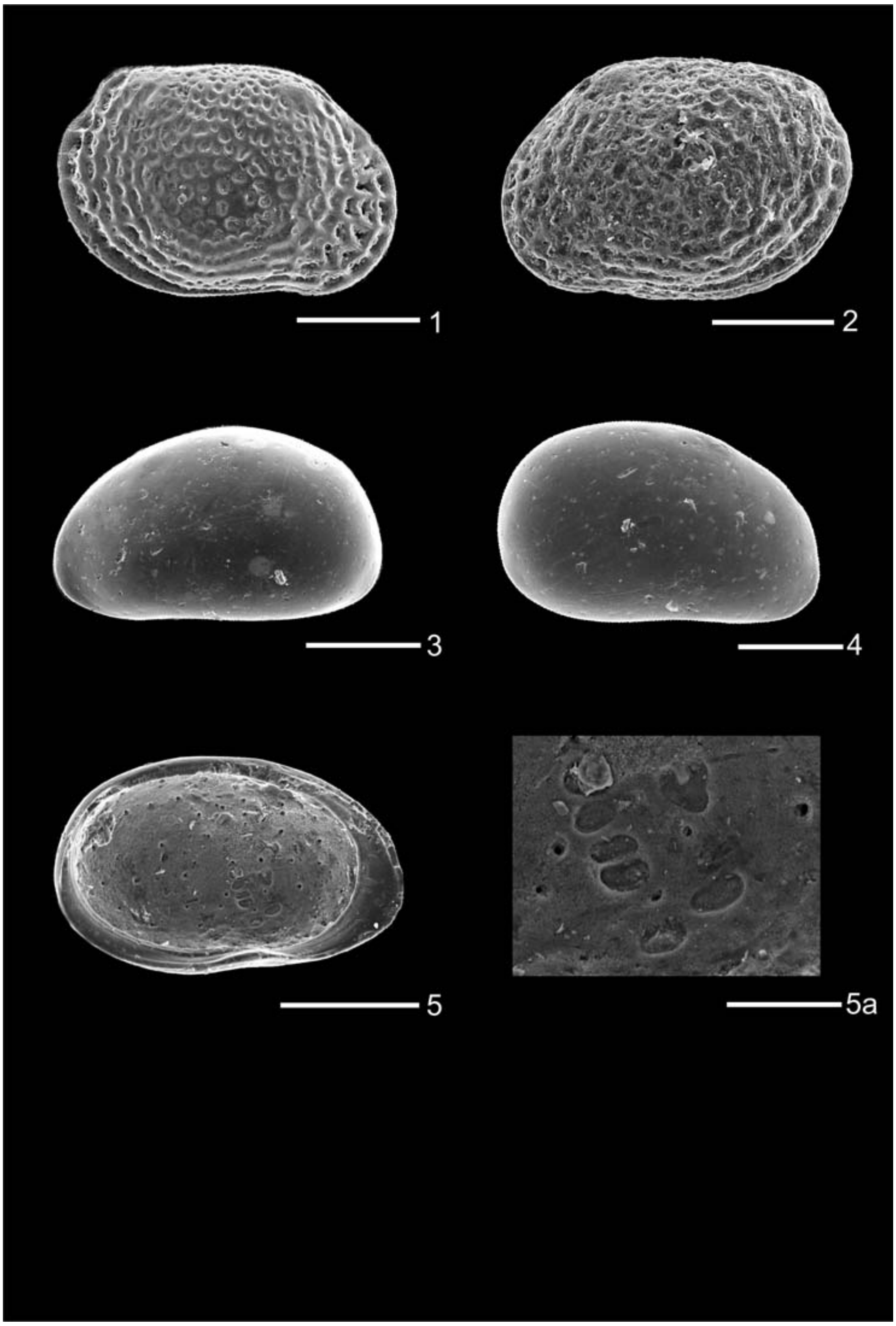


Plate 10

Figs 1–2 *Loxoconcha* ex gr. *punctatella* (REUSS, 1850).
Fig. 1 RV. Mány–22 borehole, depth 173–175,9 m. Scale bar: 200 µm.
Fig. 2 LV. Mány–17 borehole, depth 173,1–173,3 m. Scale bar: 200 µm.

Figs 3–5 *Xestoleberis fuscata* SCHNEIDER, 1953.
Fig. 3 LV. Mány–22 borehole, depth 134,6–139,1 m. Scale bar: 200 µm.
Fig. 4 RV. Mány–22 borehole, depth 170,6–173 m m. Scale bar: 200 µm.
Fig. 5 LV from inside. Mány–22 borehole, depth 170,6–173 m.
Scale bar: 200 µm.
Fig. 5a Central muscle scars of RV. Mány–22 borehole, depth 170,6–173 m.
Scale bar: 50 µm.

Plate 10



Geologica Pannonica 36, 153—185 (2008) Budapest

Albian Foraminifera from Vértessomló Vst-8 borehole, Vértes Mountains (Hungary)

Balázs SZINGER[1]

(with 6 figures and 3 plates)

Abstract

The subject of this research is a rich and well-preserved foraminifera fauna of Albian age from Vértessomló Vst-8 borehole of Vértes Foreland (Transdanubian Range, Hungary). A fifty-meter section of the sequence contains a quantity of this diversified microfauna within the ~100 m thick Vértessomló Siltstone excavated by the borehole. The microfauna is dominated by foraminifera. The samples were dissolved in hydrogene peroxide and concentrated acetic acid. The fauna indicates Albian age but most of the species have wide stratigraphical distribution. *Tritaxia*, *Gavelinella*, *Favusella* are the dominant genera. Determination of 40 taxa, their statistical evaluation and their classification into morphogroups are given. The investigated sequence can be divided into three parts according to the ratio of calcareous/agglutinated forms, planktonic/benthic forms, inbenthic/ epibenthic forms and diversity. The lower part of the sequence was deposited in a weakly dysaerobic off-shore marine environment which contains *Orbitolina* redeposited from the platform of the Környe Limestone. The middle part of the sequence was formed in a planktonic foraminifera-rich (*Hedbergella*, *Favusella*), low energy off-shore environment with limited amount of nutrient and low/moderate degree of oxygen depletion (dysaerobic environment). On these results the upper part of the sequence can be described as a formation sedimented in a nutrient-rich dysaerobic (moderate degree of oxygen depletion) environment.

.

Introduction

Former foraminifera investigations of the Vértessomló Siltstone Formation (Pelso Unit, Transdanubian Range) were carried out by I. BODROGI in 1970 but the studied material was derived from boreholes in the Tatabánya basin (see in FÜLÖP 1975). Since the investigations did not contain quantitative evaluation, descriptions and scanning electron microscopic observations the fulfilment of these modern examinations were timely. Getting results we can create a more precise reconstruction of the palaeoenvironment of the Vértes Foreland.

Orbitolinids studies of the Vértessomló Vst-8 borehole were accomplished by Á. GÖRÖG (GÖRÖG, 1993; 1996) forming a part of her investigations on Cretaceous

[1] Department of Palaeontology, Eötvös University, P.O. Box 120, H–1518 Budapest, Hungary.
E-mail: szinger.balazs@gmail.com

orbitolinids from Hungary. Applying thin section observations GÖRÖG determined *Orbitolina (Mesorbitolina) texana* (ROEMER, 1849) and *Orbitolina* (*Mesorbitolina*) *subconcava* LEYMERIE, 1878 distributed from Late Aptian to Middle Albian and planktonic foraminifera *Favusella washitensis* (CARSEY, 1926) in the Early Albian.

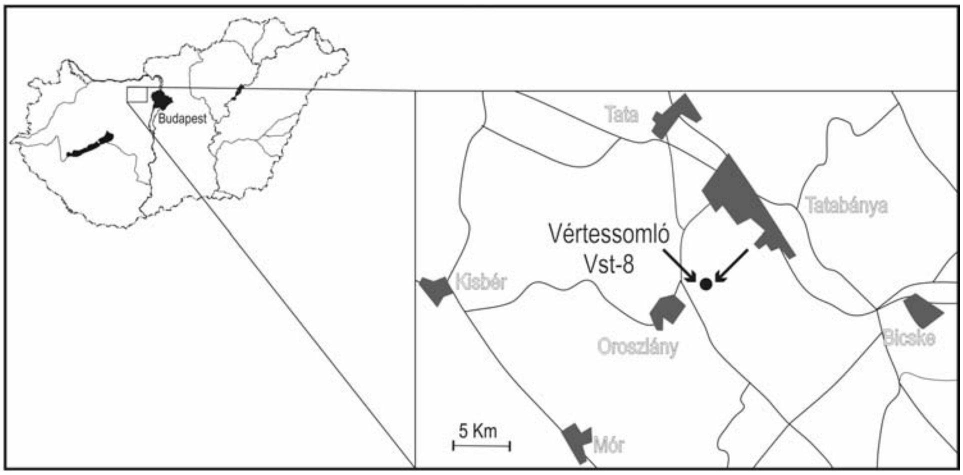


Fig. 1 Geographical location of the Vértessomló Vst-8 borehole

Geological setting

The investigated section of the Vértessomló Siltstone Formation is in the Vértessomló Vst-8 borehole which is located in the Vértes Foreland of the Transdanubian Range of the Pelso Unit. The borehole was drilled at the western slope of the Kálvária hill near Vértessomló in 1990 on behalf of the Hungarian Geological Institute (Fig. 1). The drilling opened up the following column: Middle Jurassic Tölgyhát Limestone Formation, Middle Cretaceous Tata Limestone Formation (with hiatus), Vértessomló Siltstone Formation (Fig. 2). This dark grey siltstone-marl formed in a semi-restricted weakly oxygenated basin in shallow bathyal depth. The formation interfingers with the Környe Limestone Formation of urgon facies to the west. The Környe Limestone was formed on a carbonate ramp at the edge of the basin. The stratigraphic peculiarity of the borehole sequence is facies change in 167 m depth where a 13 m thick Környe Limestone body is intercalated in the Vértessomló Siltstone. The intercalation of the Környe Limestone is a basin floor fan product (CSÁSZÁR, 2002; SZINGER, 2004).

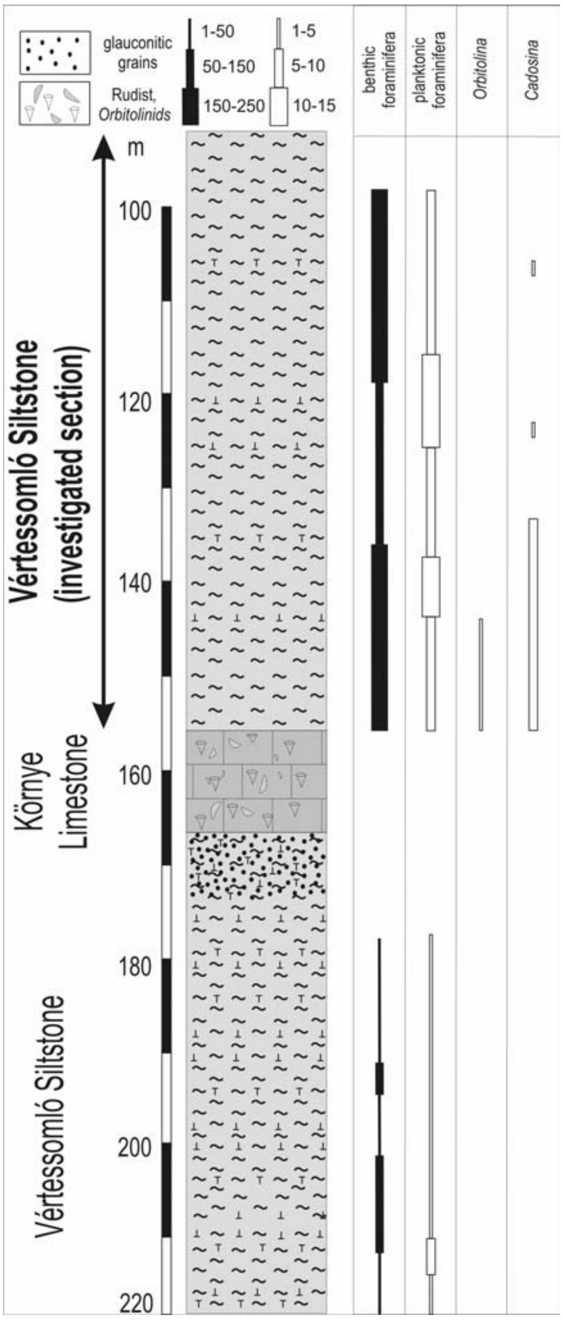


Fig. 2 Distribution of the microfauna in the Vértessomló Siltstone based on the thin sections. The arrow indicates the upper part (97—154 m) of the Vértessomló Siltstone sequence which was the subject of the detailed microfauna investigation.

Material and methods

There were 75 samples of the core observed. The samples were collected approximately in every 2 m. The clayey-silty ones were dissolved in hydrogen peroxide and then washed while the more carbonatic ones were dissolved in concentrated acetic acid and washed in a similar way to LETHIERS & CRASQUIN-SOLEAU (1988). To get more information about the microfauna and the microfacies thin section investigations were carried out. The detailed microfauna investigation was achieved on the upper part of the Vértessomló Siltstone (above the intercalation of the Környe Limestone, between 97–154 m) because there was well-preserved and rich foraminifera fauna only in this part of the sequence (38 samples). The identification and illustration of the microfauna were made by scanning electron microscopic observations. In each case when this method was unfeasible the determination was supported with normal thin section investigation and polarizing microscopic observations of the isolated specimens in transmitted light.

Microfauna studies

Thin section investigations

On the basis of the microscopic observation of 38 thin sections there are the following biogenic constituents of the siltstone in order of increasing frequency: echinoderm skeletal fragments, mollusc shell fragments, agglutinated foraminifers, calcareous (benthic and planktonic) foraminifers, *Cadosina*, siliceous sponge spicules, *Orbitolina*, coralline algae.

In addition to the foraminifers *Cadosina* were reliable tools of the stratigraphic and palaeoenvironmental determination. It was possible to determine three *Cadosina*: *Cadosina gigantea* BORZA, 1969 (Pl. 3, Fig. 17), *Cadosina oraviensis* BORZA, 1969 (Pl. 3, Fig. 18) and *Cadosina* sp. The two first mentioned species are Albian forms (BORZA, 1969).

Isolated forms

Microfossils and bioclasts (with exception of the foraminifera)

In addition to the foraminifers there are shark teeth (Pl. 3, Fig. 9), fish teeth (Pl. 3, Fig. 10), glauconitic grains, siliceous sponge spicules and pellets in the washing residue. According to SCHINDEWOLF (1967) and WIEDENMAYER (1994) the sponge spicules investigated here can be classified into two types. The round forms with short neck represent the Criccorhabd-shapes of the Diactine type (Pl. 3, Fig. 7). The bean-like forms can be classified into the groups of Rhax-shapes of the Anactine type (Pl. 3, Fig. 8).

Results of the investigation of foraminifera

As it was verified by the thin section examination the Vértessomló Siltstone contains well preserved foraminifers of the required quantity only in the upper part of the sequence (above the intercalation of the Környe Limestone, between 97–154 m). The quantitative distribution of the characteristic taxa represented in the samples along the sequence is shown in Fig. 3.

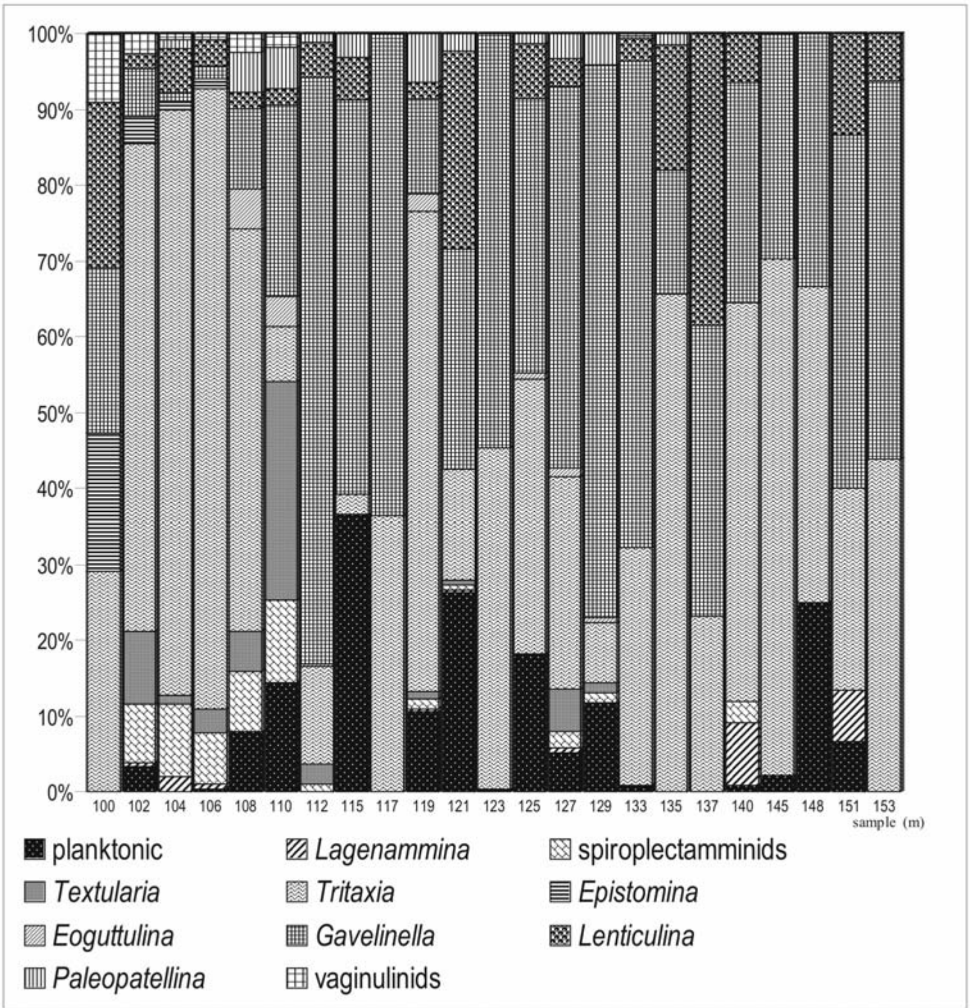


Fig. 3 Distribution and abundance of the characteristic taxa normalised to 100 %.

Fig. 4 presents the ratio of planktonic/benthic, agglutinated/calcareous and inbenthic/epibenthic forms.

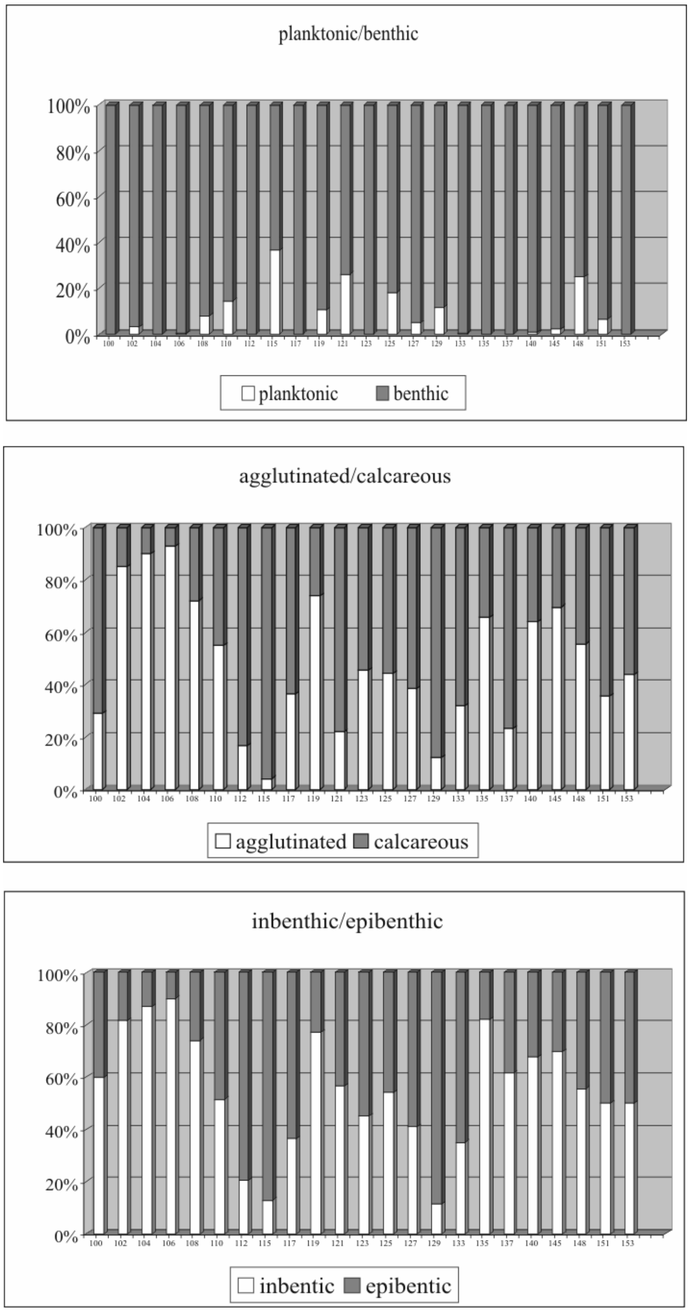


Fig. 4. Ratio of planktonic/benthic, agglutinated/calcareous, inbenthic/epibenthic forms.

In conclusion we used taxa that were the most abundant in the investigated formation and that were mentioned in standard works on the morphogroups (KOUTSOUKOS et al., 1990, TYSZKA, 1994, JONES & CHARNOCK, 1985).
On the basis of the present figures (Figs 4–5) it can be stated that:

- the sequence can be divided into three parts: upper (~112–100 m), middle (~135–112 m) and lower part (~153–135 m)
- the foraminifera are represented in large quantity in the middle and upper part
- the greatest diversity of the fauna can be found in the middle and upper part
- the quantitative distribution of the most abundant *Tritaxia* is heterogeneous in the sequence, while the *Gavelinella* which is the second in abundance is represented in the highest amount in the middle part of the sequence
- some forms (spiroplectamminids, *Textularia*, *Epistomina*, vaginulinids) occur only in the upper part of the sequence
- *Eoguttulina* and *Paleopatellina* are represented in the middle and upper part, while the *Lenticulina* occur in the whole sequence
- the rate of the agglutinated forms to the foraminifera fauna is about 75–85% in the upper part, 40% in the middle part and 60% in the lower part of the sequence
- the inbenthic rate of the forms to the whole foraminifera fauna is about 80–85% in the upper part, 55% in the middle part and 60% in the lower part of the sequence
- the rate of the planktonic forms to the foraminifera fauna never reaches 40% and its distribution is Gauss-curve like so it is the best represented in the middle part of the sequence

Life position, oxygen tolerance, feeding strategy

The interpretation of the ecological role of the foraminifers is based on the works of KOUTSOUKOS et al. (1990), TYSZKA (1994) and JONES & CHARNOCK (1985). According to KOUTSOUKOS et al. (1990) classification we can characterize the oxygen supply of the formation environment of the Vértessomló Siltstone as the following: the epipelagic planktonic forms (*Hedbergella*, *Favusella*) suggest low/moderate degree of oxygen depletion (“dysaerobic” condition: >0,1–1,0 ml/l); the occurance of some calcareous forms (*Gavelinella*, *Nodosaria*, *Vaginulina*) verifies low/moderate degree of oxygen depletion of the sea bottom (“dysaerobic” condition: >0,5–1,0 ml/l); the appearance of the *Textularia* and *Tritaxia* proves moderate degree of oxygen depletion of the sea bottom (“dysaerobic” condition: >0,1–0,5 ml/l).

As a result of KOUTSOUKOS et al. (1990) research the low diversity, the high dominance and the varied size are the characteristics of the “dysaerobic-quasi aerobic” environment.

In compliance with KOUTSOUKOS et al. (1990) paper the most abundant constituents of the samples, *Gavelinella*, *Tritaxia* and *Textularia*, can be classified into two morphogroups.

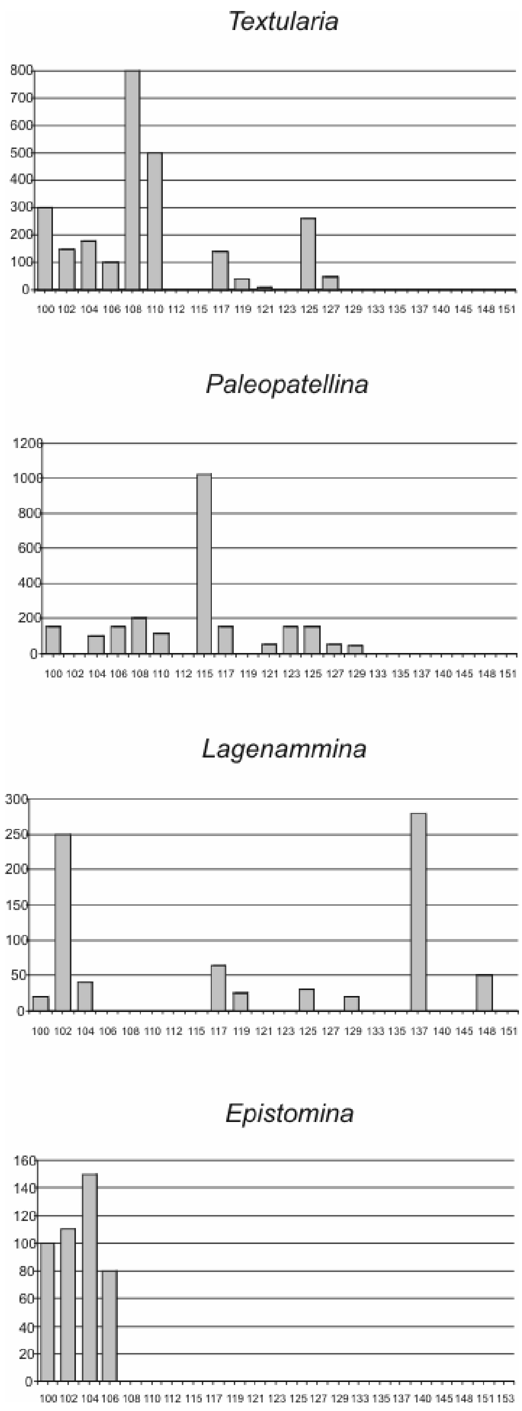


Fig. 5a. Distribution and abundance of characteristic taxa.

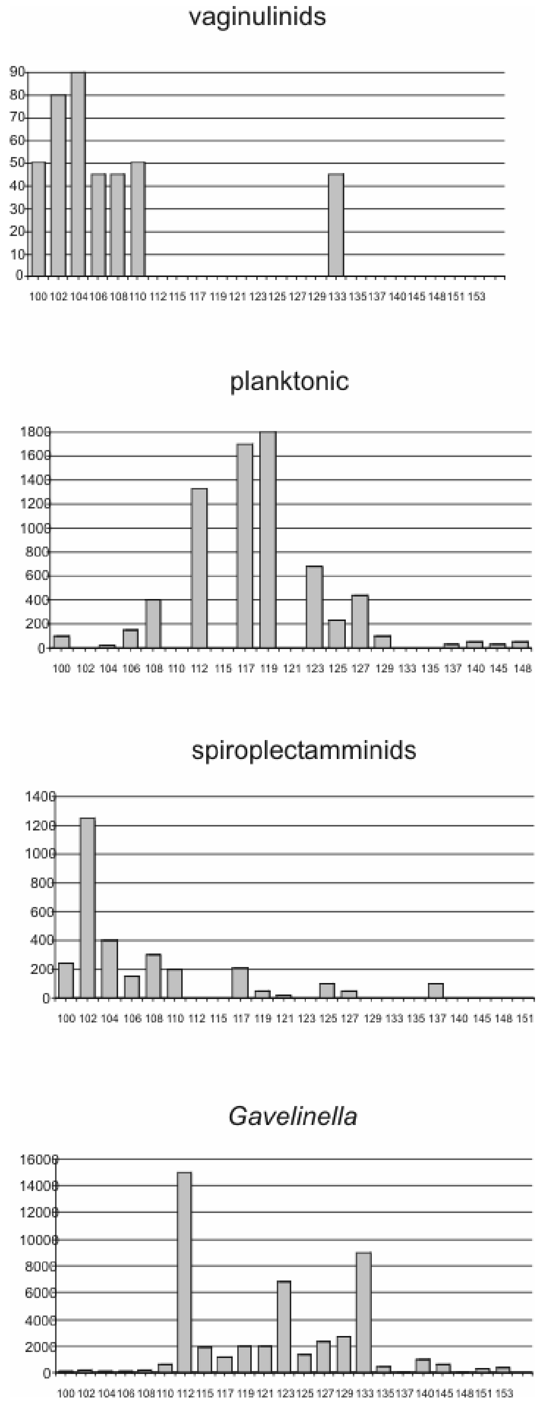


Fig. 5b. Distribution and abundance of characteristic taxa.

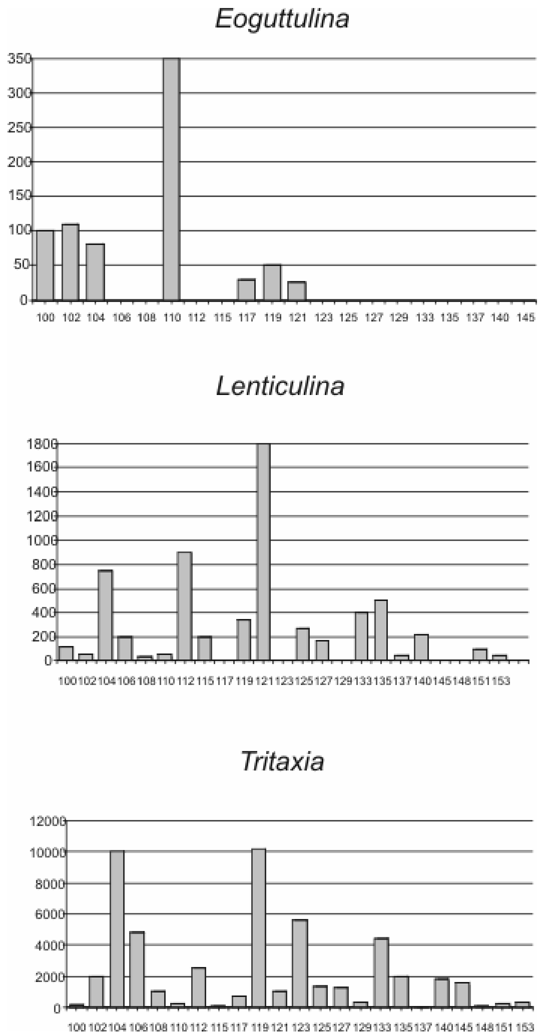


Fig. 5c. Distribution and abundance of characteristic taxa.

CH-A (KOUTSOUKOS et al.): It is a small-scale active detritus feeder (grazing herbivore) shelf association/community living in the near surficial region of the sediment. The dominant members are *Gavelinella*.

AG-A (KOUTSOUKOS et al.): It is a detritus scavenger community living in the sediment. The dominant members are *Marssonella*, *Textularia* and *Tritaxia*.

On the basis of TYSZKA's research (TYSZKA, 1994) it was possible to subdivide the fauna into 9 morphogroups in accordance with identified foraminifers, their life position and nutrition mode (Fig. 6).

Life position type of the investigated foraminifera fauna was determined also with the help of the morphogroups set up by JONES & CHARNOCK (1985). The epibenthic

Gavelinella belong to the "B" morphogroup and the inbenthic *Textularia*, *Spiroplectammina* and *Tritaxia* pertain to the "C" morphogroup.

Planktonic forms (*Favusella*, *Hedbergella*) presented in the samples prove a shallower region of the deep off-shore environment (BODROGI 1989).

Dominance of the inbenthic forms suggests a nutrient-rich environment (CORLISS & CHAN, 1988). It is verified by recent analogy that the determining feature of the epibenthic/inbenthic ratio is not sea depth but distance from the shore that inflenced the range of the nutrient supply.

In the deeper marine region the agglutinated foraminifers prevail over the calcareous ones (DODD & STANTON, 1990).

morphogroup (TYSZKA, 1994)	life position	feeding strategy	genus
A-8 (agglutinated)	shallow to deep infaunal	detrital/bacterial scavengers	*Textularia, Lagenamminna*
C-1 (calcareous)	epifauna	primary weed fauna, grazing herbivores	*Epistomina*
C-3 (calcareous)	epifauna	primary weed fauna, grazing herbivores/ /detritivores	*Spirillina, Paleopatellina*
C-5 (calcareous)	shallow infauna	deposit feeders, grazing omnivores and/or bacterial/detrital scavengers	*Nodosaria*
C-6A (calcareous)	shallow infauna	active deposit feeders	*Astacolus*
C-6B (calcareous)	shallow to deep infauna	deposit feeders, grazing omnivores	*Vaginulina*
C-6C (calcareous)	shallow to deep infauna	active deposit feeders, grazing omnivores	*Marginulina*
C-7 (calcareous)	shallow to deep infauna	deposit feeders, grazing omnivores and/or bacterial/detrital scavengers	*Pseudonodosaria, Eoguttulina*
C-8 (calcareous)	shallow to deep infauna	active deposit feeders, grazing omnivores	*Lenticulina*

Fig. 6 Classification of the studied foraminifera according to TYSZKA's (1994) morphogroups, life position and feeding strategy

Microfacies and paleoecology

The investigated sequence can be divided into three parts according to their varied foraminifera association, the ratios of calcareous/agglutinated forms, planktonic/benthic forms, inbenthic/epibenthic forms and the diversity.

Lower part (~153–135 m)

The peculiar feature of this part is the presence of a quantity of *Cadosina* and *Orbitolina*. *Cadosina* suggests off-shore environment while the platform margin indicating *Orbitolina* was redeposited from the shallow marine platform of the Környe Limestone. In this section there is a smaller diversity of the foraminifera. The ratios of agglutinated/calcareous and inbenthic/epibenthic forms are not characteristic. The agglutinated inbenthic forms are the ~60% of the whole fauna. The weak (pre)dominance of the agglutinated forms (especially *Tritaxia*) suggests a moderate degree of oxygen depletion of the seafloor environment. The lower part of the sequence can be interpreted as sedimented in a weakly disaerobic off-shore marine environment which contains some amount of *Orbitolina* redeposited from the platform of the Környe Limestone.

Middle part (~135–112 m)

This part has the highest foraminifer diversity in the sequence. The characteristic features of this part are the sudden increase of the quantity of the calcareous epibenthic forms comparing to the lower part and the highest abundance of planktonic foraminifers and *Gavelinella*. Based on these results the middle part of the sequence can be interpreted as formed in a planktonic foraminifera-rich, low energy off-shore environment with limited amount of nutrient and low/moderate degree of oxygen depletion (disaerobic).

Upper part (~112–100 m)

The specific feature of this part is the dominance (75–85%) of the agglutinated inbenthic forms. Some taxa (spiroplectamminids*, Textularia, Epistomina,* vaginulinids) appear only in this section and the *Tritaxia* prevail over the foraminifera fauna. Based on these results the upper part of the sequence can be interpreted as a formation sedimented in a nutrient-rich dysaerobic (moderate degree of oxygen depletion) environment.

Conclusion

Microfauna of the Vértessomló Siltstone Formation in the Vértessomló Vst-8 borehole show that the dominant forms are the foraminifera. They indicate Albian age but most of the species have wide stratigraphical distribution. *Tritaxia*, *Gavelinella*, *Favusella* are the most abundant species.

The investigated sequence can be divided into 3 parts according to their varied foraminifera association, the ratios of calcareous/agglutinated forms, planktonic/benthic forms, inbenthic/epibenthic forms and diversity. The lower part of the sequence can be interpreted as a formation sedimented in a weakly disaerobic off-shore marine environment which contains some amount of *Orbitolina* redeposited from the platform of the Környe Limestone. The middle part of the sequence could formed in a planktonic foraminifera-rich (*Hedbergella*, *Favusella*) low energy, off-shore environment with limited amount of nutrients and low/moderate degree of oxygen depletion (disaerobic). The upper part of the sequence can be described as a formation sedimented in a nutrient-rich disaerobic (moderate degree of oxygen depletion) environment.

Based on these results it can be stated that the foraminifera fauna denotes well that the Vértessomló Siltstone is created in a semi-restricted weakly oxygenated basin in shallow bathyal depth. The microfauna is a sensitive indicator of the fluctuating oxygen content of the water of this semi-restricted basin and the distance from the shore.

Acknowledgements

The author sincere thanks to Ágnes GÖRÖG for the help in micropaleontological analysis and Géza CSÁSZÁR for the consultations. I am very grateful to Veronika Szilágyi and Miklós KÁZMÉR for reading of the manuscript. The author wishes to thank to Miklós MONOSTORI for making available the samples, and Kamilla SÓLYMOS for processing the scanning electron micrographs. Special thanks to Prof. Roland WERNLI for refereeing the manuscript.

Systematic description

After LOEBLICH & TAPPAN (1988).

Phylum Protista
Subphylum Sarcodina SCHMARDA, 1871
Class Rhizopodea VON SIEBOLD, 1845
Subclassis Lobosia CARPENTER, 1861
Ordo Foraminiferida EICHWALD, 1830
Subordo Textulariina DELAGE & HÉROUARD, 1896
Superfamilia Astrorhizacea BRADY, 1881
Familia Saccamminidae BRADY, 1884
Subfamilia Saccamminidae BRADY, 1884
Genus *Lagenammina* LOEBLICH & TAPPAN, 1985

Lagenammina grzybowskii (SCHUBERT, 1901)
(Plate 1, Figure 1–2)

1951 *Proteonina difflugiformis* (BRADY, 1879) – BARTENSTEIN & BRAND, p. 265, pl. 1, fig. 3.
1965 *Proteonina* sp. cf. P. *ampullacea* (BRADY, 1881) – NEAGU, p. 3, pl. 1, fig. 11.
1988 *Lagenammina grzybowskii* (SCHUBERT, 1901) – KAMINSKI, GRADSTEIN & BERGGREN, p. 182, pl. 2, fig. 7.

Description: flask-shaped, coarse test, with elongated neck; wide aperture; grained agglutinated wall; rough surface.
Distribution: Albian (Romania), Early Maastrichtian (Trinidad)

Superfamilia Hippocrepinacea RHUMBLER, 1895
Familia Ammodiscidae REUSS, 1862
Subfamilia Ammovertellinae SAIDOVA, 1981
Genus *Glomospira* RZEHAK, 1885

Glomospira sp.
(Plate 1, Figure 3)

Description: small test, irregularly coiled tubular chamber; aperture at the end of the tube; finely agglutinated wall.
Distribution: Albian (Hungary)

Superfamilia Spiroplectamminacea CUSHMAN, 1927
Familia Spiroplectamminidae CUSHMAN, 1927
Subfamilia Spiroplectammininae CUSHMAN, 1927
Genus *Spiroplectammina* CUSHMAN, 1927

Spiroplectammina sp. 1
(Plate 1, Figure 4)

Description: elongated, narrow test with sharp, finely depressed edges; early stage: short and narrow test, the first 4–5 chambers are planispirally coiled; later stage: biserial alternating chambers; a low arched aperture at the inner margin of the final chamber; agglutinated wall.
Distribution: Albian (Hungary)

Spiroplectammina sp. 2
(Plate 1, Figure 5)

Description: short and depressed, narrow test with sharp edges; early stage: short and wide test, the first 4–5 chambers planispirally coiled; later stage: biserial alternating chambers; a low arched aperture at the inner margin of the final chamber; agglutinated wall.
Distribution: Albian (Hungary)

Superfamilia Verneuilinacea CUSHMAN, 1911
Familia Verneuilinidae CUSHMAN, 1911
Subfamilia Spiroplectinatinae CUSHMAN, 1928
Genus *Spiroplectinata* CUSHMAN, 1927

Spiroplectinata complanata (REUSS, 1860)
(Plate 1, Figure 6–8)

1863 *Proporus Schultzei* m. – REUSS, p. 80, pl. 9, fig. 10.
1994 *Spiroplectinata complanata* (REUSS, 1860) – MEYN & VESPERMANN, p. 76, pl. 3, fig. 10–15.

Description: elongated, narrow, thin and depressed test; short early 3–4 chambers planispirally coiled; later stage: biserial alternating chambers; inflated final chamber; a low arched aperture at the inner margin of the final chamber; agglutinated wall.
Distribution: Middle to Late Albian (Germany)

Superfamilia Verneuilinacea CUSHMAN, 1911
Familia Tritaxiidae PLOTNIKOVA, 1979
Genus *Tritaxia* REUSS, 1860

Tritaxia pyramidata REUSS, 1863
(Plate 1, Figure 9–10)

1863 *Tritaxia pyramidata* m. – REUSS, p. 32, pl. 1, fig. 9.
1965 *Tritaxia pyramidata* REUSS, 1863 – NEAGU, p. 5, pl. 1, fig. 9–10.
1975 *Tritaxia pyramidata* REUSS, 1863 – SIDÓ, pl. 1, fig. 2.
1979 *Tritaxia pyramidata* REUSS, 1863 – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK p. 20, pl. 4, fig. 1.
1981 *Tritaxia pyramidata* REUSS, 1862 – JENKINS & MURRAY, p. 178, pl. 7.3, fig. 2–3.
1983 *Tritaxia pyramidata* REUSS, 1863 – MOULLADE, pl. 1, fig. 12.
1990 *Tritaxia pyramidata* REUSS, 1863 – Weidich, p. 105, pl. 12, fig. 23.
1994 *Tritaxia pyramidata* REUSS, 1863 – MEYN & VESPERMANN, p. 76, pl. 4, fig. 3–8.

Description: triserial, triangular test in cross-section; generally concave sides but may be straight; inflated chambers with depressed suture, rounded last chamber; circular and terminal aperture at the inner margin in the triserial stage; agglutinated wall.
Distribution: Early Cretaceous (Germany), Albian (Romania), Aptian to Early Cenomanian (Germany), Upper Albian to Early Cenomanian (England), Late Albian (Atlantic Ocean, DSDP).

Tritaxia tricarinata (REUSS, 1845)
(Plate 1, Figure 11)

1965 *Tritaxia tricarinata* (REUSS, 1845) – NEAGU, p. 6, pl. 1, fig. 17–18.
1981 *Tritaxia singularis* MAGNIEZ-JANNIN, 1975 – JENKINS & MURRAY, p. 178, pl. 7.3, fig. 2–3.
1983 *Tritaxia tricarinata* (REUSS, 1845) – MOULLADE, pl. 1, fig. 14.
1990 *Tritaxia tricarinata* (REUSS, 1845) – WEIDICH, p. 106, pl. 12, fig. 24.

Description: triserial test with sharp edges, triangular in cross-section; strongly concave sides; slightly inflated chambers with strongly depressed suture; circular and terminal aperture, at the inner margin in the triserial stage; agglutinated wall.
Distribution: Albian (Romania), Albian (England), Aptian to Late Cenoman (Germany), Late Albian (Atlantic Ocean, DSDP).

Superfamilia Ataxophragmacea SCHWAGER, 1877
Familia Orbitolinidae MARTIN, 1890
Genus *Orbitolina* D'ORBIGNY, 1850

Orbitolina (Mesorbitolina) texana (ROEMER, 1849)
(Plate 3, Figure 12)

1849 *Orbitulites Texanus* n. sp. – ROEMER, p. 392.
1969 *Orbitolina (Mesorbitolina) texana* (ROEMER) – MÉHES, pl. 3, fig. 4.
1996 *Orbitolina (Mesorbitolina) texana* (ROEMER, 1849) – GÖRÖG, p. 281, fig. 6.1.6/B–G.; 6.3.2/A–H.; 6.3.3.; 6.3.4.;6.3.6/C–E.; 6.4.5.; 6.4.6.; 6.4.9./A, B; 6.4.13/A–B., E_H.; 6.4.15/A–C; 6.4.17/A–O.

Remark: Orbitolina fauna of the present sample was studied and described in details by Á. GÖRÖG (GÖRÖG, 1996).

Superfamilia Textulariacea EHRENBERG, 1838
Familia Eggerellidae CUSHMAN, 1937
Subfamila Dorothiinae BALAKHMATOVA, 1972
Genus *Bannerella* Loeblich & TAPPAN, 1985

Bannerella sp.

Description: conical test, rounded in section, early stage: trochospirally enrolled, then reduce finally biserial; the last two biserial chambers are large and rounded, rapidly increasing in diameter; circular aperture at the inner side in the biserial stage; agglutinated wall.
Distribution: Albian (Hungary)

Genus *Dorothia* PLUMMER, 1931

Dorothia gradata (BERTHELIN, 1880)

1965 *Dorothia gradata* (BERTHELIN, 1880) – NEAGU, p. 8, pl. 2, fig. 23.
1975 *Dorothia gradata* (BERTHELIN, 1880) – SIDÓ, pl. 2, fig. 3.
1987 *Dorothia gradata* (BERTHELIN, 1880) – WILLIAMSON, p. 53, pl. 1, fig. 2.

Description: elongate test, rounded chambers, early stage: trochospiral, with four or more chambers by whorl, then reduced to biserial; aperture is at the inner side in the biserial stage; finely agglutinated wall.
Distribution: Albian (Romania), Late Albian (Newfoundland), Late Albian (Hungary), Albian to Cenomanian (Poland).

Dorothia oxycona (REUSS, 1860)
(Plate 1, Figure 12)

1975 *Dorothia (Marssonella) oxycona* (REUSS, 1860) – Sidó, pl. 2, fig. 3–5.
1979 *Dorothia oxycona* (REUSS, 1860) – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK, p. 24, pl. 5, fig. 5.
1983 *Dorothia oxycona* (REUSS, 1860) – MOULLADE, pl. 1, fig. 17.
1988 *Dorothia oxycona* (REUSS, 1860) – GASINSKI, pl. 11, fig. d.
1988 *Dorothia oxycona* (REUSS, 1860) – KAMINSKI, GRADSTEIN & BERGGREN, p. 195, pl. 9, fig. 9.

Description: conical, dumpy test, poorly oval in cross section, early stage: trochospiral, with four or more chambers by whorl, then reduced to biserial; aperture is at the inner side in the biserial stage; agglutinated wall.
Distribution: Late Albian (Hungary), Late Cretaceous to Paleocene (Trinidad), Late Albian (Atlantic Ocean, DSDP), Albian to Cenomanian (Poland).

Genus *Marssonella* CUSHMAN, 1933
Marssonella sp.

Description: conical test, circular in section, with thiny early trochospire five chambers per whorl followed by a biserial stage of rapidly increasing in diameter; a low basal arched aperture with a narrow bordering flap; agglutinated wall.
Distribution: Albian (Hungary)

Subordo Spirillinina HOHENEGGER & PILLER, 1975
Familia Spirillinidae REUSS & FRITSCH, 1861
Genus *Spirillina* EHRENBERG, 1843
Spirillina sp.
(Plate 1, Figure 13)

Description: discoidal, planispiral,test with five closely appressed whorls, tubular chamber; aperture is at the end of the tubular chamber; calcareous wall.
Distribution: Albian (Hungary)

Familia Patellinidae RHUMBLER, 1906
Subfamilia Hergottellinae LOEBLICH & TAPPAN, 1984
Genus *Paleopatellina* Agalarova, POROSCHINA & GAODAKTCHAN, 1973

Paleopatellina aptica (AGALAROVA, 1951)
(Plate 1, Figure 14)

1980 *Paleopatellina aptica* (AGALAROVA, 1951) – KASSIMOVA, POROSHINA & GAODAKCTHAN, p. 122, pl. 12, fig. 5.

Description: low conical test, all chambers visible from the convex side, only the final pair of the last whorl is visible on the flattened umbilical side, nicked edge in the umbilical side; arched aperture in the umbilical side; calcareous wall.
Distribution: Aptian (Azerbaijan)

Genus *Turrispirillina* CUSHMAN, 1927

Turrispirillina sp.
(Plate 1, Figure 15)

Description: conical test, low cone, aperture is at the end of the tube on the flattened concave side; finely perforate, calcareous wall.
Distribution: Albian (Hungary)

Subordo Miliolina DELAGE & HÉROUARD, 1896
Superfamilia Miliolacea EHRENBERG, 1839
Familia Hauerinidae SCHWAGER, 1876
Subfamilia Hauerininae SCHWAGER, 1876
Genus *Cycloforina* LUCZKOWSKA, 1972

Cycloforina sp.

Description: quinqueloculine test, five chambers are visible from the exterior side, half coil in length; circular aperture at the produced end of the final chamber; calcareous, imperforate wall.
Distribution: Albian (Hungary)

Subordo Lagenina DELAGE & HÉROUARD, 1896
Superfamilia Nodosariacea EHRENBERG, 1838
Familia Nodosariidae EHRENBERG, 1838
Subfamilia Nodosariinae EHRENBERG, 1838
Genus *Dentalina* RISSO, 1826

Dentalina sp.

Description: uniserial, arched, elongated test; oblong prolonged chambers, rounded in cross section; radiate aperture in the end of the final chamber; calcareous wall.
Distribution: Albian (Hungary)

Genus *Nodosaria* LAMARCK, 1812

Nodosaria obscura REUSS, 1846
(Plate 1, Figure 16)

1863 *Nodosaria obscura* m. - REUSS, p. 40, pl. 2, fig. 13.
1951 *Nodosaria obscura* Reuss, 1845 – BARTENSTEIN & BRAND, p. 312, pl. 10, fig. 247–248.
1971 *Nodosaria obscura* Reuss, 1846 – FUCHS, p. 16, pl. 3, fig. 20.
1979 *Nodosaria obscura* Reuss, 1846 – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK, p. 27, pl. 5, fig. 10.

Description: elongate test with lengthwise continuous 8 strong ribs in all chambers, circular chambers in cross section; terminal aperture in the short neck of the final chamber, calcareous, perforate wall.
Distribution: Late Albian (Ukraine), Cretaceous (Germany), Middle Barremian (Austria).

Genus *Pseudonodosaria* BOOMGAART, 1949

Pseudonodosaria humilis (ROEMER, 1841)
(Plate 2, Figure 1)

1971 *Nodosaria humilis* ROEMER, 1841 – FUCHS, p. 15, pl. 3, fig. 12–14, 17.
1979 *Pseudonodosaria humilis* (ROEMER, 1841) – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & Lipnik, p. 31, pl. 6, fig. 8.
1994 *Pseudonodosaria humilis* (ROEMER, 1841) – MEYN & VESPERMANN p. 97, pl. 11, fig. 1–15.

Description: elongate, cylindrical test; early chamber strongly overlapping and increasing gradually in diameter, reduced final chamber, distant straight horizontal suture, smooth surface; terminal aperture; calcareous wall.
Distribution: Middle Barremian (Austria), Berriasian to Albian (Crimea), Valanginian to Albian (Germany).

Genus *Tristix* MACFADYEN, 1941

Tristix excavata (REUSS, 1863)
(Plate 2, Figure 2)

1863 *Rhabdogonium excavatum* m.; – REUSS, p. 91, pl. 12, fig. 8.
1965 *Tristix excavata* (REUSS, 1863) – NEAGU, p. 24, pl. 5, fig. 14–15.
1979 *Tristix excavatus* (REUSS, 1863) – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK, p. 29, pl. 6, fig. 3.

Description: elongated test with sharp edges, uniserial, triangular in cross-section; strongly concave sides; oval chambers with strongly depressed suture; terminal aperture; calcareous, hyaline wall.
Distribution: Barremian to Albian (Crimea), Albian (Romania).

Familia Vaginulinidae REUSS, 1860
Subfamila Lenticulininae CHAPMAN, PARR, & COLLINS, 1978
Genus *Lenticulina* LAMARCK, 1804

Lenticulina muensteri (ROEMER, 1839)
(Plate 2, Figure 3)

1951 *Lenticulina (Lenticulina) muensteri* (ROEMER, 1839) – BARTENSTEIN & BRAND, p. 283, pl. 5, fig. 109, pl. 14A, fig. 13–14, pl. 14B, fig. 3–6, pl. 16, fig. 16–18.
1975 *Lenticulina muensteri* (ROEMER, 1839) – JENDRYKA -FUGLEWICZ, p. 149, pl. 8, 9, 10, 11, fig. 1–6, pl. 19, 20, fig. 1–2.
1981 *Lenticulina muensteri* (ROEMER, 1839) – JENKINS & MURRAY, pl. 7.18, fig. 2.
1988 *Lenticulina muensteri* (ROEMER, 1839) – SZTEJN, pl. 2, fig. 4.
1994 *Lenticulina muensteri* (ROEMER, 1839) – MEYN & VESPERMANN, p. 130, pl. 23, fig. 12–17, pl. 24, fig. 1–17, pl. 25, fig. 1–3.
2003 *Lenticulina muensteri* (ROEMER, 1839) – SZŰCS, p. 22, pl. 3, fig. 6.

Description: planispiral involute test, lot of chambers by whorl, chambers increase slowly, sharp smooth edge, slight dipping suture, smooth surface; radiate terminal aperture in the peripheral angle; calcareous, hyaline wall.
Distribution: Jurassic to Cretaceous (cosmopolitan)

Lenticulina pulchhella (REUSS, 1863)
(Plate 2, Figure 4)

1863 *Cristellaria pulchhella* m.; – REUSS, p. 71, pl. 8, fig. 1.
1965 *Lenticulina (Robulus) pulchhella* (REUSS, 1863) – NEAGU, p. 12, pl. 4, fig. 3–6.
1994 *Lenticulina pulchhella* (REUSS, 1863) – MEYN & VESPERMANN, p. 136, pl. 25, fig. 4–10.
2002 *Lenticulina pulchhella* (REUSS, 1863) – KELE, p. 36, pl. 2, fig. 28–29.

Description: planispiral involute test, lot of chambers by whorl, chambers increase slowly in size, inflated chambers, uncoiled last chambers, dipping suture, semi rought surface; radiate aperture in the peripheral angle; calcareous, hyaline wall.
Distribution: Albian (Romania), Late Hauterivian to Late Albian (Germany).

Lenticulina dunkeri (REUSS, 1863)
(Plate 2, Figure 5)

1863 *Cristellaria dunkeri* m.; – REUSS, p. 73, pl. 8, fig. 6.
1994 *Lenticulina dunkeri* (REUSS, 1863) – MEYN & VESPERMANN, p. 137, pl. 25, fig. 11–12, pl. 26, fig. 1–6.

Description: planispiral involute test, lots of chambers increasing slowly, sharp smooth edge, rought surface, slightly uncoiled last chambers, straight terminal chambers; radiate aperture in the peripheral angle; calcareous, hyaline wall.
Distribution: Valanginian to Albian (Germany)

Genus *Marginulinopsis* A. SILVESTRI, 1904

Marginulinopsis jonesi (REUSS, 1863)
(Plate 2, Figure 6)

1863 *Marginulina jonesi* m. – REUSS, p. 61, pl. 5, fig. 19.
1965 *Marginulina jonesi* REUSS, 1863 – Neagu, p. 17, pl. 5, fig. 11–12.
1971 *Lenticulina (Marginulinopsis) jonesi* (REUSS, 1863) – FUCHS, p. 23, pl. 5, fig. 12.
1979 *Marginulinopsis jonesi* (REUSS, 1863) – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK, p. 109, pl. 40, fig. 2.
1988 *Marginulina* sp. aff. *M. jonesi* (REUSS) – SZTEJN, pl. 2, fig. 5.
1994 *Marginulinopsis jonesi* (REUSS, 1863) – MEYN & VESPERMANN, p. 153, pl. 31, fig. 5–8, pl. 32, fig. 1–14, pl. 33, fig. 1–14.

Description: elongated test with lengthwise hard 8 ribs, early portion close coiled, later uncoiled chambers, circular in cross section, dipping suture; terminal aperture with long neck; calcareous, hyaline wall.
Distribution: Middle Barremian (Austria), Albian to Cenomanian (Ukraine), Albian (Romania), Valanginian to Albian (Germany).

Subfamila Marginulininae WEDEKIND, 1937
Genus *Astacolus* DE MONTFORT, 1808

Astacolus linearis (Reuss, 1863)
(Plate 2, Figure 7)

1863 *Cristellaria linearis* m. – REUSS, p. 66, pl. 12, fig. 1.
1994 *Astacolus linearis* (REUSS, 1863) – MEYN & VESPERMANN, p. 180, pl. 40, fig. 3–12, 14.

Description: elongated test, early portion coiled, later uncoiled chambers, ovate chambers in cross section, deep straight sutures, sharp edge in the firs coiled chambers; rough surface; radiate aperture in the dorsal angle; calcareous wall.
Distribution: Valanginian to Middle Albian (Germany)

Subfamila Vaginulininae REUSS, 1860
Genus *Citharina* D'ORBIGNY, 1839
Citharina sp.

Description: quadrangle test in outline, flattened and with truncate margin, acute proloculus, numerous later chambers; rounded aperture, produced on the short neck at the dorsal angle; calcareous wall.

Distribution: Albian (Hungary)

Genus *Planularia* (DEFRANCE, 1826)

Planularia tricarinella (REUSS, 1863)
(Plate 2, Figure 8)

1963 *Cristellaria tricarinella* m. – Reuss, p. 68, pl. 7, fig. 9.
1994 *Planularia tricarinella* (Reuss, 1863) – Meyn & Vespermann, p. 226, pl. 55, fig. 1–5, 7–11.

Description: large test, triangular outline, coiled early portion, chambers increase rapidly in size, strong depressed periphery tricarinate, strongly curved and elevated sutures; radiate aperture in the dorsal angle; calcareous, hyaline wall.
Distribution: Late Bajocian to Late Barremian (Germany)

Genus *Psiloctharella* (LOEBLICH & TAPPAN, 1986)

Psiloctharella striolata (REUSS, 1863)
(Plate 2, Figure 9)

1963 *Vaginulina striolata* m. – REUSS, p. 46, pl. 3, fig. 7.
1994 *Psiloctharella striolata* (REUSS, 1863) – MEYN & VESPERMANN, p. 235, pl. 57, fig. 10–15.

Description: elongated test, triangular in outline, strongly compressed, sharp carinate, coiled rounded early portion, chambers increase rapidly in size, lengthwise distant rib; aperture is at the dorsal angle; calcareous, hyaline wall.
Distribution: Middle to Late Albian (Germany)

Genus *Vaginulina* D'ORBIGNY, 1826

Vaginulina orthonata REUSS, 1863
(Plate 2, Figure 10)

1963 *Vaginulina orthonata* m. – REUSS, p. 49, pl. 4, fig. 3.

Description: narrow elongated test, triangular in outline, strongly compressed, coiled early portion, finely vertical striated; broad surface; aperture is at the dorsal angle; calcareous, hyaline wall.
Distribution: Late Hauterivian (Germany)

Familia Polymorphinidae D'ORBIGNY, 1839
Subfamila Polymorphininae D'ORBIGNY, 1839
Genus *Eoguttulina* CUSHMAN & OZAWA, 1930

Eoguttulina anglica CUSHMAN & OZAWA, 1930
(Plate 2, Figure 11)

1965 *Eoguttulina anglica* CUSHMAN & OZAWA, 1930 – NEAGU, p. 28, pl. 7, fig. 1–2.

Description: ovate test, rounded in cross section, quickly increasing in size, elongated inflated chambers, deeply depressed suture; smooth surface; terminal radial aperture; calcareous wall.
Distribution: Albian (Romania)

Subfamila Polymorphininae D'ORBIGNY, 1839
Genus *Ramulina* T.R. JONES, 1875

Ramulina sp.
(Plate 2, Figure 12)

Description: elongated test, rounded in cross section, elongated chambers, dipping suture, terminal radial aperture, smooth surface; calcareous wall.
Distribution: Albian (Hungary)

Subordo Robertinina LOEBLICH & TAPPAN, 1984
Superfamilia Duostominacea BROTZEN, 1963
Familia Epistominidae WEDEKIND, 1937
Subfamilia Epistomininae WEDEKIND, 1937
Genus *Epistomina* TERQUEM, 1883

Epistomina cretosa TEN DAM, 1947
(Plate 2, Figure 13–14)

1954 *Hiltermannia cretosa* (TEN DAM, 1947) – HOFKER, p. 190, fig. 25–26.
1967 *Epistomina cretosa cretosa* TEN DAM, 1947 – OHM, p. 148, pl. 20, fig. 2.
1979 *Epistomina cretosa* TEN DAM, 1947 – KAPTARENKO-CHERNOUSOVA, PLOTNIKOVA & LIPNIK, p. 64, pl. 17, fig. 2.
1987 *Epistomina cretosa* TEN DAM, 1947 – WILLIAMSON, p. 53, pl. 3, fig. 5–7.
1988 *Epistomina cretosa* TEN DAM, 1947 – WILLIAMSON & STAM, p. 140, pl. 2, fig. 1–4.

Description: lens shaped test, trochospirally coiled, gradually increasing chambers, broad surface, sharp carinate, radial curved strongly ribbed sutures; calcareous, aragonitic wall.
Distribution: Middle to Late Albian (Newfoundland)

Subordo Globigerinina DELAGE & HÉROUARD, 1896
Superfamilia Favusellacea LONGORIA, 1974
Familia Favusellidae LONGORIA, 1974
Genus *Favusella* MICHAEL, 1973

Favusella washitensis (CARSEY, 1926)
(Plate 2, Figure 15–16, Plate 3, Figure 1)

1954 *Hiltermannia cretosa* (TEN DAM, 1947) – HOFKER, p. 190, fig. 25–26.
1989 *Favusella washitensis* (CARSEY, 1926) – Bodrogi, p. 27, pl. 4, pl. 6, fig. 38.
1989 *Favusella washitensis* (CARSEY, 1926) – WEIDICH, pl. 1, fig. 7.
1990 *Favusella washitensis* (CARSEY, 1926) – WEIDICH, p. 158, pl. 51 fig. 6–10.

Description: trochospirally coiled test, globular chambers rapidly enlarging, radial suture, three whorls, surface distinctly honeycomblike; interomarginal arched aperture; calcareous, aragonitic wall.
Distribution: Albian to Cenomanian (Hungary), Early Albian to Cenomanian (Germany).

Superfamilia Globigerinacea CARPENTER, PARKER & JONES, 1862
Familia Hedbergellidae LOEBLICH & TAPPAN, 1961
Genus *Hedbergella* BRÖNNIMANN & BROWN, 1958

Hedbergella planispira (TAPPAN, 1940)
(Plate 3, Figure 2–3)

1979 *Hedbergella planispira* (TAPPAN, 1940)– ROBASZYNSKI & CARON, p. 139, pl. 27, fig. 1–3, pl. 28, fig. 1–4.
1993 *Hedbergella planispira* (TAPPAN, 1940) – MARTINOTTI, p. 71, pl. 3, fig. 8–11.
1989 *Hedbergella planispira* (TAPPAN, 1940) – BODROGI, pl. 4, p. 25, pl. 5, fig. 29–30.
1990 *Hedbergella planispira* (TAPPAN, 1940) – WEIDICH, p. 167, pl. 58, fig.9–11.
1997 *Hedbergella planispira* (TAPPAN, 1940) – BOUDAGHER-FADEL, BANNER & WHITTAKER, pl. 11.1, p. 1–3.

Description: low trochospirally coiled test, globular and gradually enlarging chambers, the last 4–5 chambers with the same size, deep radial suture, smooth surface; interomarginal, umbilical arched aperture; calcareous wall.
Distribution: Albian to Cenomanian (France), Albian to Cenomanian (Hungary), Albian (Germany).

Hedbergella delrioensis (CARSEY, 1926)
(Plate 3, Figure 4)

1979 *Hedbergella delrioensis* (CARSEY, 1926) – ROBASZYNSKI & CARON, p. 123, pl. 22, fig. 1–2, pl. 23, fig. 1–3.
1989 *Hedbergella delrioensis* (CARSEY, 1926) – BODROGI, pl. 4, p. 24, pl. 5, fig. 32–33.
1998 *Hedbergella delrioensis* (CARSEY, 1926) – BELLIER, p. 338, pl. 1, fig. 1–3.

Description: trochospirally coiled test, gradually enlarging, globular chambers, deep radial suture, smooth surface; interomarginal, umbilical arched aperture; calcareous wall.
Distribution: Early Cretaceous (France), Albian to Cenomanian (Hungary).

Subordo Rotaliina DELAGE & HÉROUARD, 1896
Superfamilia Chilostomellacea BRADY, 1881
Familia Gavelinellidae HOFKER, 1956
Subfamila Gavelinellinae HOFKER, 1956
Genus *Gavelinella* BROTZEN, 1942

Gavelinella intermedia (BERTHELIN, 1880)
(Plate 3, Figure 5–6)

1965 *Gavelinella intermedia* (BERTHELIN, 1880) – NEAGU, p. 32, pl. 8, fig. 1–2.
1966 *Gavelinella intermedia* (BERTHELIN, 1880) – MICHAEL, p. 432, pl. 50, fig. 4–13.
1975 *Gavelinella intermedia* (BERTHELIN, 1880) – SIDÓ, pl. 8, fig. 4–5.
1981 *Gavelinella intermedia* (BERTHELIN, 1880) – JENKINS & MURRAY, p. 194, pl. 7.11, fig. 7–9.
1987 *Gavelinella intermedia* (BERTHELIN, 1880) – WILLIAMSON, p. 56, pl. 2, fig. 9–10.
1988 *Gavelinella intermedia* (BERTHELIN, 1880) – GASINSKI, pl. 15, fig. h.
1990 *Gavelinella intermedia* (BERTHELIN, 1880) – WEIDICH, p. 153, pl. 29, fig. 1–13.

Description: trochospiral and flattened test, involute umbilical and evolute spiral side, curved depressed chambers in the spiral side; rought surface; low interomarginal aperture; calcareous wall.
Distribution: Late Aptian to Late Albian (Newfoundland), Albian (Romania), Aptian to Lover Cenomanian (Germany), Albian to Cenomanian (England).

References

BARTENSTEIN, H. & BRAND, E. (1951): Mikropalaeontologische Untersuchungen zur Stratigraphie des nordwestdeutschen Valendis. – Abhandlungen Senckenbergische Naturforschende Gesellschaft, 485, pp. 239–335.

BELLIER, J. P. (1998): Cretaceous planktonic foraminifers, Eastern Equatorial Atlantic. – Proceedings of the Ocean Drilling Program, Scientific Results, 159, pp. 335–345.

BODROGI, I. (1989): Planktonic foraminifera stratigraphy of Pénzeskút Marl Formation. – Magyar Állami Földtani Intézet Évkönyve, LXIII. kötet, 5. füzet, 111 p.

BORZA, K. (1969): Die Mikrofazies und Mikrofossilien des Oberjuras und der Unterkreide der Klippenzone der Westkarpaten. – Vydavatel'stvo Slovenskej Akadémie vied Bratislava, 301 p.

BOUDAGHER-Fadel, M. K., BANNER, F. T. & WHITTAKER, J. E. (1997): The Early Evolution History of Planktonic Foraminifera. – British Micropaleontological Society Publications Series, Chapman & Hall, 269 p.

CORLISS, B. H. & CHEN, C. (1988): Morphotype patterns of Norwegian Sea deep-sea benthic foraminifera and ecological implications. – Geology, 16, pp. 716–719.

CSÁSZÁR, G. (2002): Urgon Formations in Hungary. – Geologica Hungarica, Series Geologica 25, 209 p.

DODD, J. R. & STANTON, R. J. (1990): Paleoecology concepts and applications. – Wiley, Chichester, 502 p.

FUCHS, W. (1971): Eine alpinen Foraminiferenfauna des tieferen Mittel-Barreme aus den Drusbergschichten vom Ranzenberg bei Hohenems in Vorarlberg. – Abhandlungen der Geologischen Bundesanstalt, 27, 49 p.

FÜLÖP, J. (1975): The Mesozoic basement horst blocs of Tata. . – Geologica Hungarica ser. Geol., 16, 115 p.

GASINSKI, M. A. (1988): Foraminiferal biostratigraphy of the Albian and Cenomanian sediments in the Polish part of the Pieniny Klippen Belt, Carpathian Mountains. – Cretaceous Research, 9, pp. 217–247.

GÖRÖG, Á. (1993): Occurence of Orbitolinids (larger foraminifers) in Lower and Middle Cretaceous formations in Hungary. – Őslénytani Viták, 39, pp. 51–71.

GÖRÖG, Á. (1996): Magyarországi kréta Orbitolina-félék vizsgálata, sztratigráfiai és ökológiai értékelése/Investigation, stratigraphical and ecological valuation of Cretaceous Orbitolinids in Hungary. – Doktori értekezés, ELTE TTK Őslénytani Tsz., 329 p.

HOFKER, J. (1954): Über die familie Epistomariidae (Foram.). – Palaeontographica, 105, pp. 166–206.

JENDRYKA-FUGLEWICZ, B. (1975): Evolution of the Jurassic and Cretaceous smooth-walled *Lenticulina* (Foraminiferida) of Poland. – Acta Palaeontologica Polonica, 20 (2), pp. 99–197.

JENKINS, D. G. & MURRAY, J. W. (1981): Stratigraphical Atlas of Fossil Foraminifera. – Ellis Horwood Ltd., Chichester, British Micropaleontological Society, 310 p.

JONES, R. W. & CHARNOCK, M. A. (1985): „Morphogroups" of agglutinating foraminifera. Their life position and feeding habbits and potential applicability in (paleo)ecological studies. – Revue de Paléobiologie, 4, pp. 311–320.

KAMINSKI, M. A., GRADSTEIN, F. M. & BERGGREN, W. A. (1988): Flysch-type agglutinated foraminiferal assemblages from Trinidad: Taxonomy, stratigraphy and paleobathymetry. – Second Workshop on Agglutinated Foraminifera, Abhandlungen der Geologischen Bundesanstalt, 41, pp. 155–229.

KAPTARENKO-CHERNOUSOVA, O. K, PLOTNIKOVA, L. F. & LIPNIK, E. S. (1979): Foraminiferü mela Ukrainü. – Paleontologicheski spravochnik, Akad. Nauk Ukr., Inst. Geol. Nauk, Kiev, (Cretaceous Foraminifera of Ukraine), 260 p.

KASSIMOVA, G. K., POROSHINA, L. A. & GEODAKCTHAN, A. A. (1980): New family Placentulinidae and peculiarities of its development during Jurassic and Cretaceous. – Voprosi Micropaleontologi Academia Nauk SSSR, 23, pp. 121–126.

KELE, S. (2002): A felső-jura Szársomlyói Mészkő mikrofácies és mikrofauna vizsgálata/Microfacies and microfauna investigation of the Upper Jurassic Szársomlyó Limestone. – Tudományos Diákköri dolgozat, ELTE TTK Őslénytani Tsz., 62 p.

KOUTSOUKOS, A. M. E., LEARY, N. P. & HART, B. M. (1990): Latest Cenomanian-earliest Turonian low-oxygen tolerant benthonic foraminifera: a case-study from the Sergipe basin (N. E. Brazil) and the western Anglo-Paris basin (Southern England). – Palaeogeography, Palaeoclimatology, Palaeoecology, 77, pp. 145–177.

LETHIERS, F. & CRASQUIN-SOLEAU, S. (1988): Comment extraire les microfossiles à tests calcitiques des roches calcaires dures. – Revue de Micropaléontologie, 31/1, pp. 56–61.

LOEBLICH, A. R. & TAPPAN, H. (1988): Foraminiferal genera and their classification I–II. – New York, Van Nostrand Reinhold Company, 970 p.

MARTINOTTI, G. M. (1993): Foraminiferal evidence of a hiatus between the Aptian and Albian, offshore northern Sinai. – Journal of Foraminiferal Research, 23, p. 66–75.

MEYN, H. & VESPERMANN, J. (1994): Taxonomische Revision von Foraminiferen der Unterkreide SE-Niedersachsens nach ROEMER (1839, 1841, 1842), KOCH (1851) und REUSS (1863). – Senckenbergiana lethaea, 74, pp. 49–272.

MÉHES, K. (1969): Az Orbitolinák evolúciós problémája és sztratigráfiai értékelése/Evolutionary problem and stratigraphic valuation of Orbitolinids. – Földtani Közlöny, 99/2, pp. 137–146.

MICHAEL, E. (1966): Die Evolution der Gavelinelliden (Foram.) in der NW-deutschen Unterkreide. – Senckenbergiana Lethaea, 47, pp. 411–459.

MOULLADE, M. (1983): The value of „deep" smaller benthic foraminifera in the biostratigraphy and analysis of Mesozoic oceanic paleoenvironments. – Benthos '83 (OERTLI, H.J. ed.), 2nd Symp. On Benthic Foraminfiera. – ELF Aquitaine, Esso REP and Total CFP, Pau and Bordeaux, pp. 429–464.

NEAGU, T. (1965): Albian foraminifera of the Rumanian Plain. – Micropaleontology, 11, pp. 1–38.

OHM, U. (1967): Zur Kenntnis der Gattungen *Reinholdella*, *Garantella* und *Epistomina* (Foramin.). – Palaeontographica, Abt. A, 127, 55 p.

REUSS, A. E. (1863): Die Foraminiferen des nord-deutschen Hils und Gault. – Sitzungsberichte der Math.-Naturwiss. Cl., Akad. der Wiss., Wien, Österreich, 46/1, 94 p.

ROBASZYNSKI, F. & CARON, M. (1979): Atlas de foraminifères planctoniques du Crétacé moyen. – Cahiers de Micropaléontologie, 1–2, 185 p.

ROEMER, F. (1849): Texas, mit besonder Rucksicht auf deutche Auswanderung und die physichen Verhaltnisse des Landes. – Bonn, A. Marcus, 464 p.

SCHINDEWOLF, O. H. (1967): Schwammspicula aus weissen Jura Zeta von Nattheim (Schwabische Alb). – Palaeontographica, 127, pp. 85–102.

SIDÓ, M. (1975): A tatai formáció Foraminiferái (felső-apti)/Foraminifers (Upper Aptian) of the Tata Formation. – Földtani Közlöny, 105, pp. 155–187.

SZINGER, B. (2004): Középső-kréta képződmények mikrofosszíliáinak és üledékképződési környezetének értékelése a Vértessomló Vst-8 fúrásban/Valuation of microfossils and sedimentation environment of Middle Cretaceous formations in the Vértessomló Vst-8 borehole. – Diplomadolgozat, ELTE TTK Őslénytani Tsz., 101 p.

SZTEJN, J. (1988): Benthic Foraminifera from the Ryazanian and Lower Valanginian in the Polish Lowlands. – Revue de Paléobiologie, Spéc. No. 2, Benthos'86, Genève, pp. 339–346.

SZŰCS, Z. (2003): A Bersek-hegy kora-kréta üledékeinek mikrofauna vizsgálata/Microfauna investigation of Early Cretaceous sediments of the Bersek Hill. – Tudományos Diákköri dolgozat, ELTE TTK Őslénytani Tsz., 52 p.

TYSZKA, J. (1994): Response of Jurassic benthic foraminiferal morphogroups to dysoxic/anoxic condition in the Pieniny Klippen Basin, Polish Carpathians. – Palaeogeography, Palaeoclimatology, Palaeoecology, 110, pp. 55–81.

WEIDICH, K. F. (1989): Planktonic and Benthonic Foraminiferal Zonations of the Lower Cretaceous of the Northern Calcareous Alps. – In: WIEDMANN, J. (ed.), Cretaceous of the Western Tethys. Proceedings 3rd International Cretaceous Symposium, Tübingen, 1987, pp. 465–468.

WEIDICH, K. F. (1990): Die kalkalpine Unterkreide und ihre Foraminiferenfauna. – Zitteliana. – Abhandlungen der Bayerischen Staatssammlung für Paläontologie und historische Geologie, 17, 312 p.

WIEDENMAYER, F. (1994): Contributions to the knowledge of post-Paleozoic neritic and archibenthal sponges (Porifera). – Schweizerische Paläontologische Abhandlungen, 116, 147 p.

WILLIAMSON, M. A. (1987): A quantitative foraminiferal biozonation of the Late Jurassic and Early Cretaceous of the East Newfoundland Basin. – Micropaleontology, 33, pp. 37–65.

WILLIAMSON, M. A. & STAM, B. (1988): Jurassic/Cretaceous Epistominidae from Canada and Europe. – Micropaleontology, 34. pp. 136–158.

Plate 1

(scale: 100µm)
(scanning electron micrographs with the exception of Figs. 4, 5 and 8 which are polarized microscopic photos of the isolated foraminifera)

Figs. 1–2. *Lagenammina grzybowskii* (SCHUBERT, 1901) (sample: 119 m)
Fig. 3. *Glomospira* sp. (sample: 119 m)
Fig. 4. *Spiroplectammina* sp. 1 (sample: 102 m)
Fig. 5. *Spiroplectammina* sp. 2 (sample: 102 m)
Figs. 6–8. *Spiroplectinata complanata* (REUSS, 1860) (sample: 102 m)
Figs. 9–10. *Tritaxia pyramidata* REUSS, 1863 (sample: 104 m)
Fig. 11. *Tritaxia tricarinata* (REUSS, 1845) (sample: 104 m)
Fig. 12. *Dorothia oxycona* (REUSS, 1860) (sample: 106 m)
Fig. 13. *Spirillina* sp. (sample: 119 m)
Fig. 14. *Paleopatellina aptica* (AGALAROVA, 1951) (sample: 108 m)
Fig. 15. *Turrispirillina* sp. (sample: 119 m)
Fig. 16. *Nodosaria obscura* REUSS, 1845 (sample: 119 m)

Plate 1

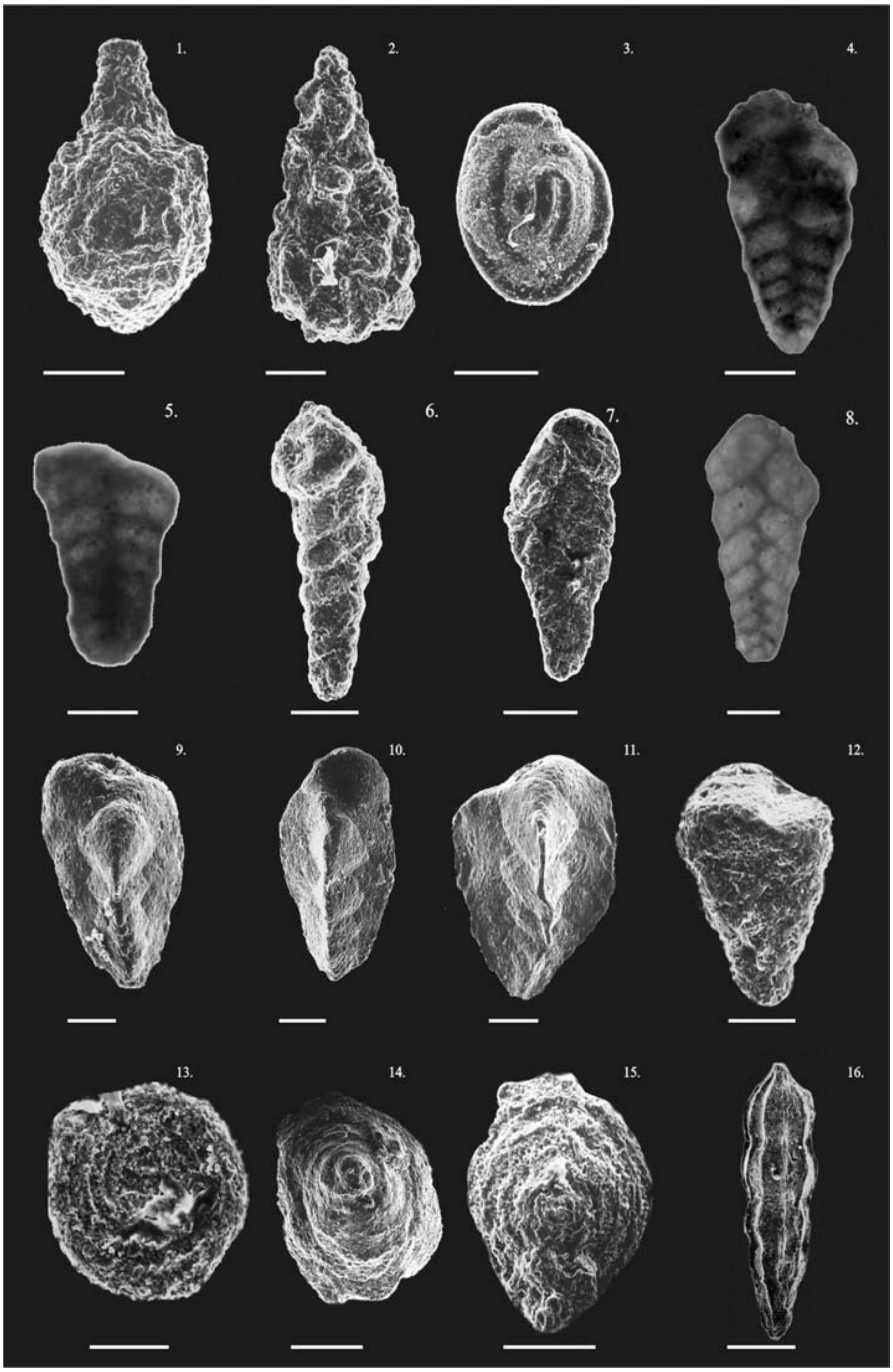


Plate 2

(scale 100µm)
(scanning electron micrographs with the exception of Fig. 12 which is a polarized microscopic photo of the isolated foraminifera)

Fig. 1. *Pseudonodosaria humilis* (ROEMER, 1841) (sample: 119 m)
Fig. 2. *Tristix excavata* (REUSS, 1863) (sample: 140 m)
Fig. 3. *Lenticulina muensteri* (ROEMER, 1839) (sample: 129 m)
Fig. 4. *Lenticulina pulchella* (REUSS, 1863) (sample: 117 m)
Fig. 5. *Lenticulina dunkeri* (REUSS, 1863) (sample: 112 m)
Fig. 6. *Marginulinopsis jonesi* (REUSS, 1863) (sample: 119 m)
Fig. 7. *Astacolus linearis* (REUSS, 1863) (sample: 119 m)
Fig. 8. *Planularia tricarinella* (REUSS, 1863) (sample: 106 m)
Fig. 9. *Psilocthareila striolata* (REUSS, 1863) (sample: 112 m)
Fig. 10. *Vaginulina orthonata* REUSS, 1863 (sample: 106 m)
Fig. 11. *Eoguttulina anglica* CUSHMAN & OZAWA, 1930 (sample: 110 m)
Fig. 12. *Ramulina* sp. (sample: 119 m)
Figs. 13–14. *Epistomina cretosa* TEN DAM, 1947 (sample: 104 m)
Figs. 15–16. *Favusella washitensis* (CARSEY, 1926) (sample: 117 m)

Plate 2

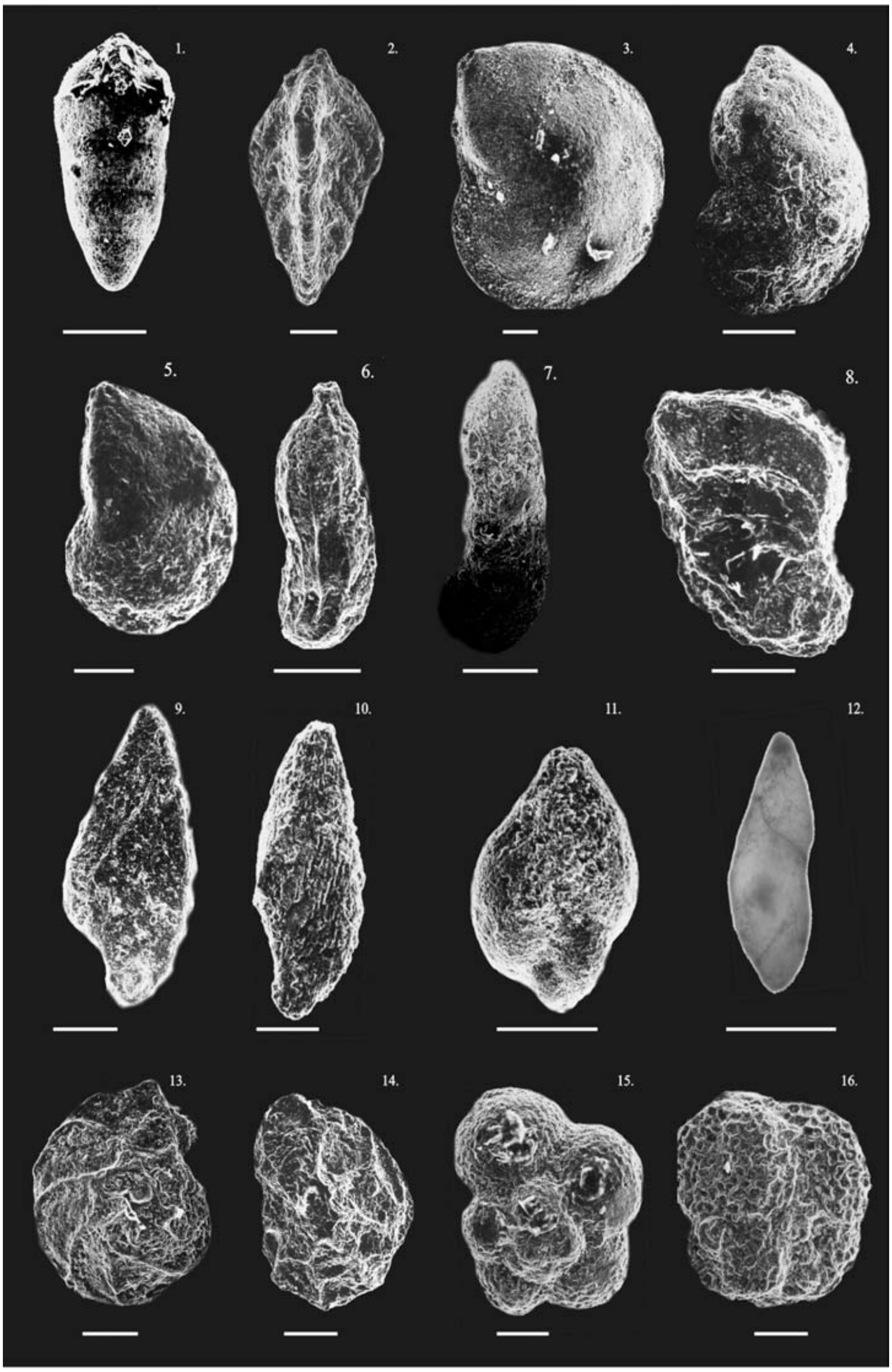


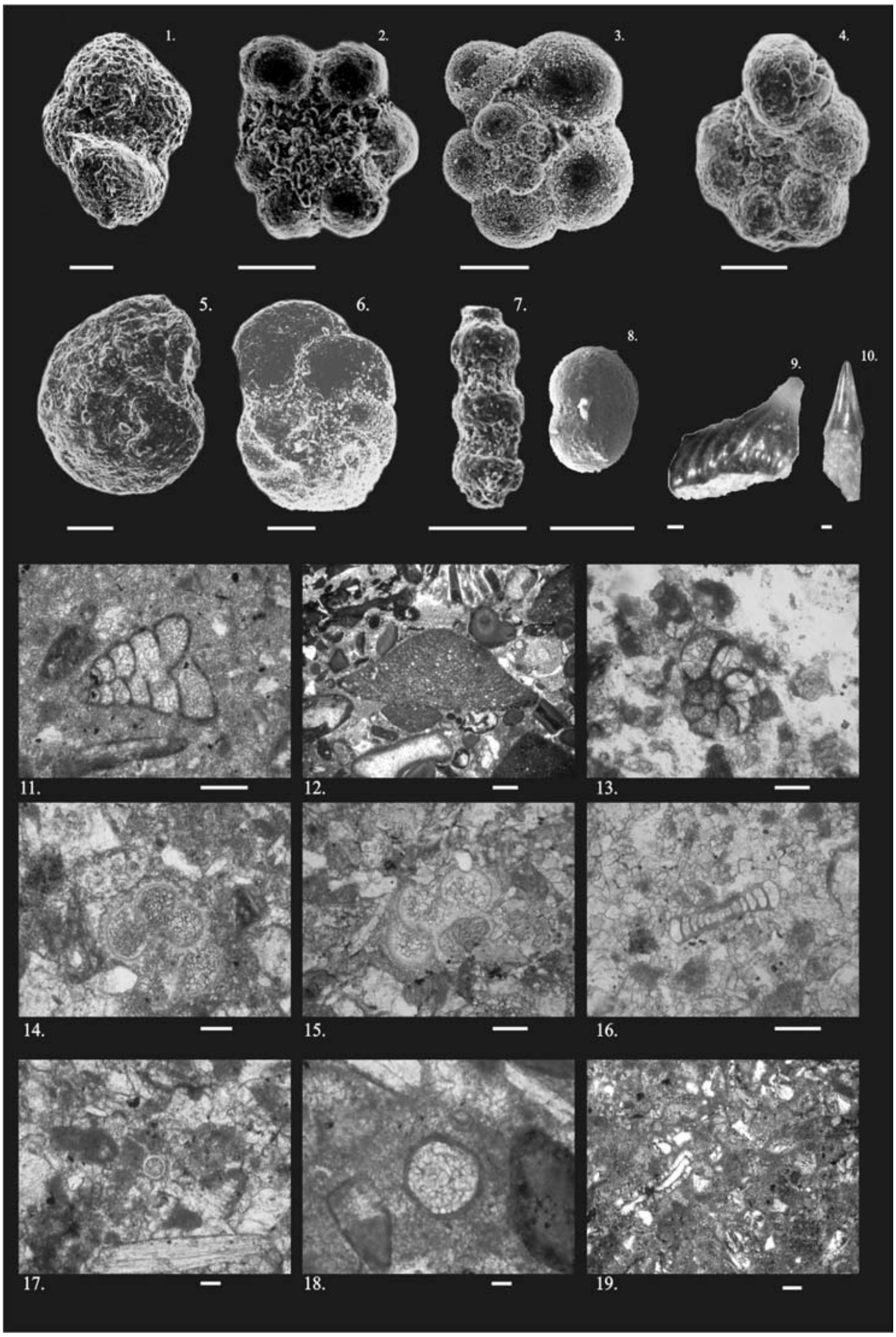
Plate 3

(scale 100µm)

(Figs. 1—8 are scanning electron micrographs, Figs. 9—10 are polarized microscopic photos of isolated teeth, and Figs. 11—19 are polarized microscopic photos of thin sections)

Fig. 1.	*Favusella washitensis* (CARSEY, 1926) (sample: 117 m)
Figs. 2–3.	*Hedbergella planispira* (TAPPAN, 1940) (sample: 123 m)
Fig. 4.	*Hedbergella delrioensis* (CARSEY, 1926) (sample: 117 m)
Figs. 5–6.	*Gavelinella intermedia* (BERTHELIN, 1880) (sample: 119 m)
Fig. 7.	Sponge spicule, Diactine type - Criccorhabd-shaped (sample: 170 m)
Fig. 8.	Sponge spicule, Anactine type - Rhax-shaped (sample: 170 m)
Fig. 9.	Shark teeth (sample: 116 m)
Fig. 10.	Fish teeth (sample: 132 m)
Fig. 11.	*Tritaxia* sp. (sample: 104 m)
Fig. 12.	*Orbitolina (Mesorbitolina) texana* (ROEMER, 1849) (sample: 166,4 m)
Fig. 13.	*Gavelinella intermedia* (BERTHELIN, 1880) (sample: 112 m)
Figs. 14–15.	*Favusella washitensis* (CARSEY, 1926) (sample: 117 m)
Fig. 16.	*Spirillina* sp. (sample: 119 m)
Fig. 17.	*Cadosina gigantea* BORZA, 1969 (sample: 140 m)
Fig. 18.	*Cadosina oraviensis* BORZA, 1969 (sample: 142 m)
Fig. 19.	Sponge spicules (sample: 217m)

Plate 3



Geologica Pannonica 36, 187—225 (2008) Budapest

Csernye revisited: New ammonite finds and ostracods from the Lower Jurassic Pliensbachian/Toarcian boundary beds in Bakonycsernye, Transdanubian Hungary

András GALÁCZ, Barnabás GÉCZY & Miklós MONOSTORI[1]

Abstract

Recently a new exposure near the classic outcrops at Bakonycsernye made possible to make a closer study on the Pliensbachian/Toarcian boundary beds. Careful sampling and the re-investigation of formerly collected but unpublished material (ammonites and microfossils) evidenced that in the new section the hiatus between the Pliensbachian massive red limestone and the Toarcian claymarl is much shorter than suggested before, on the basis of previous exposures. The earliest Toarcian ammonite in the new section is *Paltarpites* cf. *paltus* of the Paltus Subzone, while the earliest Toarcian ammonites in the classic Csernye section indicated the Falciferum Zone. The ammonite fauna shows no abrupt change at the chronostratigraphic boundary: most of the represented morphological lineages are continuous across, while the ostracod fauna, having been represented by benthonic forms, reacted heavily to the limestone to claymarl facies change at the boundary: the former sublittoral elements are replaced by deper-water forms in the Toarcian. To document these circumstances and changes, the most important ammonites and ostracods from the new section and from the boundary beds of the classic Csernye section are figured and stratigraphically evaluated.

Introduction

The Jurassic sequence of Csernye (Bakonycsernye, Text-fig. 1) became classic through the pioneering works of HANTKEN (1870) and PRINZ (1904), and later as one of the standards of Mediterranean Liassic and Aalenian stratigraphy by the re-examination by GÉCZY (1966, 1967). The original locality has been the so-called Tűzköves-árok ('Chert Gorge'), the valley running down to the former Kisgyón coal mine (Eocene), administratively belonging to village Isztimér, but traditionally referred to the nearer Bakonycsernye. In the valley the Middle Liassic limestones were exploited in a quarry, while the younger, Upper Liassic and lower Middle Jurassic beds were exposed in the gorge uphill.

[1] Department of Palaeontology, Eötvös University, Pázmány Péter sétány 1/c, H–1518 Budapest, Hungary. E-mail: galacz@ludens.elte.hu

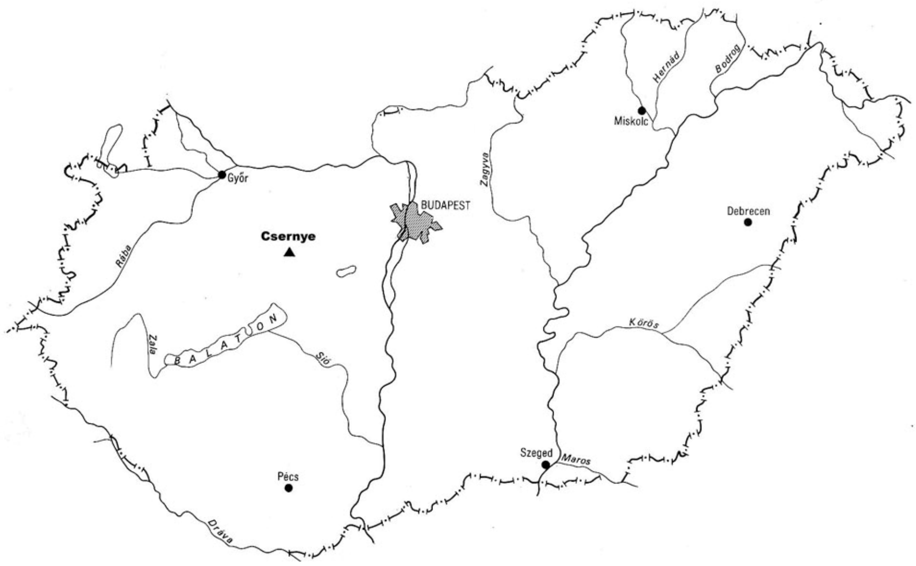


Fig.1. Bakonycsernye in Hungary

The quarry became abandoned in the early 1900s, and a new excavation was made only in 1969 (Fig. 2), when the International Mediterranean Jurassic Colloquium visited the locality (FÜLÖP et al. 1969). Later the fossils from this new section have been identified and published (GÉCZY 1974).

Nowadays the section and the exposures in the gorge are covered by scree, thus unaccessible for studies. However, a part of the succession had been exposed by landslides recently. This portion is luckily the Pliensbachian/Toarcian boundary interval. This new section is called here Section N. The renewed interest toward the geological and biotic changes at this boundary makes reasonable a complex paleontologic/stratigraphic re-examination of these beds. As comparison, the material of the section starting in the old quarry, and having been measured and collected in 1968 was also re-examined, and additional micropaleontological samples were also collected. This is the same section (Section A) which was examined for Upper Pliensbachian ammonites by GÉCZY & MEISTER recently (1998).

The local significance of the new section lies in the fact that while previously, on the basis of studies on Section A, the basal Toarcian Tenuicostatum Zone have been regarded as missing, in lack of diagnostic ammonites (GÉCZY 1974), the new section yielded poorly preserved, but determinable ammonites immediately above the Pliensbachian limestone. These ammonites, together with the micropaleontological material prove the presence of the lowermost Toarcian ammonite zone, too.

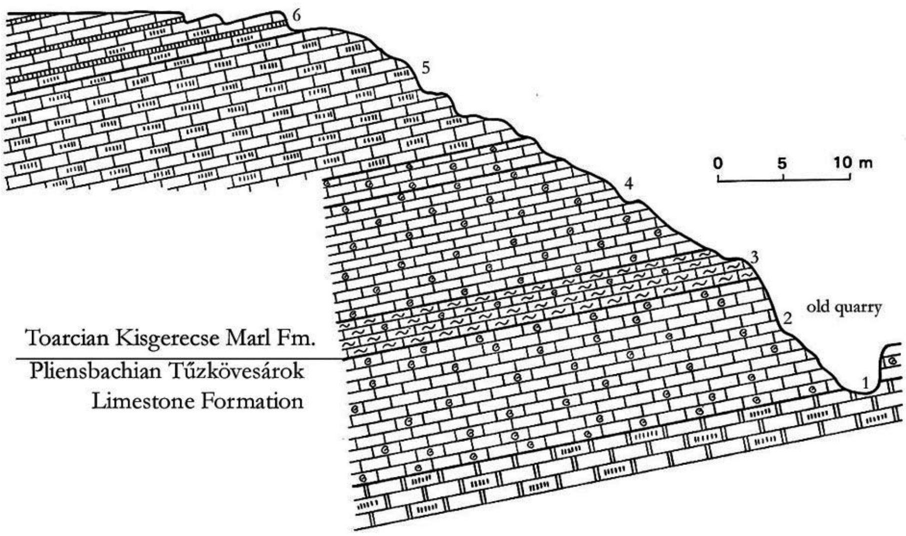


Fig. 2. The classic section (A) of the Bakonycsernye Tűzkövesárok, ont he basis of excavations made for the Mediterranean Jurassic Colloquium, Budapest, 1969 (after KONDA, 1989). 1 = Sinemurian grey cherty limestone; 2 = Pliensbachian red massive limestone; 3 = Lower and Middle Toarcian red clayey marl; 4 = Upper Toarcian–Aalenian nodular marly limestone; 4 = Lower Bajocian greyish-greenish siliceous limestone; 5: Bajocian to ?Bathonian siliceous, ammonite-free limestone; 6: ?Bathonian–Callovian radiolarite.

Description of the sequences

The studied new section (Section N) is situated above the old quarry, about 20 m south to the former southern wall of the mine, opposite to the main artificial section (Section A) starting from the northern wall of the quarry. The following detailed descriptions are given from the top to the bottom (Fig. 3).

Section N

The exposure shows a ca. 2 m thickness of carbonate rocks. In the lower part limestone dominates, with marly interbeds upwards, then claymarl succeeds (Fig. 2).

Bed E – Dark red, fine-grained, foliated clayey marl. It is the uppermost portion of the exposed sequence. It shows no distinguishable layers within. The lowermost part (3–5 cm) gave several ammonite specimens (*Calliphylloceras, Lytoceras, Paltarpites*), and some belemnites and a nautilid.

thickness……..……… > 1.00 m

Bed D – Greyish-red limestone with vertical partings. It weathers into 3–4 cm angular fragments. Its surface is covered with a 3–5 mm thick ferromanganese crust (hardground). Yielded a few belemnite rostra.

thickness ….…..…………0.20 m

Bed C – Pale reddish, greyish-pink laminted, soft, clayey marl weathering yellow. The weathered lamellae are 1 to 2.5 cm thick. Sharply delimited from the overlying limestone. Yielded a modest ammonite fauna with *Calliphylloceras, Zetoceras* and *Protogrammoceras*.

thickness..……....………..0.32 m

Bed B – Red, clayey, nodular limestone. Its undulating surface shows transition into the clayey marl above. Yielded a few belemnite rostra.

thickness ….……………..0.22 m

Bed A – greyish-creamy massive limestone with green clay seams. Its 1 cm thick uppermost part is exfoliated as gray clay laminae which grade into a 3 to 5 cm thick red, foliated claymarl. The bed yielded an *Emaciaticeras* specimen.

thickness …………….…0.08 m

Bed Y – greyish, slightly nodular limestone with uneven surface covered by some millimetres of reddish clay. No macrofauna.

thickness ……………..…0.12 m

Bed X – a massive, yellowish-red, partly greyish limestone bed, showing a threefold (of 20, 21 and 5 cm) inner partition. Its surface is uneven, somewhat stylolithic, giving a tight bond to the bed above.

thickness ………………. 0.46 m

Section A

The section comprised the former quarry wall, which practically represented the whole Pliensbachian. The beds above (Toarcian, Aalenian and beyond, up to the higher Middle Jurassic radiolarite) were excavated for the field trip of the Mediterranean Jurassic Colloquium in 1969 (FÜLÖP et al. 1969). We used the manuscript report written in 1967, and made some additional field observation.

Bed 67 and above – Dark red, clayey marl disintegrating into thin layers and nodules. Ammonites (*Hildaites* spp., *Hildoceras* spp.) are frequent, but mainly fragmentarily preserved. Inner whorls are usually missing in the clayey marl, while better preserved in the more calcareous portions.

thickness ………………….. 0.35 m

Bed 68 – Massive limestone bed with sporadic ammonites (*Canavaria* sp.), and with ferromanganese crust (hardground) on top.

thickness …………………. 0.18 m

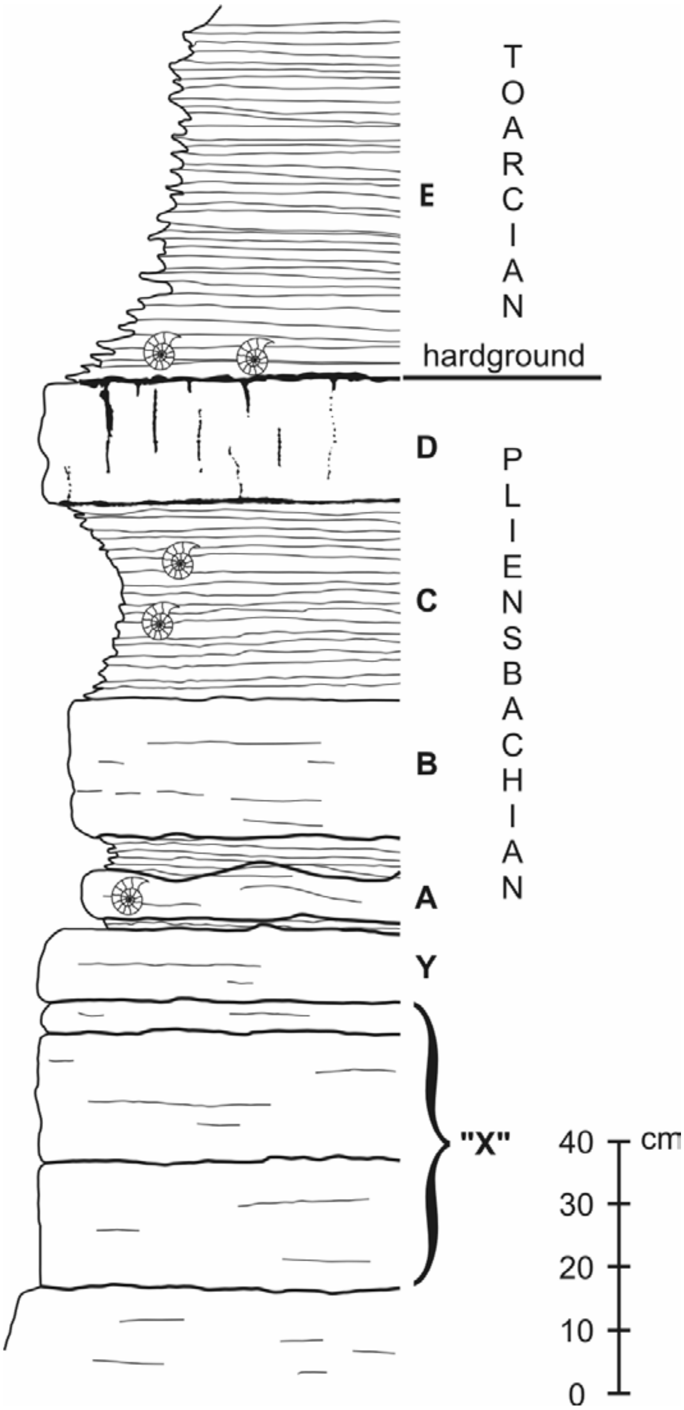


Fig. 3: The new section exposing the Pliensbachian/Toarcian boundary beds

Bed 69 – Reddish-grey limestone with reduced ammonite content, mainly phylloceratids, *Fuciniceras, Canavaria* and *Emaciaticeras*.

thickness ………………….. 0.13 m

Further beds downwards – Massive red limestone with rich ammonite content, discussed in detail recently by GÉCZY & MEISTER as section Csernye A (1988, text-fig. 8).

Lithostratigraphy

The here studied sections show the boundary of two lithostratigraphic units, both widely distributed in the Transdanubian Range. According to former data (KONDA 1989) the limestone beds in the lower part of the profile belong to the Tűzkövesárok Limestone forming the upper part of the here defined formation. The overlying clayey marl represents the basal part of the Kisgerecse Marl Formation. The two formations are markedly separated by the hardground mentioned previously by GÉCZY (1974, p. 411).

Fig. 4: The hardground on top of Bed 68 in Section A. Uppermost Pliensbachian massive red limestone covered by red claymarl here of Serpentinum Zone age. From a color slide made in the 1970s.

Ammonite stratigraphy

The ammonites of the Pliensbachian/Toarcian boundary beds of Csernye had been studied formerly in several works. The most recent monograph (GÉCZY & MEISTER 1998), treating the Domerian ammonites of the Bakony Mts described two sections (A and B) from Csernye, both displaying the uppermost Pliensbachian and one showing also the basal Toarcian beds. Géczy and Meister designated an uppermost ammonite faunal horizon for the Pliensbachian, the „*Emaciaticeras* gr. *fervidum* horizon", which is represented in Csernye with the ammonitids *Lioceratoides* sp., *Emaciaticeras* gr. *fervidum*, ?*Taurومeniceras* sp. (Section A) and *Taurومeniceras* sp. (Section B). Additionally, *Zetoceras iudicariense* (HAAS, 1913) seems to be appearing here also in this horizon (GÉCZY & MEISTER 1998, figs 8, 9 and p. 95). This horizon was recognized in both sections in one layer: in the lower part of Bed 69 in Section A and in Bed 1 of Section B. The lowermost Toarcian was identified in the upper part of Bed 69 in Section A, on the basis of an ammonite determined as *Dactylioceras* aff. *pseudocommune* FUCINI, 1935.

The hardground separating the lower Tűzkövesárok Limestone from the overlying Kisgerecse Marl appears on top of Bed 69, i.e. the limestone bed above this biostratigraphic boundary (Fig. 4). A re-investigation of the specimen which was identified as *Dactylioceras* aff. *pseudocommune* resulted in the revised opinion that it is a Pliensbachian form. The specimen, which is refigured here (Pl. 8, figs 5–6), matches well the figures in FISCHER 1966 (pl. 1, fig. 5, pl. 4, figs 3 and 6), FARAONI et al. 1994 (Pl. 3, fig. 1, pl. 4, figs 1, 2, 3, 5) all records from the upper Pliensbachian. The very similar type series (FUCINI 1934, pl. 9, figs 1–3) came also from the uppermost Pliensbachian. Moreover, the uppermost massive limestone bed (Bed 68), immediately above Bed 69, yielded Upper Pliensbachian ammonites: *Canavaria* cf. *haugi* (GEMMELLARO, 1886) (Pl. 6, fig. 1), *Protogrammoceras* cf. *bassanii* (FUCINI, 1910) (Pl. 7, fig. 4).

Accordingly, if *Dactylioceras* aff. *pseudocommune* defines a faunal horizon, it would be ranged into the topmost Pliensbachian. Bed 69 seems to be indivisible, and is charcterised by various *Emaciaticeras* species. These were omitted from the monograph of GÉCZY & MEISTER (1998), so some of them are figured here: *Emaciaticeras* cf. *emaciatum* (CATULLO, 1853) (Pl. 4, fig. 2), *Emaciaticeras*? sp. (Pl. 4, fig. 1).Other elements are Phylloceratids (*Phylloceras iudicariense* HAAS, 1913, Pl. 1, figs 2–3; *Partschiceras* sp., Pl. 2, fig. 1), *Fuciniceras* cf. *cornacaldense* (TAUSCH, 1890), (Pl. 6, fig. 5), *Canavaria* cf. *ducetiana* FUCINI, 1931 (Pl. 4, figs 3–4) and *Lioceratoides* sp. (Pl. 6, fig. 2).

The overlying basal bed of the red claymarl in Section A yielded Falciferum Zone ammonites: *Hildaites* cf. *forte* (BUCKMAN, 1921) (Pl. 8, figs 1–2), *Hildaites crassus* (GUEX, 1973) (Pl. 7, figs 5–6) and *Hildoceras* spp. (Pl. 7, fig. 3; Pl. 8, figs 3–4). On the basis of these records indicating the Falciferum Zone, the hiatus above the hardground-capped massive limestone was estimated as representing one ammonite zone (the Tenuicostatum Zone, see GÉCZY 1974).

In the new section (N) the beds below the lithofacies change gave sporadic ammonites. Most significant is the *Emaciaticeras emaciatum* specimen from Bed A (see description below), which indicates a correlation with Bed 69 of Section A. Higher up, in Bed C poorly preserved ammonites: *Zetoceras* sp., *Calliphylloceras* cf. *bicicolae*, *Lytoceras* cf. *baconicum* and *Protogrammoceras* cf. *bassanii* occured (descriptions below), which make possible a correlation with Bed 68 of Section A.

The uppermost excavated bed (Bed E) of Section N gave a limited fauna with *Lytoceras* sp. (Pl. 3, figs 1–2), *Zetoceras* cf. *zetes*, *Calliphylloceras* sp. and a nautilid (*Cenocoeras* sp.), and most importantly *Paltarpites* cf. *paltus* (description of the ammonites from the new section see below). *Paltarpites paltus*, being the index of the basal Toarcian subzone within the Tenuicostatum Zone indicates the presence of the lowermost Toarcian immediately above the lithofacies change and the developed hardground in this new section.

Description of ammonites from the newly excavated section (Section N)

Zetoceras cf. *zetes* (D'ORBIGNY, 1850)
Pl. 1, fig. 1

1845 *Ammonites heterophyllus amalthei* – QUENSTEDT in 1845–49, p. 100, pl. 6, fig. 1a–c.
1850 *Ammonites zetes* D'ORBIGNY, 1850 – D'ORBIGNY in 1842–51, p. 247.
2000 *Zetoceras zetes* (D'ORBIGNY, 1850) – JOLY, p. 65, pl. 10, fig. 6, pl. 12, figs 1, 2a–b, figs 125–131.
2007 *Zetoceras zetes* (D'ORBIGNY, 1850) – GÉCZY & MEISTER, p. 149, pl. 2, figs 3, 7.

An internal mould of a single, bigger phragmocone with deep umbilicus, nearly parallel, outwardly convergent flanks and wide, somewhat rounded venter.

Z. zetes is a species of long vertical range (from the Early Sinemurian up to the late Domerian or possibly earliest Toarcian), which is distributed from the Western Tethys to the Pontids, and in France, Germany and England within the Euboreal realm.

The specimen came from Bed C (Upper Pliensbachian) of Section N.

Calliphylloceras cf. *bicicolae* (MENEGHINI, 1874)
Pl. 2, figs 2, 4–5

1874 *Phylloceras bicicolae* – MENEGHINI, p. 106.
2000 *Calliphylloceras bicicolae* (MENEGHINI, 1874) – JOLY, p. 71, pl. 14, figs 1–5, figs 139–142.
2007 *Calliphylloceras bicicolae* (MENEGHINI, 1874) – GÉCZY & MEISTER, p. 148, pl. 1, fig. 7.

Three moderately preserved, medium size specimens. The umbilicus is rather wide, the flanks are slightly convex, nearly parallel, the venter is rounded. There are 4 or 5 prorsiradiate constrictions on the flanks.

C. bicicolae is a persistent species, with range from the Early Sinemurian to the middle Taorcian. Its geographic dsitribution is also wide, with Tethyan occurrences from Hispania to the Pontides (Anatolia), while in the Toarcian it reached the southern margin of the Massif Central (Gard, Lozère).

The specimens came from Bed C (Upper Pliensbachian) of Section N.

Lytoceras cf. *baconicum* VADÁSZ, 1910
Pl. 2, fig. 3

1910 *Lytoceras baconicum* – VADÁSZ, p. 75, figs 24, 25.
1998 *Lytoceras* gr. *baconicum* VADÁSZ 1910 – GÉCZY & MEISTER, pl. 6, fig. 1.

A single, medium size internal mould of moderate preservation. The umbilicus is extremely wide, the whorls just touch each other, and their whorl-height grows rapidly. The whorls are narrower than those of the type.

L. baconicum is a rare species, having been recorded from the Bakony Mts and from the Domerian of the Southern Alps.

The specimen came from Bed C (Upper Pliensbachian) of Section N.

Emaciaticeras emaciatum (CATULLO, 1853)
Pl. 5, figs 1–2

1853 *Ammonites emaciatus* – CATULLO, p. 35, pl. 4, fig. 2.
1983 *Emaciaticeras emaciatum* (CATULLO, 1853) – BRAGA, p. 282, pl. 13, figs 28–31; pl. 14, fig. 1.
1997 *Emaciaticeras emaciatum* (CATULLO 1853) – DOMMERGUES, p. 17, pl. 2, fig. 26.

A single, medium size, well-preserved internal mould with wide umbilicus, narrow, slightly emerged ventral keel bordered by shallow furrows. The strong, narrow, rigid, radial ribs bacome stronger toward the keel, then fade out completely. There are 10 ribs on a half-whorl.

The here studied specimen has narrower umbilicus than the type from Northern Italy (Feltre, Belluno), but matches well the specimens from Appenines figured by FUCINI (1930). *E. emaciatum* is known exclusively from West Mediterranean areas (Italy: Lombardian Alps, Appennines, Iberia: Betic Cordilleras). FUCINI (1930, p. 120) suggested that the specimen described by KULCSÁR (1914) from the Gerecse (North Transdanubian Hungary) as *Arieticeras Bertrandi* could be ranged into *E. emaciatum*.

According to BRAGA (1983) *E. emaciatum* is the index form in the Elisa Subzone of the Upper Pliensbachian Emaciatum Zone.

The specimen came from Bed A (Upper Pliensbachian) of Section N.

Protogrammoceras cf. *bassanii* (FUCINI, 1900)
Pl. 5, fig. 3; Pl. 6, fig. 3

1900 *Grammoceras bassanii* FUC. – FUCINI in 1899–1900, p. 46, pl. 10, figs 6,7.
1972 *Protogrammoceras* (*Bassaniceras*) *bassanii* (FUCINI) – CANTALUPPI, p. 343, pl. 16, figs 1, 2.
1983 *Protogrammoceras bassanii* (FUCINI, 1900) – BRAGA, p. 175, pl. 6, figs 3–5.

A single, bigger, moderately preserved internal mould with a quarter-whorl preserved body chamber fragment. The umbilicus is moderately wide. The slightly convex flanks are sculptured by faint, falcoid ribs, which are equal in width the intercostal spaces. The venter is wide, flattened, with broad, low keel.

The Csernye specimen is closer to the specimen described by FUCINI and refigured by CANTALUPPI (1972, pl. 16, figs 1, 2) than to the ones documented by FARAONI et al. from the E. mirabilis Subzone (1994, p. 256, pl. 10, figs 2, 3, 5).

According to BRAGA (1983), *P. bassanii* belongs into the Elisa Subzone of the Emaciatum Zone, and possibly ranges up into the Solare Subzone. The species occurs in Italy (Lombardy, Apennines) and Iberia (Subbetic Cordilleras).

The specimen came from Bed C (Upper Pliensbachian) of Section N.

Paltarpites cf. *paltus* BUCKMAN, 1922
Pl. 7, figs 1–2

1922 *Paltarpites paltus*, nov. sp. – BUCKMAN in 1909–1930, pl. 362A.
2006 *Protogrammoceras* (*Paltarpites*) *paltum* (BUCKMAN, 1922a) – BÉCAUD, p. 45, pl. 1, figs 1, 2, 4, 5.

A single, medium-size, poorly preserved, incomplete internal mould. The body chamber is missing. The umbilicus is wide, the umbilical wall cannot be seen. The flattened, nearly parallel flanks are covered by sigmoid ribs which are slightly wider than the intercostal spaces. The ventrolateral shoulder is rounded, the venter is narrow and slightly convex. The ribs become strongly proverse on the venter, reaching the keel.

P. paltus is a rare but widely distributed species. It occurs in Europe (e.g. in England, France, Iberia and Italy), in North America (British Columbia, Alaska, Arctic Canada) and in Japan. The occurrence in Morocco is doubtful.

P. paltus characterises the basal Toarcian (Paltus horizon, Tenuicostatum Zone) of Europe.

The specimen came from Bed E (basal Toarcian) of Section N.

Ostracod studies

All beds of the here studied sections yielded rich ostracod material. The lower, Pliensbachian part (Section N: Beds X to D and Section A: the reddish-greyish limestone below the red claymarl) gave the following forms

Polycope sp.
Pseudohealdia acuticauda MONOSTORI, 1996 (Pl. 9, fig. 3)
Ogmoconcha amalthei (QUENSTEDT, 1858) (Pl. 9, fig. 4)
Ogmoconcha? sp.
Ogmoconchella? sp. (Pl. 9, fig. 6)
Cardobairdia liassica (DREXLER, 1958) (Pl. 9, fig. 7)
Bairdia longoarcuata MONOSTORI, 1996 (Pl. 9, fig. 8)
Bairdia michelseni arcuatocauda MONOSTORI, 1996 (Pl. 10, fig. 1)

Ptychobairdia lordi MONOSTORI, 1996 (Pl. 10, fig. 2)
Ptychobairdia spp. (Pl. 10, figs 3–5)
Lobobairdia rotundata MONOSTORI, 1996 (Pl. 10, figs 6–7)
Macrocypris? sp. (Pl. 10, fig. 8)
Liasina lanceolata APOSTOLESCU, 1959 (Pl. 11, fig. 1)
Fabalicypris? sp. (Pl. 11, fig. 2)
Bythocypris? cf. *faba* KNITTER, 1983 (Pl. 12, figs 3–4)
Isobythocypris? aff. *postera* HERRIG, 1979 (Pl. 11, fig. 5)
Paracypris redcarensis BLAKE in BLAKE & TATE, 1876 (Pl. 11, fig. 3)
Paracypris sp. (Pl. 11, fig. 4)

Nearly half of these species are known hitherto from the Bakony Mts (MONOSTORI 1996).

The lower (X to B) beds of the Pliensbachian part of Section N is characterised by the dominance of *Lobobairdia rotundata*, with the common *Ogmoconcha amalthei*, *Polycope* sp., *Cardobairdia liassica* and *Isobythocypris*? aff. *postera*. In the uppermost Pliensbachian beds (C and D) *Isobythocypris*? aff. *postera*, *Cardobairdia liassica, Paracypris redcarensis* and *Polycope* sp. occur in great quantitites, *Ogmoconcha amalthei* is relatively common, while *Lobobairdia rotundata* is comparatively rare.

The Toarcian (Bed E in Section N and the red claymarl in Section A) yielded the following species:

Polycope sp.
Cytherella sp. (Pl. 11, fig .6)
Cardobairdia cf. *infalata spinosa* MONOSTORI, 1995 (Pl. 11, fig. 7)
Cardobairdia sp. (Pl. 11, fig. 8)
Bairdia cf. *guttulae* HERRIG, 1979 (Pl. 12, fig. 1)
Bairdia michelseni arcuatocauda MONOSTORI (Pl. 12, fig. 2)
Bairdia cf. *michelseni* HERRIG, 1979
Bythocypris? *faba* KNITTER, 1983 (Pl. 12, figs 3–4)
Paracypris sp.
Pontocyprella cf. *cavata* DONZE, 1967 (Pl. 12, fig. 5).

In the fauna *Pontocyprella* cf. *cavata* and *Bythocypris*? *faba* show mass occurrence, and *Cardobairdia* sp., *Bairdia* cf. *michelseni*, *Polycope* sp. and *Paracypris* sp. are common elements.

The Pliensbachian and Toarcian ostracod faunas show significant differences which are usually interpreted as related to the Lower Toarcian anoxic event. The main change is the disappearance of the Healdidae in the Lower Toarcian. The disappearance of this characteristic and frequently dominant Pliensbachian group has been recorded from several European sections (see RIEGRAF 1985, LORD 1988, LORD & BOOMER 1990, BOOMER 1992, HARLOFF 1994, LORD 1994, ANDREU et al. 1995, BODERGAT 1997, BODERGAT et al. 1998, BOOMER et al. 1998, ARIAS & LORD 1999, ARIAS & WHATLEY 2005).

The characteristically sculptured bairdiids (*Lobobairdia, Ptychobairdia*), which are common from the Triassic, disappear with Healdidae. However, this is a less conspicuous change, because other sculptured Bairdiaceae occur later (e.g in the Bajocian of the Somhegy, Bakony Mts, see MONOSTORI 1995), and some even live today. The fall of the formerly flourishing sculptured Bairdidae can be connected to the break-up and submersion of the Triassic carbonate platforms. The faunas, having been long adapted to this special environment, could not stand the bottom deepening, and were substituted in the here studied Toarcian beds by a less diverse, moderately sculptured fauna of low species and high specimen number.

The difference from the mentioned West European faunas is in the representation of the genera *Ogmoconcha* and *Ogmoconchella*. These are still present in the West European Tenuicostatum zone, but are missing from the same level in Bakonycsernye, in spite of the otherwise high specimen numbers of the fauna.

Remarkable is the lack of Cytheracea from the basal Toarcian samples, because the flourishing of this group in the lowermost Toarcian is the other characteristic feature in other European sections besides the disappearance of the genera *Ogmoconcha* and *Ogmoconchella*. The Bakonycsernye section, with the red clayey marl present, does not show evident signs of anoxia. The fact that the Cytheracea remain subordinate also in the higher Toarcian beds of the section can be due to the deep water conditions. Otherwise, in the higher Toarcian beds the smooth forms remain dominant, while specimens with bigger individaul sizes become characteristic.

Conclusions

The re-investigated Csernye sections show that in condensed sequences, where thicknesses are reduced and diagnostic fossils are rare, the representation of short stratigraphic intervals is occasional. The intermittent sedimentation left only fragmentary record of the reduced deposits and embedded faunal elements alike. In the short distance (ca. 20–30 m) which separates the here described sections differences of at least subzonal scale may appear. The new discoveries indicate that the time of non-depostion above the Upper Pliensbachian limestone which was enough to develop a ferromanganese-encrusted hardground in Section A could have been restricted to a shorter diasteme in Section N, quite understandable in this case of facies change from limestone to clayey marl.

The ammonite faunas show the general tendecies: some lineages (e.g. those of *Zetoceras, Calliphylloceras, Protogrammoceras→Paltarpites*) endure into the Toarcian, other elements (e.g. *Emaciaticeras*) are restricted to the upper Pliensbachian, while new, dominantly Toarcian groups appear already in the uppermost Pliensbachian (e.g. *Dactylioceras* aff. *pseudocommune*).

The ostracod fauna, indicating a continuous subsidence in the Middle Liassic, now shows a significant change which can be probably due to abrupt deepening of the bottom from sublittoral to bathyal depth. This is reflected by the phenomenon that the ostracod elements so characteristic to the sublittoral faunas in the Tenuicostatum Zone of Western Europe, are completely missing from the lowermost Toarcian beds in both Csernye sections.

Acknowledgements

Prof. M. MONOSTORI's studies on the ostracods of the Pliensbachian/Toarcian boundary beds were supported by OTKA (National Scientific Research Fund), Project T 047138; participation of Prof. B. GÉCZY was made possible by the Research Support Programme of the Hungarian Academy of Sciences.

References

ANDREU, B., QUAJOUN, A. & CUBAYES, R. (1995): Ostracodes du Toarcien du Quercy (Bassin d'Aquitaine, France): systématique, biostratigraphie et paléobiogeographie. – Geobios, 28, pp. 209–240.

ARIAS, C. & LORD, A.R. (1999): Upper Pliensbachian and Lower Toarcian ostracoda from the Cordillera Iberica, North East Spain. – Revista Española de Micropaleontologia, 31, pp. 73–98, 219–242.

ARIAS, C. & WHATLEY, R. (2005): Paleozoogeography of Western European Lower Jurassic (Pliensbachian and Toarcian) Ostracoda. – Geobios, 38, pp. 697–724.

BÉCAUD, M. (2006): Les Harpoceratinae, Hildoceratinae et Paroniceratinae du Toarcien de la Vendée et des Deux-Sèvres (France) – Documents des Laboratoires de Gélogie, Lyon, 162, 1–153.

BODERGAT, A.-M. (1997): Les ostracodes marins de Jurassique européen. Utilisation stratigraphiques. – In: Group Français d'Étude du Jurassique: Biostratigraphie du Jurassique ouest-européen et méditerranéen: zonation parallèles et distribution des invertébrés et microfossiles. – CARIOU, E. & HANTZPERGUE, P. (coord.). – Bull. Centre Rech. Elf, Explor. Prod., Mém. 17, pp. 197–223.

BODERGAT, A.-M., BONNET, L., COLIN, J.P. & CUBAYES, J.R. (1998): Opportunistic development of *Ogmoconcha amalthei* (ostracod) in the Lower Liassic of Quercy (SW France): an indicator of sedimentary disturbance. – Palaeogeography, Palaeoclimatology, Palaeoecology, 143, pp. 179–190.

BOOMER, I. (1992): Lower Jurassic ostracods from Ilminster, Somerset, England. – Journal of Micropaleonotology, 11, pp. 47–57.

BOOMER, I., AINSWORTH, N.R. & EXTON, J. (1998): A re-examination of the Pliensbachian and Toarcian Ostracoda of Zambujal, west-central Portugal. – Journal of Micropaleontology, 17, pp. 1–14.

BRAGA, C. (1983): Ammonites del Domerense de la Zona Subbetica (Cordilleras Beticas sur de España) Tesis doctoral, Universidad de Granada, 410 p.

BUCKMAN, S.S. (1909–1930): Yorkshire Type Ammonites 1,2, and Type Ammonites 3–7, Wheldon & Wesley, London, 790 pls.

CANTALUPPI, G. (1972): Revisione di „*Grammoceras bassanii*" controversa specie-tipo dei generi d'Ammoniti *Protogrammoceras* e *Bassaniceras*. – Atti Soc. Sci. Nat. Mus. Civ. Storia nat. Milano, 113 (1972), pp. 335–356.

CATULLO, T.A. (1853): Intorno a una nuova classificazione delle Calcaire Rosse Ammonitiche delle Alpi Venete – Mem. Rel. Ist. Veneto, Sci., Lett. Arti, 5, pp. 1–57.

DOMMERGUES, J.-L-. MEISTER, C. & SCHIOLLI, P. (1997): Les successions des ammonites du Sinémurien supérieur au Toarcien basal dans les Préalpes de Brescia (Italie). – Memorie di Scienze Geologiche, 49, pp. 1–26.

FARAONI, P., MARINI, A., PALLINI, G. & VENTURI, F. (1994): Nuove faune ad ammoniti delle zone ad *E. mirabilis* ed *H. serpentinus* nella Valle del F. Bosso (PS) e loro riflessi sulla biostratigrafia del limite Domeriano-Toarciano in Appennino. Studi Geol., Cam., Vol. Spec., pp .247–297.

FISCHER, R. (1966): Die Dactylioceratidae (Ammonoidea) der Kammerer (Nordtirol) und die Zonengliederung des alpinen Toarcien. – Abhandlungen bay. Akad. Wiss, math. Nat. Kl., N.F., 126, pp. 1–83.

FUCINI, A. (1899–1900): Ammoniti del Lias medio dell'Appennino centrale esistensi nel Museo di Pisa – Palaeont. Ital., 5, pp. 145–185; 6, pp. 17–78.

FUCINI, A. (1920–1935): Fossili domeriani del dintorni di Taormina. – Paleont. Ital., 26/1920 (1923), pp. 75–116: pt. 1; 27/1921 (1924), pp. 1–21: pt. 2; 29–30/1923–1928 (1929), pp. 41–77: pt. 3; 31/1929–1930 (1931), pp. 93–149: pt. 4; 35/1934–1935 (1935), pp. 85–100: pt. 5.

FÜLÖP, J., GÉCZY, B., KONDA, J. & NAGY, E. (1969): Geological excursion in the Mecsek and Villány Hills and in the Transdanubian Central Range. – Hungarian Geological Institute, Budapest, 1–68 p.

GÉCZY, B. (1966): Ammonoides jurassiques de Csernye, Montagne Bakony, Hongrie – Part I. (Hammatoceratidae). – Geologica Hungarica, Series Palaeontologica, 34, pp. 1–276.

GÉCZY, B. (1967): Ammonoides jurassiques de Csernye, Montage Bakony, Hongrie – Part II.(excl. Hammatoceratidae). – Geologica Hungarica, Series Palaeontologica, 35, 1–413. Budapest.

GÉCZY, B. (1974): Biozones et chronozones dans le Jurassique de Csernye. – Colloque du Jurassique, Luxembourg, 1967. Mém. B.R.G.M.Fr. 75, pp. 411–422.

GÉCZY, B. & MEISTER, C. (1998): Les ammonites du Domérien de la montagne du Bakony (Hongrie). – Revue de Paléobiologie, Genève, 17/1, pp. 69–161.

GÉCZY, B. & MEISTER, C. (2007): Les ammonites du Sinémurien et du Pliensbachien inférieur de la montagne du Bakony (Hongrie). – Revue de Paléobiologie, Genève, 26/1, pp. 137–305.

HANTKEN, M. (1870): Geologische Untersuchungen im Bakonyer Wald. – Verhandlungen der k.-k. geologisches Reichsanstalt, 1, 4, pp. 58–59.

HARLOFF, J. (1994): Ostracoden aus dem Lias der Kalkalpen Bayerns und Nordtirols. – Stuttgarter Beiträge zur Naturkunde, Ser.B, 205, pp. 1–63.

JOLY, B. (2000): Les Juraphyllitidae, Phylloceratidae, Neophylloceratidae (Phyllocerataceae, Phylloceratina, Ammonoidea) de France au Jurassique et Crétacé. Geobios, Mém. Spéciel, 23, Mém. Soc. géol. France, N.S., 174, pp. 1–202.

KONDA, J. (1989): Magyrország geológiai alapszelvényei. Bakony, Isztimér (Bakonycsernye), Tűzköves-árok. Tűzkövesárki Mészkő Formáció. [Geological Reference Sections of Hungary. Tűzkövesárok Limestone Formation.] Hungarian Geological Institute, Budapest. 7 p.

KULCSÁR, K. (1914): Die mittelliassischen Bildungen des Gerecsegebirges. – Földtani Közlöny, 44/1, pp . 150–175.

LORD, A.R. (1974): Ostracods from the Domerian and Toarcian of England. – Palaeontology, 17/3, pp. 642–665.

LORD, A.R. (1988): Ostracoda of the Early Jurassic Tethyan Ocean. In: HANAI, T., IKEYA, N. & ISHIZAKI, K. (eds): Evolutionary Biology of Ostracoda. Kodansha/Elsevier, pp. 855–868.

LORD, A.R. & BOOMER, I.D. (1990): The occurrence of ostracods in the Triassic/Jurassic boundary interval. – Cahiers de l'Université Catholique de Lyon, Sér. Sci., 3, pp. 119–126.

MENEGHINI, G. (1867–1881): Monographie des fossiles du calcaire rouge ammonitique (Lias supérieur) de Lombardie et de l'Appenin central. – Paléontologie Lombarde, 242 pp.

MONOSTORI, M. (1995): Bajocian ostracods from the Som Hill (Bakony Mts, Hungary). – Hantkeniana, 1, pp. 155–161.

MONOSTORI, M. (1996): Pliensbachian ostracod fauna from condensed limestones of the Bakony Mts. (Transdanubain Central Range, Hungary): – Fragmenta Mineralogica et Palaeontologica, 18, pp. 33–61.

D'ORBIGNY, A. (1842–1851): Paléontologie française, Terrains jurassiques, 1, Cephalopodes. Masson, Paris, 642 p.

PRINZ, G. (1904): Die Fauna der älteren Jurabildungen im nordöstlichen Bakony. – Mitt. Jahrb. Ung. Geol. Anst., 15, pp. 1–142.

QUENSTEDT, F.A. (1845–1849): Petrefactenkunde Deutschkands; Die Cephalopoden. – L.F Fues, Tübingen, 580 p.

RIEGRAF, W. (1985): Mikrofauna, Biostratigraphie und Fazies im Unteren Toarcium Südwestdeutschlands und vergleiche mit benachbarten Gebieten. Tübinger mikropaläontologische Mitteilungen, 3, pp. 1–232.

VADÁSZ, M. (1910): Die Juraschichten des südlichen Bakony. – Resultaten der wissenschaftliche Erforschung des Balatonsees, Paläontologie, 1/1, pp. 1–89.

Plate 1

Fig. 1: *Zetoceras* cf. *zetes* (D'ORBIGNY, 1850); Section N, Bed C = Upper Pliensbachian. Wholly septate specimen.
Figs 2–3: *Phylloceras iuducariense* HAAS, 1913; Section A, Bed 69 = Upper Pliensbachian. Wholly septate specimen.

All photos natural size

Plate 1

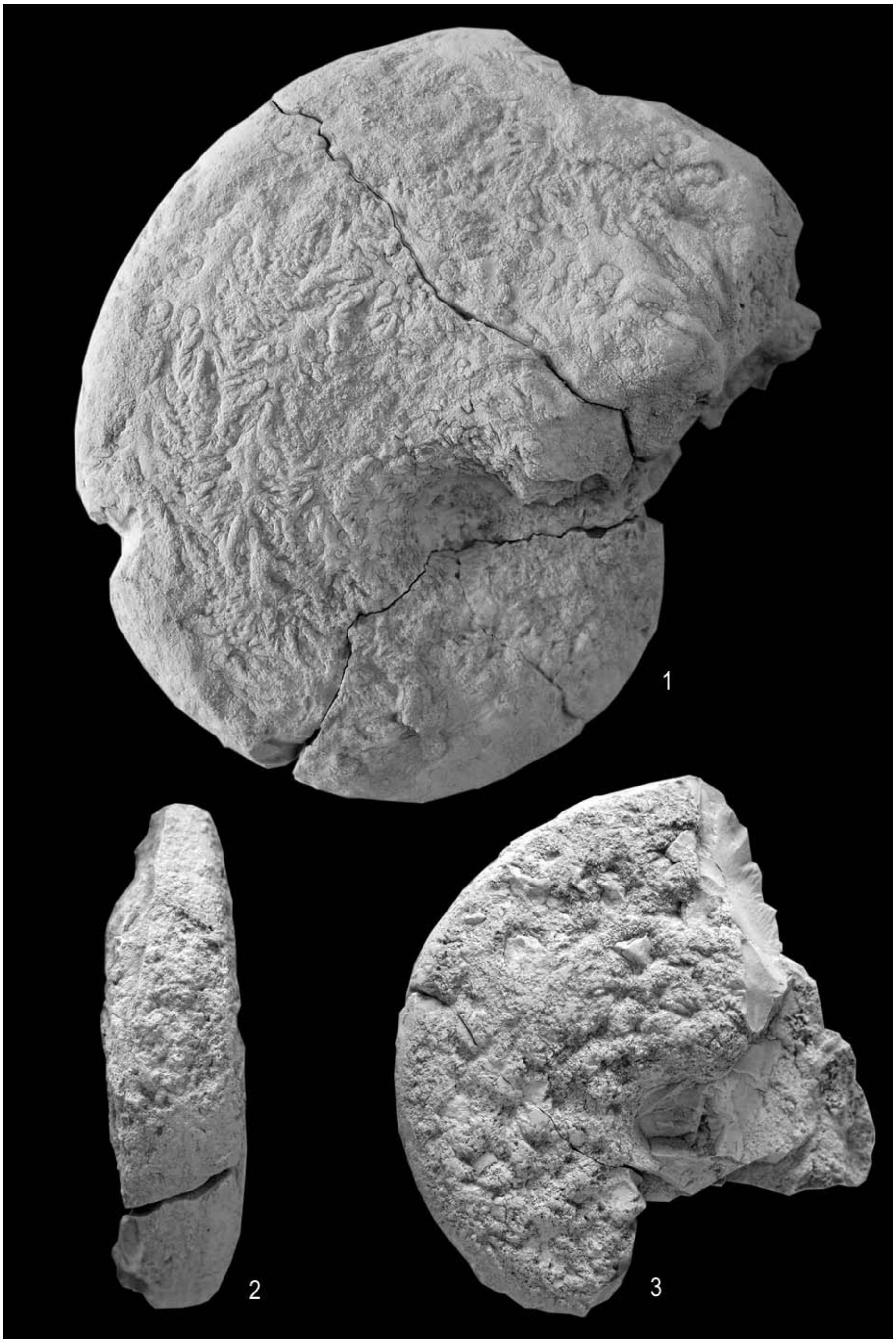


Plate 2

Fig. 1: *Partschiceras* sp.; Section A, Bed 69 = Upper Pliensbachian
Figs 2, 4–5: *Calliphylloceras* cf. *bicicolae* (MENEGHINI, 1874); Section N, Bed C = Upper Pliensbachian. Wholly septate specimens.
Fig. 3: *Lytoceras* cf. *baconicum* VADÁSZ, 1910; Section N, Bed C = Upper Pliensbachian. Wholly septate specimen.

All photos natural size

Plate 2

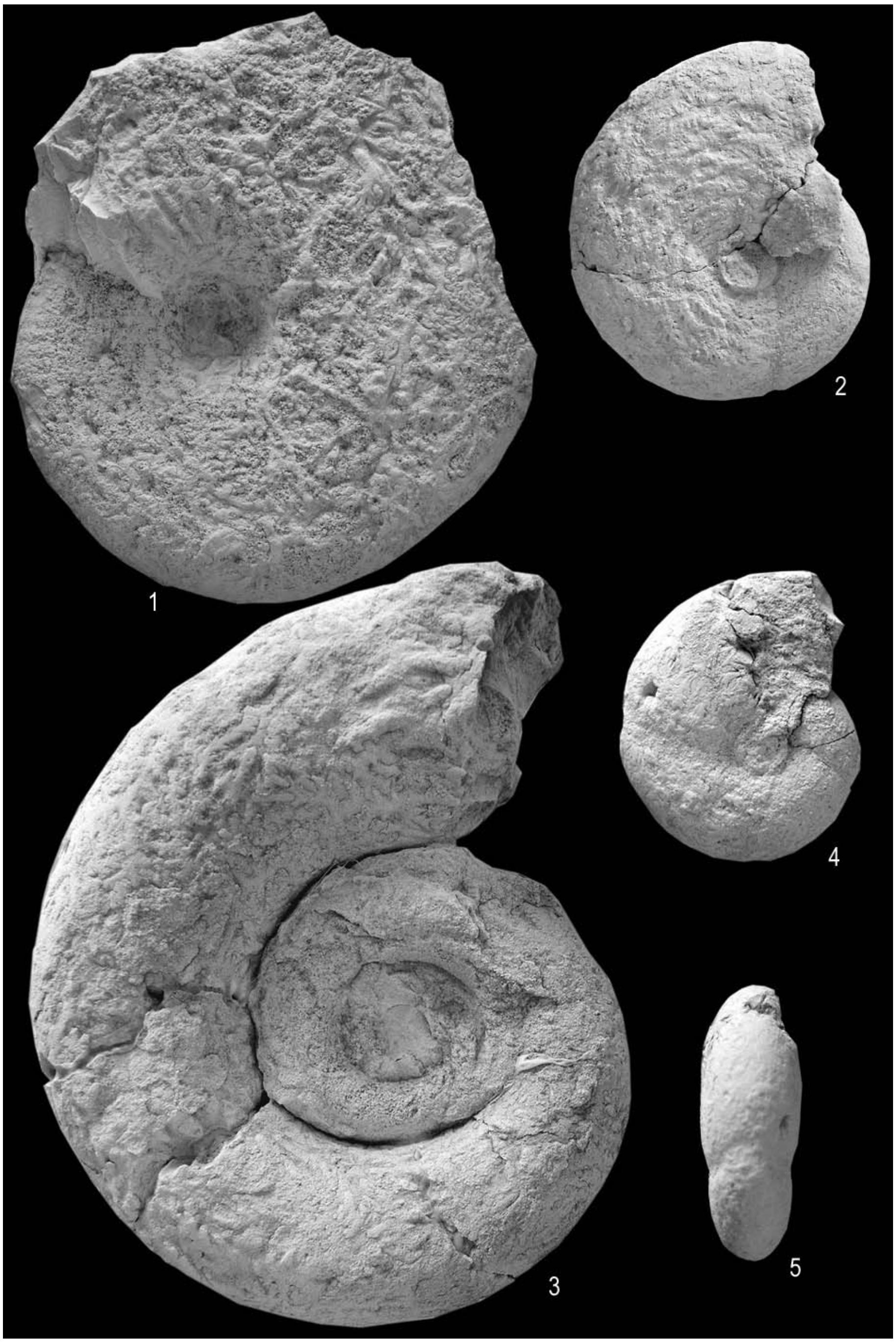


Plate 3

Figs 1–2: *Lytoceras* sp.; Section N, Bed E = basal Toarcian. Wholly septate specimen; X 0.8. Fig. 2 shows an enlarged part of the preserved portion of the sculptured shell.

Plate 3

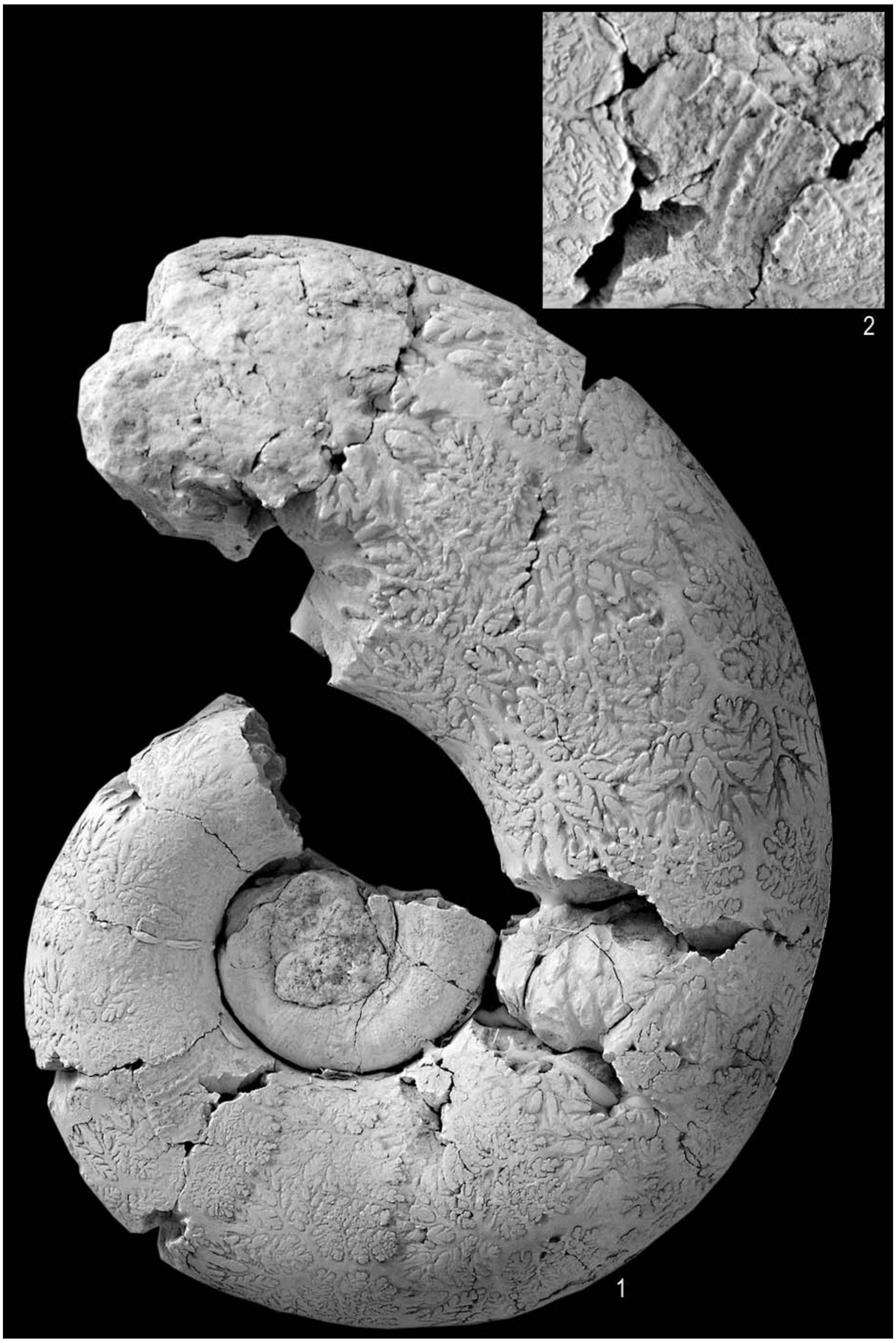


Plate 4

Fig. 1: *Emaciaticeras*? sp.; Section A, Bed 69 = Upper Pliensbachian. Wholly septate specimen.
Fig. 2: *Emaciaticeras* cf. *emaciatum* (CATULLO, 1853); Section A, Bed 69 = Upper Pliensbachian.
Figs 3–4: *Canavaria* cf. *ducetiana* FUCINI, 1931; Sectuin A, Bed 69 = Upper Sinemurian.

All photos natural size, asterisks indicate end of phragmocone.

Plate 4

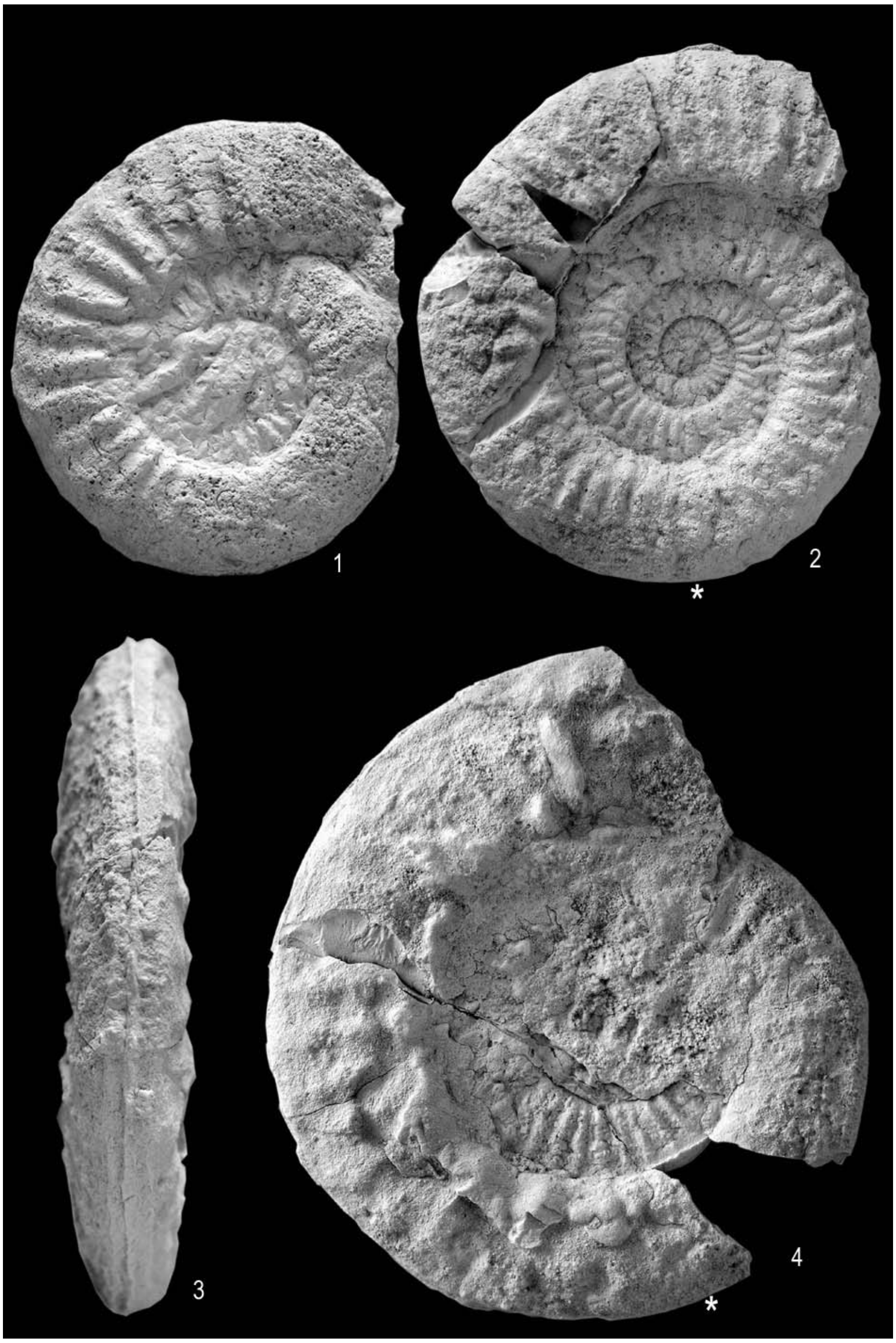


Plate 5

Figs 1–2: *Emaciaticeras emaciatum* (CATULLO, 1853); Section N, Bed A = Upper Sinemurian
Fig. 3: *Protogrammoceras* cf. *bassanii* (FUCINI, 1900); Section N, Bed C = Upper Sinemurian (for ventral view see Pl.6, fig.3)

All photos natural size, asterisks mark end of phragmocone.

Plate 5

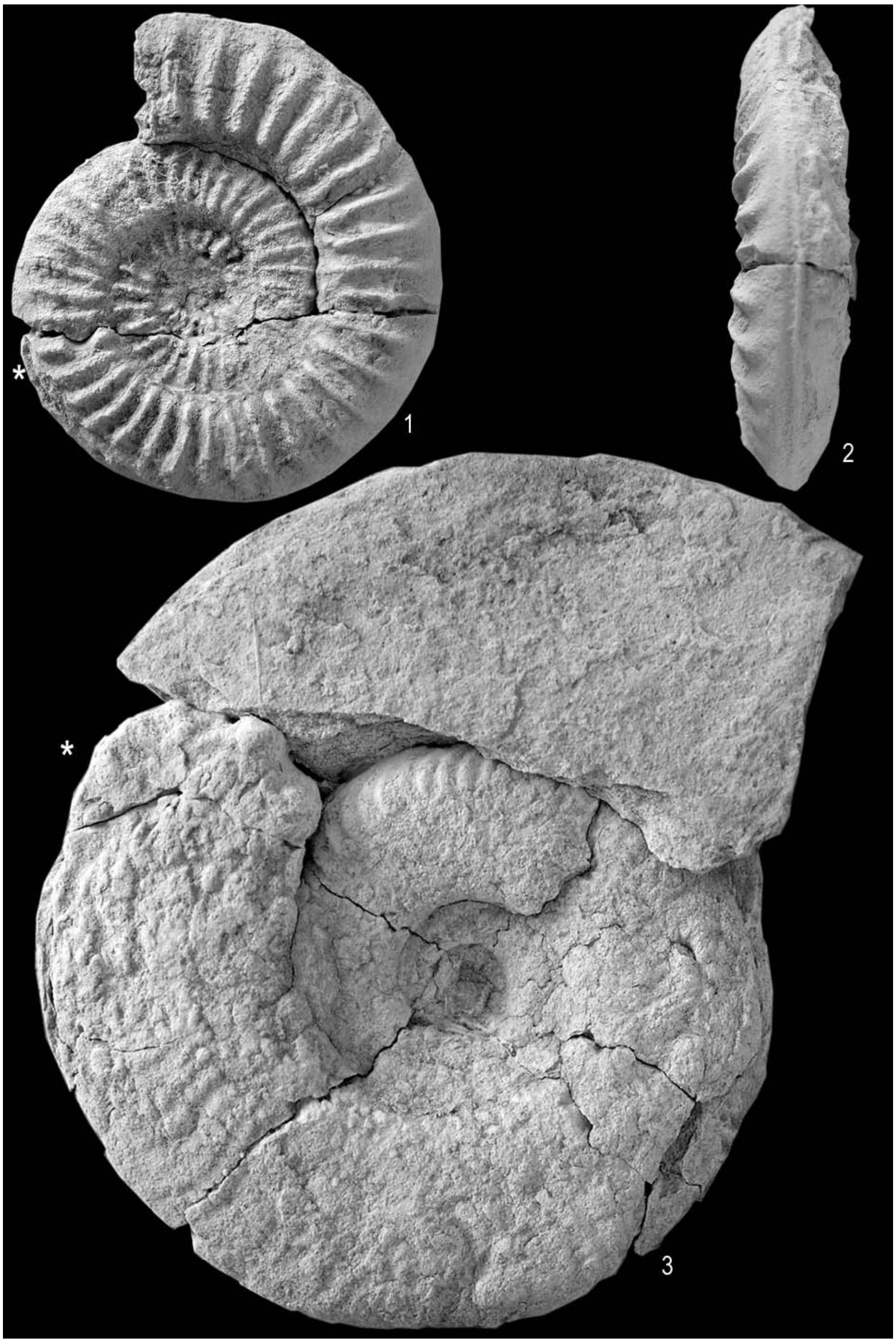


Plate 6

Fig. 1: *Canavaria* cf. *haugi* (GEMMELLARO, 1886); Section A, Bed 68 = Upper Pliensbachian
Fig. 2: *Lioceratoides* sp.; Section A, Bed 69 = Upper Sinemurian. Wholly septate specimen.
Fig. 3: *Protogrammoceras* cf. *bassanii* (FUCINI, 1900); Section N, Bed C = Upper Pliensbachian (see Pl.5, fig.3).
Fig. 4: *Fuciniceras* cf. *cornocalense* (TAUSCH, 1890); Section A, Bed 69 = Upper Pliensbachian.

All photos natural size, asterisks mark end of phragmocone.

Plate 6

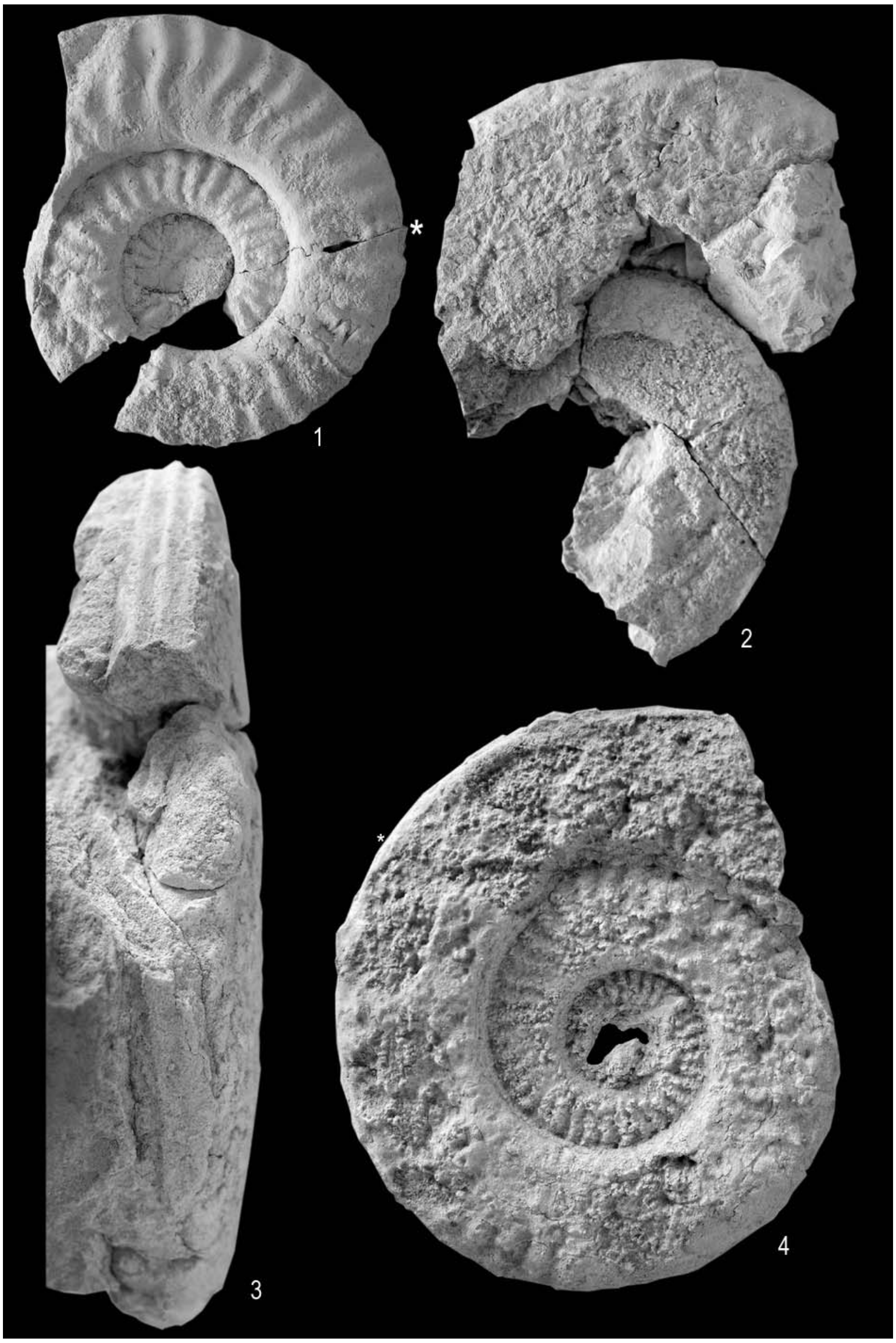


Plate 7

Figs 1–2: *Paltarpites* cf. *paltus* BUCKMAN, 1922; Section N, Bed E = Basal Toarcian. Wholly septate specimen.
Fig. 3: *Hildoceras* sp.; Section A, Bed 67 = Lower Toarcian
Fig 4: *Protogrammoceras* cf. *bassanii* (FUCINI, 1900); Section A, Bed 68 = Upper Pliensbachian. Wholly septate specimen.
Figs 5–6: *Hildaites crassus* (GUEX, 1973); Section A, Bed 67 = Lower Toarcian.

All photos natural size, asterisks mark end of phragmocone.

Plate 7

Plate 8

Figs 1–2: *Hildaites* cf. *forte* (BUCKMAN, 1921); Section A, Bed 67 = Lower Toarcian
Figs 3–4: *Hildoceras* sp. Section A, Bed 67 = Lower Toarcian
Figs 5–6: *Dactylioceras* sp. aff. *pseudocommune* FUCINI, 1935, Section A, Bed 69 = Upper Pliensbachian (previously figured by GÉCZY & MEISTER, 1998, pl. 7, fig. 1)

All photos natural size, asterisks mark end of phragmocone.

Plate 8

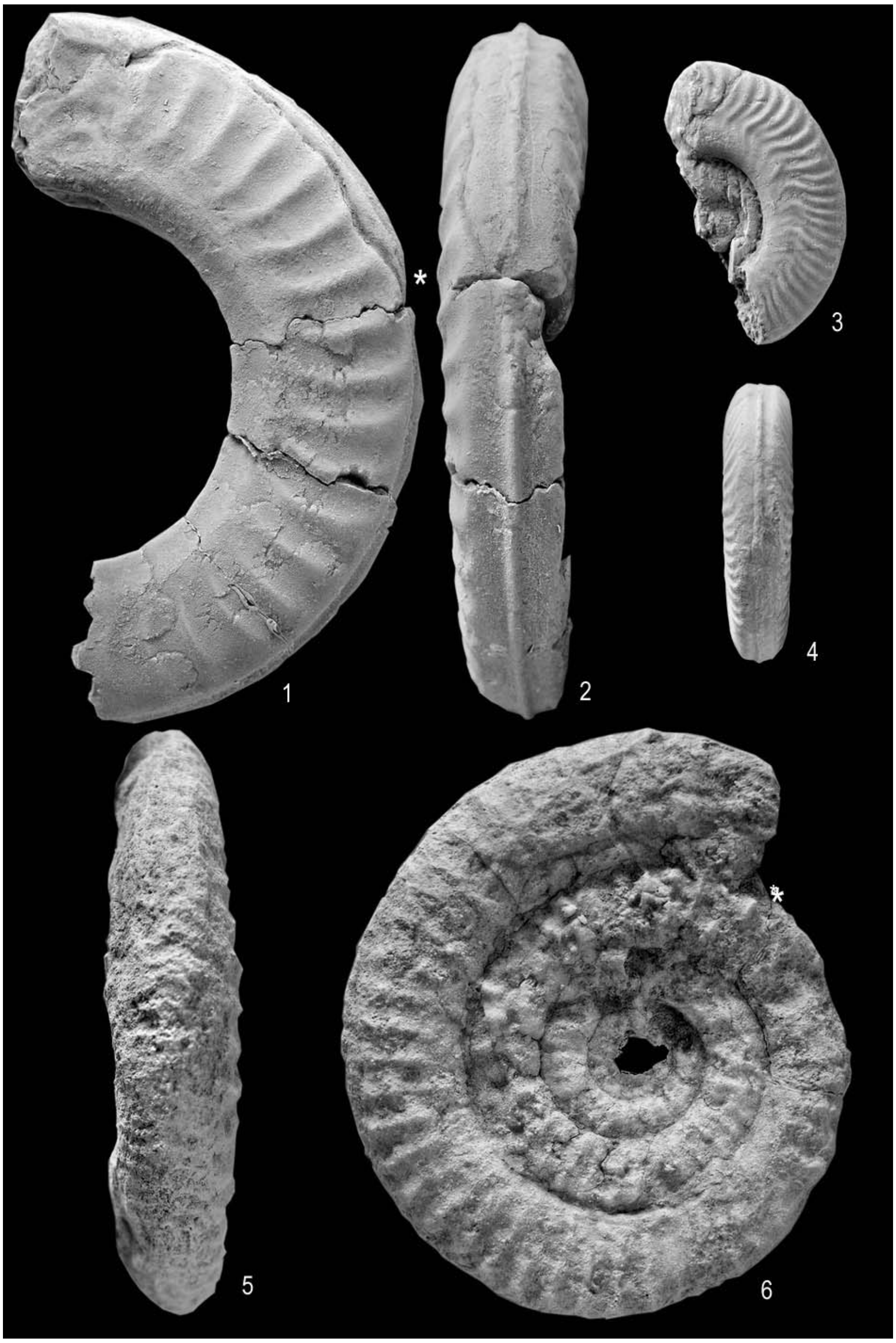


Plate 9

Fig.1. *Polycope*? sp.1. Carapace 90x. Section N, Bed C, Pliensbachian.
Fig.2. *Polycope* sp.2. Carapace 85x. Section A, Pliensbachian.
Fig.3. *Pseudohealdia acuticauda* MONOSTORI, 1966. Carapace from the right valve 80x. Section A, Pliensbachian.
Fig.4. *Ogmoconcha amalthei* (QUENSTEDT, 1858). Carapace from the right valve 60x. Section A, Pliensbachian.
Fig.5. *Ogmoconcha* sp. Carapace from the right valve 60x. Section N, Bed C, Pliensbachian
Fig.6. *Ogmoconchella*? sp. Carapace from the right valve 70x. Section A, Pliensbachian
Fig.7. *Cardobairdia liassica* (DREXLER, 1958). Carapace from the right valve 90x. Section A, Pliensbachian.
Fig.8. *Bairdia longoarcuata* Monostori, 1966. Carapace from the right valve 60x. Section N, Pliensbachian.

Plate 9

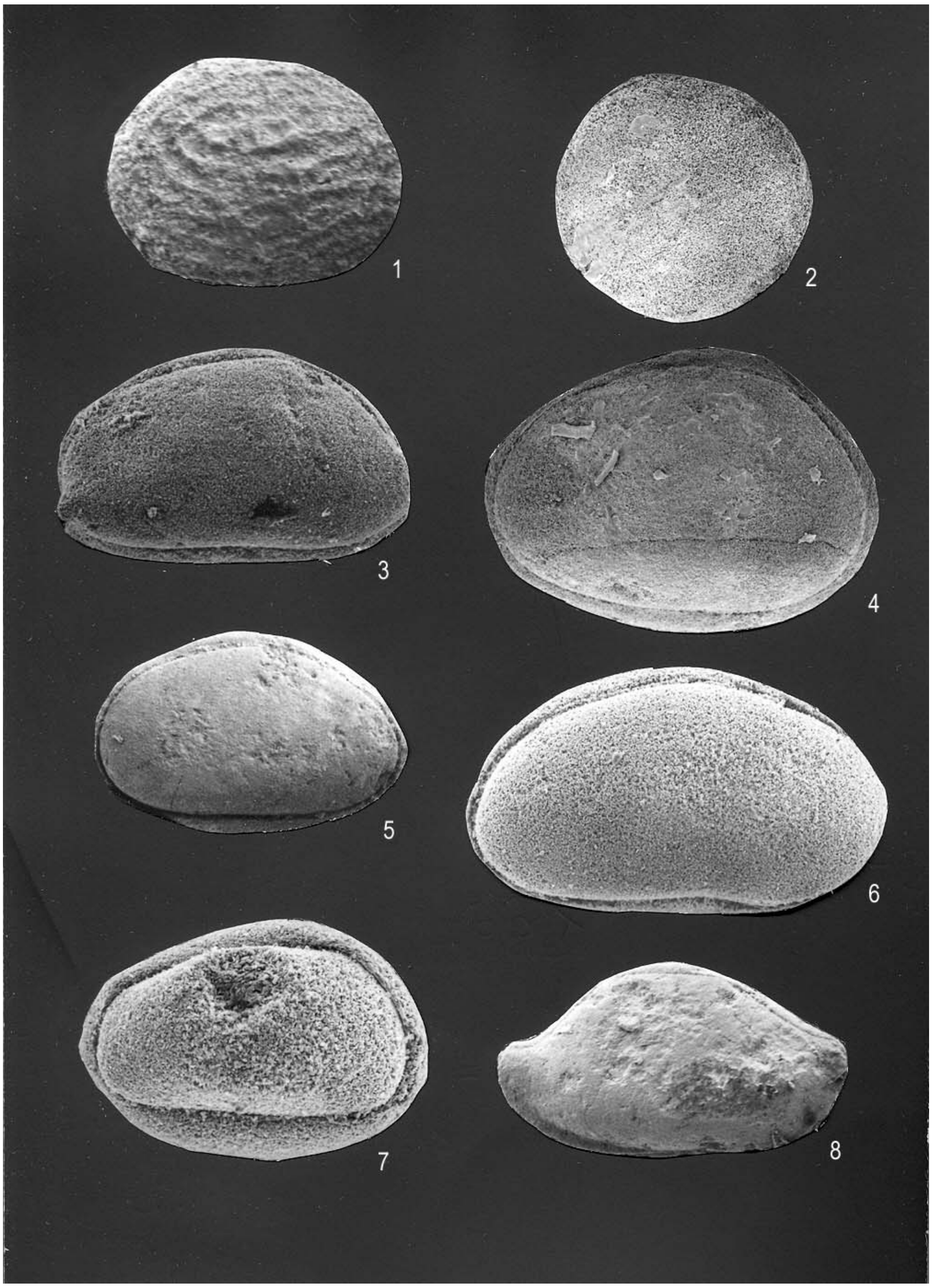


Plate 10

Fig.1. *Bairdia michelseni arcuatocauda* MONOSTORI, 1966. Carapace from the right valve 80x. Section A, Pliensbachian.
Fig.2. *Ptychobairdia lordi* MONOSTORI, 1996. Right valve 80x. Section A, Pliensbachian.
Fig.3. *Ptychobairdia* sp.1. Left valve 80x. Section A, Pliensbachian.
Fig.4. *Ptychobairdia* sp.2. Carapace from the right valve 70x. Section A, Pliensbachian.
Fig.5. *Ptychobairdia* sp.3. Carapace from the left valve 100x. Section N, Bed D, Pliensbachian.
Fig.6. *Lobobairdia rotundata* MONOSTORI, 1996. Left valve 65x. Section A, Pliensbachian.
Fig.7. *Lobobairdia rotundata* MONOSTORI, 1996. Right valve 50x. Section A, Pliensbachian.
Fig.8. *Macrocypris*? sp. Carapace from the right valve 70x. Section N, Bed D, Pliensbachian.

Plate 10

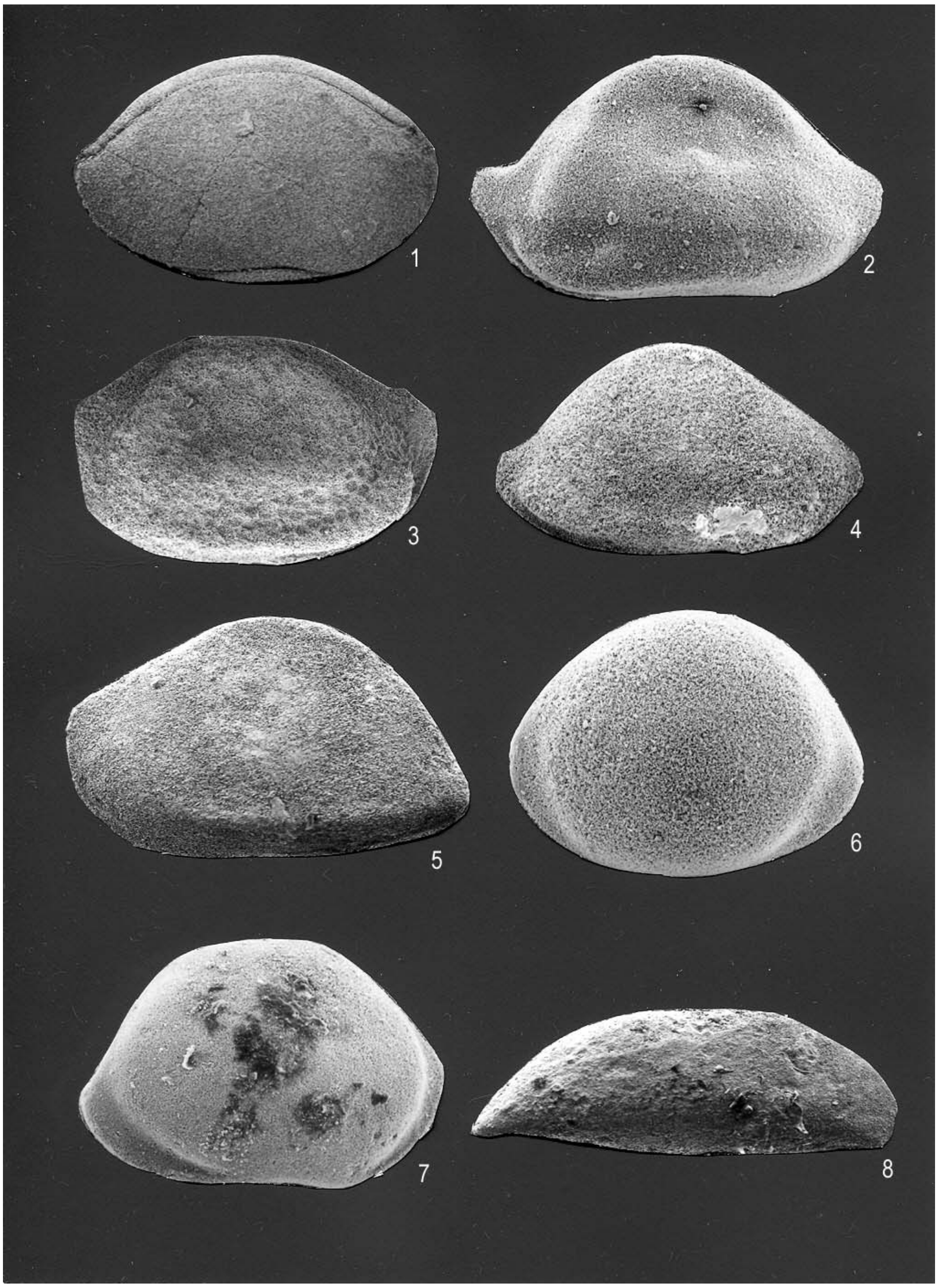


Plate 11

Fig.1. *Liasina lanceolata* APOSTOLESCU, 1959. Carapace from the right valve 90x. Section A, Pliensbachian.
Fig.2. *Fabalicypris*? sp. Carapace from the left valve 90x. Sectionh A, Pliensbachian.
Fig.3. *Paracypris redcarensis* BLAKE in BLAKE & TATE, 1876. Carapace from the right valve 75x. Section A, Pliensbachian.
Fig.4. *Paracypris* sp. Carapace from the right valve 75x. Section A, Pliensbachian.
Fig.5. *Isobythocypris*? *postera* HERRIG, 1979. Carapace from the right valve 65x. Section A, Pliensbachian.
Fig.6. *Cytherella* sp. Carapace from the left valve 67x. Section A, Toarcian.
Fig.7. *Cardobairdia* cf. *inflata spinosa* MONOSTORI, 1995. Carapace from the right valve 90x. Section N, Bed E, basal Toarcian.
Fig.8. *Cardobairdia* sp. Carapace from the right valve 90x. Section A, Toarcian.

Plate 11

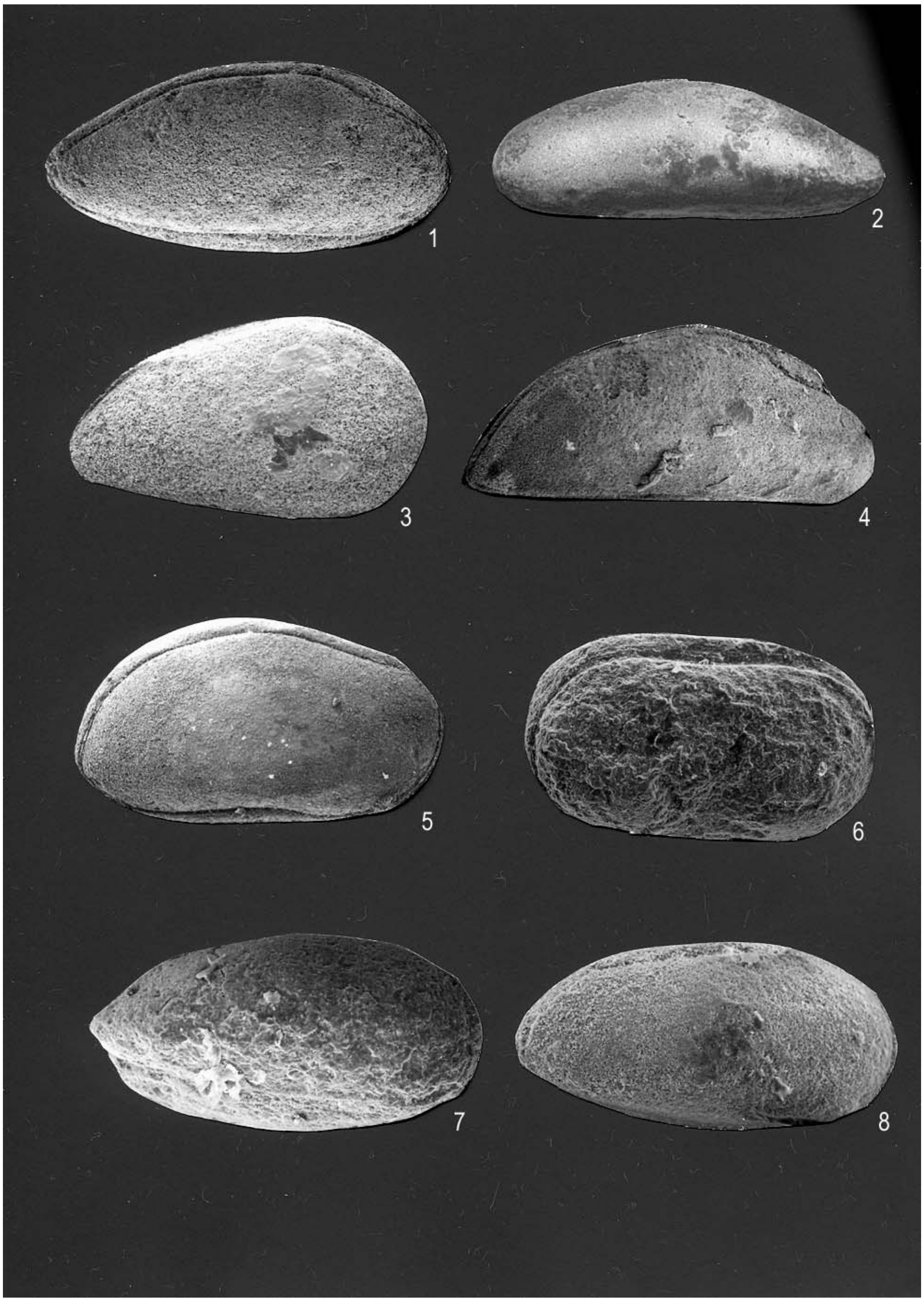


Plate 12

Fig.1. *Bairdia* cf. *guttulae* Herrig, 1979. Carapace form the left valve 55x. Section A, Toarcian.

Fig.2. *Bairdia michelseni arcuatocauda* MONOSTORI, 1996. Carapace from the right valve 70x. Section A, Toarcian.

Fig.3. *Bythocypris*? *faba* KNITTER, 1983. Carapace from the right valve 100x. Section N, Bed E, basal Toarcian.

Fig.4. *Bythocypris*? *faba* KNITTER, 1983. Carapace from the right valve 80x. Section A, Toarcian.

Fig.5. *Pontocyprella* cf. *cavata* MONOSTORI, 1995. Carapace from the right valve 70x. Section A, Toarcian.

Plate 12

Geologica Pannonica 36, 227—233 (2008) Budapest

Two *Crusafontina* (Mammalia, Insectivora) finding from the Miocene of the Transdanubian Central Range (Hungary)

Lukács Gy. MÉSZÁROS[1]

(with 2 figures)

Abstract

Two isolated teeth of Anourosoricini shrews, *Crusafontina* (Mammalia, Insectivora, Soricidae) are present in this paprer. A complete left maxillary molar was found in the Sarmatian (Middle Miocene) locality of Várpalota Lignite Mine, Pit III. The species is different from all known *Crusafontina* species in its smaller size and less reduced talone of this tooth, so we described it as *Crusafontina* sp. On the basis of its less evolved morphology, the here described form seems the most ancient known species of the genus. A fragmented upper molar of *Crusafontina kormosi* (Bachmayer & Wilson 1970) came from the Late Miocene locality of Tihany, Fehér-part. The most probable age of the remain is Early Turolian. It might have been transported by flowing water to the Late Miocene lacustrine basin and indicates well watered, wooded environment in the surroundings.

Introduction

Crusafontina were very common shrews in the Late Miocene of Hungary. Many rich and well-preserved samples are reported by MÉSZÁROS (1998 b). Only two teeth, as new findings are described here, but they are palaeoecologically and stratigraphically very important for knowing the Middle and Late Miocene history of the Carpathian Basin. The Várpalota form gives new information about the evolution of genus *Crusafontina*.

Both findings are stored in the collection of the Geological Museum of Hungary (in the Hungarian Geological Institute), Budapest. The morphological terms and the measurements are used after REUMER (1984). The measurements are given in millimetres.

[1] Department of Palaeontology, Eötvös University, Pázmány Péter sétány 1/c, H–1518 Budapest, Hungary. E-mail: salpin@freemail.hu

Localities and material

Tihany

The Tihany Peninsula of Lake Balaton is one of the most popular Hungarian fossil localities. The first report on its ”goat-hoof” (*Congeria ungulacaprae*) remains came from 1782. The Fehér-part (White Coast) locality, discussed here, is the type section of the Upper Pannonian Tihany Formation. The site is a 30 m high wall, situated 1600 m SSE of the port of Tihany. Well- and poorly sorted aleurite and sand layers, accumulated in open lakes and in intermittent lagoons, alternate in the sequence (MÜLLER & SZÓNOKY 1988). There are three interbedded dark huminitic layers marked by terrestrial gastropods in the section. These formations, from which the terrestrial mammal remains came, could have been deposited in lagoons without water movements and with close vegetation. According to KORDOS (1987) the layers bearing vertebrate fossils are correlative with the Early Turolian age.

The National Geographic Society supported a project for the review of the classical paleovertebrate localities in Hungary ("Evolution of Central Paratethys (Hungary) Miocene Vertebrate Communities” (# 6210-98) project). One of the collecting works of this project in the summer of 1998 by R. BERNOR and L. KORDOS produced three micromammal teeth. One of them was an insectivore, which was given for determination for the author. This remain is only a fragmented upper molar of a relatively big shrew, but, because of its uncommon morphology, is easily classifiable and gives particular additions for the stratigraphy and ecology of the locality. It came from the layer marked as No. 19 in the section of MÜLLER & SZÓNOKY (1988).

Várpalota

The town of Várpalota is situated in Western Hungary, about 70 km W–SW from Budapest. The here described shrew tooth was collected by József KÓKAY, from the Várpalota Lignite Mine, Pit III, in a depth of 133.5 m, in the upper part of the Sarmatian (Upper Miocene) formation of the mine.

The studied shrew was systematically surely ranged in the genus *Crusafontina* by the especially structured second upper molar. Because of its small size and less reduced talone than that of the other known forms of the genus, we suppose that the Várpalota shrew is an unknown species. However, the material is too fragmentary for a detailed taxonomical description of a new species.

Systematic description

Classis Mammalia LINNAEUS, 1735
Order Insectivora BOWDICH, 1821
Family Soricidae GRAY, 1821
Subfamily Soricinae FISCHER VON WALDHEIM, 1817
Tribe Anourosoricini ANDERSON, 1879
Genus *Crusafontina* GIBERT, 1974

Type species. Crusafontina endemica GIBERT, 1974

Crusafontina kormosi (BACHMAYER & WILSON, 1970)

1954 *Amblycoptus vicinus* n. sp. – KRETZOI, p. 49 (Csákvár)
1970 *Anourosorex kormosi* nov. spec. – BACHMAYER & WILSON p. 551, figs 3, 4, 4a, 20, 20a, 21, 22, 23, 23a, 24, 25 (Kohfidisch)
1978 *Anourosorex kormosi* BACHMAYER & WILSON 1970 – BACHMAYER & WILSON, p. 141 pl. 2, figs, 5, 5a (Kohfidisch)
1978 "*Anourosorex" kormosi* BACHMAYER & WILSON 1970 – STORCH, p. 424, pl. 4, figs 29–39 (Dorn-Dürkheim)
1980 *Anourosorex kormosi* BACHMAYER & WILSON 1970 – BACHMAYER & WILSON, p. 361 (Kohfidisch)
1996 *Crusafontina vicina* (KRETZOI, 1954) – MÉSZÁROS, p. 9, pl. 12, figs 5 a–b (Csákvár)
1998a *Crusafontina kormosi* (BACHMAYER & WILSON, 1970) – MÉSZÁROS, p. 106, pl. 1, figs 5–11 (Tardosbánya)
1998b *Crusafontina kormosi* (BACHMAYER & WILSON, 1970) – MÉSZÁROS, p. 147, pl. 1, figs. 2–5, pl. 3, figs 16–23 (Csákvár, Tardosbánya, Polgárdi 4)

Material. 1 M^2 sin. fragment

Measurements. LL = 1.08, PW = 1.11.

Description.

The parastyle is broken down. The metastyle is short, it is strongly shorter than the mesostyle. The hypocone is small, the hypoconal flange is missing. The PW must have been significantly less than the AW. The metacone is higher than the protocone and the paracone. The occlusal surface of the molar is strongly eroded.

Systematic position.

Genus *Crusafontina* is easily identifiable by the especially structured second upper molar with reduced talone. MÉSZÁROS (1998b) included two species in the genus from Hungary and listed the differential characters between them. However, the main specific details are not available in the specimen under description, the length of the metastyle is useful in the determination. It is more reduced, as that of *Crusafontina endemica*

GIBERT 1972. Thus, we can classify the studied tooth as *Crusafontina kormosi* (BACHMAYER & WILSON 1970).

Crusafontina sp.
(Fig. 1)

Material. Complete left M^2.

Measurements. LL = 1.20, BL = 1.38, AW = 1.90, PW = 1.65.

Description.

The parastyle is well-developed. The metastyle is hardly shorter than the parastyle. The mesostyle is strongly shorter than the other ones. The hypocone is low, but well visible, the hypoconal flange is present. The PW is hardly less than the AW. The protocone and the metacone are higher than the paracone.

Systematic position.

The here described shrew is a small sized *Crusafontina* with less reduced talone, with well-developed, protruding metastyle on M^2, and present hypoconal flange behind the hypocone. It differs from *C. endemica* and *C. kormosi* in its smaller size, shorter M^2 metastyle and larger AW/PW ratio on M^2 (Fig 2).

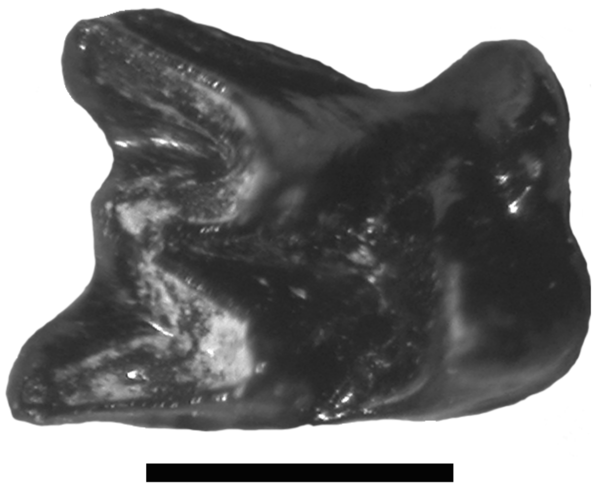


Fig. 1. *Crusafontina* sp., M^2, occlusal view, Várpalota Lignite Cave, Pit III, Geological Museum of Hungary, Inv. Nr.: V. 25628., scale bar = 1 mm

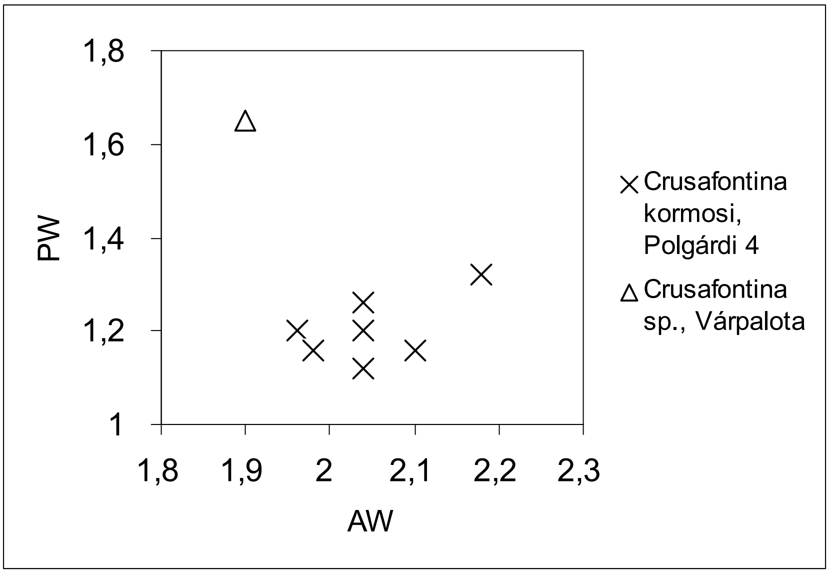


Fig. 2. Scatter diagram of M^2 AW and PW of *Crusafontina* sp from Várpalota.

Conclusions

The Várpalota shrew was surely identifiable as *Crusafontina* by the especially structured second upper molar with reduced talone. According to MÉSZÁROS (1998 b), one of the main evolutionary development in the genus from the earliest *C. endemica* specimens to the latest *C. kormosi* ones is the general size growth, with the parallel shortening of M^2 and the reduction of its talone (the metastyle becomes shorter relatively to the parastyle).

However, the specimen under description is only one tooth, therefore many characters are not available on it, we can surely see the less degree of the reduction of the talone. The differential characters between the Várpalota finding and the other forms suggest that the studied one is the most ancient species of the genus

By this time, genus *Crusafontina* was known only in the Late Miocene Vallesian and Turolian ages of Europe. (BACHMAYER & WILSON 1970, 1978, 1980, GIBERT 1975, KRETZOI et al. 1976, MÉSZÁROS 1996, 1998 a, b, c, STORCH 1978, BERNOR et al. 2002). *C. endemica* occurs from the Vallesian MN 9 Zone to the older part of MN 10 Zone, while *C. kormosi* from the latest part of the Vallesian MN 10 Zone to the beginning of the Late Turolian MN 13 Zone.

By the new form discovered in Várpalota sample we can emend the stratigraphic range of the genus to the upper part of the Middle Miocene Sarmatian stage (Astaracian mammal faunal unit, MN 7/8 zone) in the Carpathian Basin.

The occurrence of *Crusafontina kormosi* indicates that the age of Tihany is MN 10–13. By the measurements this species would be between the Sümeg (MN 10) and Tardosbánya (MN 12) forms (MÉSZÁROS, 1998 b).

The Tihany *Crusafontina* remain is fragmented, but not digested. The sedimentology of the fossiliferous layer precludes the possibility of the intensive surge of the lake, in which the teeth were accumulated. On the other hand the breakage pattern suggests that the studied finding was moved before the deposition. The most likely possibility is that the *Crusafontina* tooth may be transported by flowing water to the lacustrine basin.

We can see *Crusafontina* as an indicator of well-watered, wooded environments in both of the sites. By this time its fossils were described from forested or at least partly wooded areas (Rudabánya, Alsótelekes, Sümeg, Csákvár, Dorn-Dürkheim, Kohfidisch, Tardosbánya, Polgárdi 4). This view is supported by the close relation of *Crusafontina* to the extant *Anourosorex squamipes*, which occurs in the mountain forests of SE Asia. The occurrence of *C. kormosi* does not exclude the possibility of the semiarid macroclimate in the Turolian of Tihany, but certainly marks closed local vegetation in the surrounding of the lake.

Acknowledgements

The special thanks of the author go to prof. R. BERNOR (Howard University, Washington) and prof. L. KORDOS (Geological Museum of Hungary, Budapest) for the chance to study the described *Crusafontina* teeth. The research was supported by the National Geographic Society "Evolution of Central Paratethys (Hungary) Miocene Vertebrate Communities” (# 6210-98) project and the OTKA F 038041 project.

References

BACHMAYER, F. & WILSON, R. W. (1970): Small mammals (Insectivora, Chiroptera, Lagomorpha, Rodentia) from the Kohfidisch fissures of Burgenland, Austria. Ann. Naturhist. Mus. Wien 74: 533–587; Wien.

BACHMAYER, F. & WILSON. R. W. (1978): A second Contribution to the Small mammal fauna of Kohfidisch, Austria. Ann. Naturhist. Mus. Wien 81: 129–161; Wien.

BACHMAYER, F. & WILSON. R. W. (1980): A third contribution to the small mammal fauna of Kohfidisch (Bungerland), Austria. Ann. Naturhist. Mus. Wien 83: 351–386; Wien.

BERNOR, R. L., KORDOS, L. & ROOK, L.: (eds) (2002): Recent advances on multidisciplinary research at Rudabánya, Late Miocene (MN 9), Hungary: a compendium. Palaeontographia Italica, 89: 3–36, Pisa.

GIBERT, J. (1975): New insectivores from the Miocene of Spain. I and II. Kon. Nederl. Akad. Wetenschappen, Proc. (Ser. B.) 78 (2): 108–133; Amsterdam.

KORDOS, L. (1987): Neogene Vertebrate biostratigraphy in Hungary. Ann. Inst. Geol. Publ. Hung., 70: 393–396; Budapest.

KRETZOI, M., KROLOPP, E., LÖRINCZ, H. & PÁLFALVY, I. (1976): A rudabányai alsópannoniai prehominidás lelőhely flórája, faunája és rétegtani helyzete. (Flora, Fauna und Stratigraphische Lage der Untenpannonischen Prähominiden-Fundstelle von Rudabánya, NO-Ungarn). MÁFI Évi Jelentése az 1974. évröl: 365–394; Budapest.

MÉSZÁROS, L. GY. (1996): Soricidae (Mammalia, Insectivora) remains from three Late Miocene localities in western Hungary. Annales Universitatis Scientiarum Budapestinensis, Sectio Geologica, 31: 5–25 & 119–122; Budapest.

MÉSZÁROS, L. GY. (1998 a): Late Miocene Soricidae (Mammalia) fauna from Tardosbánya (Western Hungary). Hantkeniana, 2: 103–125; Budapest.

MÉSZÁROS, L. GY. (1998 b): *Crusafontina* (Mammalia, Soricidae) remains from Late Miocene localities in Hungary. Senckenbergiana lethaea, 77 (1/2): 145–159; Frankfurt am Main.

MÉSZÁROS, L. Gy. (1999): Some insectivore (Mammalia) remains from the Late Miocene locality of Alsótelekes (Hungary). Annales Universitatis Scientiarum Budapestinensis, Sectio Geologica, 32: 35–47; Budapest..

REUMER, J. W. F. (1984): Ruscinian and Early Pleistocene Soricidae from Tegelen (The Netherlands) and Hungary. Scr. Geol. 73:1–173; Leiden.

STORCH, G. (1978): Die turolische Wilbertierfauna von Dorn-Dürkheim, Rheinhessen (SW-Deutschland). 2. Mammalia: Insectivora. Senckenbergiana lethaea, 58 (6): 421–449; Frankfurt am Main.

Geologica Pannonica 36, 235—254 (2008) Budapest

Vertebrates in classical and medieval sources – an annotated list

Miklós KRETZOI

Introduction

This list of animal names used by classical medieval authors has been gathered by the late Miklós KRETZOI and edited by Mária KRETZOI. The major source was Thomas CANTIMPRATENSIS and *Hortus sanitatis*, with several minor sources (see below). This collection is far from being complete – there are many more data among the manuscripts, which were assembled to serve as basis for a complete history of zoology, esp. of mammals. Meaning of ancient animal names is a major problem, whether various names indicate the same animal or not; also, if the same name means the same animal for various authors. Revealing this might tell whether the author had first-hand experience with animals or his work is compilation only, even if he has seen the cited book.

Author names followed by abbreviations indicate the relevant chapter.

(...) – synonyms.

'Text' and 'Index' indicates that spellings vary between text and index.

[T: ...] and [Ho: ...] – these two works cite the authors, but the cited work does not contain the name cited, or not in the same form. Some unchecked data arre in this format, too.

The editor

Abibes - Megenberg: Meerw. (*Aussgängel*)
Abydes - Hortus sanitatis: Pisc., [Ho: Albertus]
Achaines elaphos - Aristoteles
Achanes - Thomas: Q (text: *Ahanes*)
Achinne - Megenberg: Meerw. (*Meerstrass*)
Agna - Bartholomaeus: Anim.
Agnus - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, Jonston: Q [Ho:Aristoteles, Avicenna, Plinius, Palladius, Actor, Isaac in Diet., Lib. de nat., Albertus, Ambrosius, Lib. nat. rer.]
Agnus anniculus - Bartholomaeus: Anim.
Ahane - Vincentius: Best., (Albertus: *Hahane*), Hortus sanitatis, [Ho: Lib. nat. rer., Aristoteles (*Achaines elaphos*!)]
Ahanes - Thomas: Q (text)
Ahuna - Hortus sanitatis: Pisc., [Ho: Albertus]
Ahune - Thomas: Monst., Vincentius: Monstr.
Ailuros - Aristoteles
Aix - Aristoteles
Alce - Plinius: An. terr., Jonston: Q, Solinus
Alces - Gesner: Q
Alche - Vincentius: Best., Hortus sanitatis, [Ho: Lib. nat. rer., Helynandus]
Alches - Thomas: Q, Albertus: Q, Hortus sanitatis (sub *Ahane*), Megenberg: Landt., [T: Solinus], [Ho: Helynandus]
Alfech - Albertus: Q
Alopex - Aristoteles
Alopex dermopteron - Aristoteles
Aloy - Thomas: Q, Vincentius: Best., Albertus: Q
Alzabo - Albertus: Q

Ana - Thomas: Q, Albertus: Q, [T: Aristoteles]
Anabula - Albertus: Q
Anabulla - Thomas: Q, Vincentius: Best., [T: Plinius]
Anafabula - Hortus sanitatis
Analopus - Albertus: Q
Ancacinor - Hortus sanitatis (sub *Anafabula*), [Ho: Aristoteles]
Anguis - Bartholomaeus: Anim.
Ankatinor - Vincentius: Best.
Annabula - Hortus sanitatis, [Ho: Isidorus] (?= *Anafabula*)
Antaplon - Hortus sanitatis (*Aptalos*, sub *Anafabula*)
Anthaplon - Vincentius: Best.
Anthropos - Aristoteles
Aper - Isidorus: Pecor., Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Wild Eber*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [Ho: Plinius, Lib. nat. rer.]
Aper domesticus - Thomas: Q (*Porcus*, *Sus*), (Megenberg: Landt., *Heymlicher Eber*), [T: Lib. rer.]
Aper silvestris - Thomas: Q, [T: Lib. rer., Plinius, Experimentator]
Apis - Bartholomaeus: Anim.
Aptalon - Vincentius: Best., Hortus sanitatis (*Antaplon*, *Aptalos*), [Ho: Lib. nat. rer.]
Aptalos - Hortus sanitatis (*Antaplon*, sub *Anafabula*)
Aranea - Bartholomaeus: Anim.
Aries - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [Ho: Plinius, Isaac, Aristoteles, Avicenna, Aesculapius, Haly]
Arktos - Aristoteles
Asinus - Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Esel*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [T: Experimentator, Lib. Kyrannidarum], [Ho: Lib. nat. rer., Actor, Aristoteles, Physiologus, Ambrosius, Avicenna, "Euscalia", Galenus, Dioscorides, Haly]
Asinus arcadicus - Isidorus: Pecor.
Asinus cornutus - Jonston: Q (*Monoceros*)
Asinus silvestris - Albertus: Q
Asinus sylvestris - Gesner: Q (*Onager*)
Aspalax - Aristoteles (*Talpa* s. *Spalax*)
Aspis - Batholomaeus: Anim.
Aucacinor - Hortus sanitatis
Axis - Gesner: Q,Qp

*

Balaena - Plinius: An.aqua., Solinus, Jonston: Pisc.
Balena - Thomas: Monstr. (sub *Cethus*; *Ballena*), Vincentius: Pisc., Hortus sanitatis: Anim., Pisc., [T: Plinius, Lib. rer., Experimentator], [Ho: Isidorus, Solinus, Lib. nat. rer.]
Ballena - Thomas: Monstr. (sub *Cethus*; *Balena*)
Barchora - Thomas: Monstr., Megenberg: Merw. (*Hörschnabel*), Vincentius: Monstr., [T: Aristoteles]
Basiliscus - Plinius: An. terr., Bartholomaeus: Anim.
Bison - Vincentius: An. terr. (*Bisontes*), Hortus sanitatis, Gesner: Q, Qp, Jonston: Q, [Ho: Isidorus]
Bison albus scoticus - Gesner: Qp
Bisontes - Vincentius: An. terr., Hortus sanitatis (sub *Bubalus*), [Ho: Solinus, Plinius]
Bisontes jubati - Plinius: An. terr., Jonston: Q (*Bison jubatus*)
Bombex - Bartholomaeus: Anim., Hortus sanitatis: Vermis!
Bonachus - Thomas: Q (*Bonachum*), Albertus: Q, [T: Solinus]
Bonasos - Aristoteles
Bonasus - Plinius: An. terr., Gesner: Q,Qp, Jonston: Q
Bonnacon - Vincentius: Best., Hortus sanitatis (*Bonnacus*), [Ho: Solinus, Actor, Aristoteles]
Bonnacus - Megenberg: Landt., Hortus sanitatis (*Bonnacon*)
Boryes - Gesner: Q
Bos - Isidorus: Pecor., Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius, An. terr., Bartholomaeus: Anim., Gesner: Q (*B*. et *Vacca*), Thomas: Q (sub *Taurus - bos* et *vacca*), [Ho: Aristoteles, Actor, Theophrastos, Isaac, Avicenna, Dioscorides, Haly]
Bos ferus - Gesner: Q

Bos indicus - Plinius: An. terr., Gesner: Q (*B. ferus indicus*)
Bos libycus - Gesner: Q
Bos marinus - Thomas: Monstr. (*Focha*)
Bos sylvestris - Gesner: Q
Botrax - Bartholomaeus: Anim.
Bous - Aristoteles
Bubalis - Aristoteles
Bubalus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Busontes*), Bartholomaeus: Anim., Gesner: Q, [T: Experimentator], [Ho: Lib. nat. rer., Solinus, Haly, Dioscorides]
Bubalus africanus - Gesner: Qp
Bubalus sive ***Bubalides*** - Jonston: Q (*B.* et *Pygargus*)
Bubalus veterum - Jonston: Q
Bubulcus - Bartholomaeus: Anim.
Buffelus - Jonston: Q
Bus - Aristoteles
Bus agrios - Aristoteles

*

Caab - Thomas: Monstr., Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Isidorus], [T: Aristoteles]
Caballus - Isidorus: Pecor.
Caccus - Hortus sanitatis, [Ho: Lib. nat. rer., Adelinus, Vergilius]
Cacum - Albertus: Q
Cacus - Thomas: Q, Vincentius: Best., Gesner: Q, [T: Adelinus, Lib. sapient.]
Cale - Plinius: An. terr. (*Eale*)
Callithrix - Isidorus: Best.
Callitrix - Gesner: Q (*Simia caudata barbata*), Solinus (*C. simia*)
Calopus - Thomas: Q, Albertus: Q, Hortus sanitatis, Megenberg: Landt., Gesner: Q, [Ho: Physiologus]
Cama - Thomas: Q (text: *chama*), Albertus: Q
Camelopardalis - Plinius: An. terr., Gesner: Q, Jonston: Q, [T: Glossa], Solinus
Camelopardus - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Bartholomaeus: Anim., [Ho: Isidorus, Plinius]
Camelus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [T: Jacobus, Experimentator, Basilius, Lib. rer.], [Ho: Lib. nat. rer., Aristoteles, Vegetius, Avicenna, Dioscorides, Haly], Solinus
Camelus arabicus - Solinus
Camelus bactrianus - Solinus
Camelus dromas - Gesner: Q
Campes - Gesner: Q
Canicula [***us***?] - Bartholomaeus: Anim.
Canis - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Bartholomaeus: Anim., Gesner: Q,Qp, Jonston: Q, [T: Jacobus, Ambrosius, Solinus, Lib. rer., Basil, Liber Kyrannidarum], [Ho: Aristoteles, Alexander, Lib. nat. rer., Aristoteles, Physiologus, Aesculapius, Avicenna, Dioscorides], Solinus
Canis marinus - Megenberg: Meerw. (*Mörhund*), Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Avicenna]
Canis maris - Thomas: Monstr. (*Canes maris*), [T: Plinius]
Caper - Isidorus: Pecor., Vincentius: An. terr., Albertus: Q
Capra - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius, Megenberg: Landt. (*Gayss*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [T: Lib. rer., Aristoteles, Liber Kyrannidarum], [Ho: Lib. nat. rer., Constantinus, Serapion, Isidorus, Plinius, Palladius, Aesculapius, Avicenna, Dioscorides]
Capra (***Capreolus***) - Gesner: Q
Capra auribus demissis - Jonston: Q
Capra (s. Hircus) bezoarticus - Jonston: Q
Capra indica - Gesner: Q, Jonston: Q
Capra moschi - Jonston: Q
Capra sylvestris - Thomas: Q (*C. silvestris, sylvestris*, *Capreola, Capreolus*, *Rupicapra, Rubricapra*), Hortus sanitatis (sub *Caprea*), Gesner: Q (*Rupicapra*), Jonston: Q, (gyűjtőcsoport!), Solinus, [Ho: Lib. nat. rer., Dioscorides]
Caprea - Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., [Ho: Plinius "rupi caprae sunt Ibices", Isidorus, Dioscorides, Actor]

Caprea moschi - Gesner: Qp (*Gazella*)
Caprea platyceros - Gesner: Qp (*Hippelaphus*)
Caprea plinii - Jonston: Q
Caprea strepsiceros - Jonston: Q
Capreola - Thomas: Q (*Capra sylvestris*, *Capreolus*, *Rubricapra*, *Rupicapra*), Megenberg: Landt. (*Rech*)
Capreolus - Thomas: Q (*Capra sylvestris*, *Capreola*, *Rubricapra*, *Rupicapra*), Albertus: Q, Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, [Ho: Avicenna, Aristoteles, Dioscorides, Platearius]
Capricornis - Gesner: Q
Capricornus marinus - Jonston: Q
Carygueja - Jonston: Q ("*Vulpi congener*")
Castor - Isidorus: Best., Thomas: Q (*Fiber*), Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Biber*), Bartholomaeus: Anim., Gesner: Q,Qp, Jonston: Q, [T: Jacobus, Experimentator, Liber Kyrannidarum], [Ho: Lib. nat. rer., Physiologus, Platarius, Dioscorides, Avicenna], Solinus (*fiber*)
Catablepa -Vincentius: Best.
Cathapleba - Albertus: Q, Thomas: Q, [T: Plinius, Solinus], Hortus sanitatis
Cathaplepa - Hortus sanitatis (sub *Cattus*), [Ho: Plinius, Solinus]
Cathaseba - Megenberg: Landt.
Cathus - Albertus: Q, Megenberg: Landt.
Catoblepas - Plinius: An. terr., Gesner: Q, Solinus
Catoblepas libycus - Gesner: Q
Cattus - Vincentius: Best., Hortus sanitatis, Megenberg: Landt. (*Murilegus*, *Musio)*, Thomas: Q (*Murilegus*, *Musio*), [Ho: Isidorus, Albertus, Avicenna (sub *Musio*), Razi, Haly, Aesculapius]
Catulus - Bartholomaus: Propr.
Catus Hispaniae - Jonston: Q
Catis Zibethicus - Jonston: Q
Catus (Felis) - Gesner: Q
Catus sylvestris - Gesner: Q
Cavia cobaya cunic. spec. - Jonston: Q
Cefusa - Thomas: Q, Solinus
Celethi - Thomas: Monstr., [T: Aristoteles]
Celethy - Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Aristoteles]
Centaurus - Isidorus: Pecor.
Centrocota - Vincentius: Best., Hortus sanitatis (sub *Cephos*), [Ho: Physiologus]
Cephos - Vincentius: Best., Hortus sanitatis, [Ho: Plinius, Solinus]
Cephus - Plinius: An. terr., Solinus
Cephusa - Albertus: Q
Cepus - Gesner: Q
Cerastes - Bartholomaeus: Anim., Hortus sanitatis: serpens!
Cercopithecus - Isidorus: Best., Plinius: An. terr., Gesner: Q, Jonson, Solinus (*Simia*)
Cercopithecus prasianus - Gesner: Q (*Simia prasianus*)
Cervocamelus - Jonson
Ceruleum - Thomas: Monstr., Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Plinius], [T: Solinus]
Cervus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Hyrss*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [T: Ambrosius, Augustinus, Experimentator], [Ho: Aristoteles, Lib. nat. rer., Aesculapius, Platearius, Physiologus, Haly, Avicenna, Actor], Solinus
Cervus marinus - Thomas: Monstr., [Liber Kyrannidarum]
Cervus palmatus - Gesner: Qp
Cete - Megenberg: Fisch. (*Wal visch*)
Cethus - Thomas: Monstr. (text: *Cethe*, *Ballena*, *Balena*) [T: Isidorus, Basilios, Ambrosius, Lib. rer., Experimentator]
Cetus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Actor, Isidorus, Jorathus, Avicenna]
Chama - Thomas: Q (index: *Cama*), Hortus sanintatis, [T: Plinius], [Ho: Albertus]
Chamaeleon - Isidorus: Best.
Chaos - Gesner: Q (*Lepus cervarius, Lynx*)
Chaus - Plinius: An. terr.
Chilon - Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Lib. nat. rer.]
Chimaria - Aristoteles
Chimera - Thomas: Q (index: *Chymera*), [T: Jacobus]
Choiropithecus - Aristoteles
Chylon - Thomas: Monstr., Megenberg: Meerw. (*Kül*), [T: Aristoteles]
Chymera -Thomas: Q (*Chimera*), Albertus: Q

Circhos - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Chilon*; alias *Crichos*)
Cirogrotus - Megenberg: Landt.
Cirotrochea - Hortus sanitatis, [Ho: Albertus]
Cirogrillus - Hortus sanitatis, Megenberg: Landt., Thomas: Q (*Cyrogrillus*), [Ho: Rudolphus, Actor, Glossa]
Citellus - Gesner: Q (*Mus noricus*)
Civetta - Gesner: Qp (*Felis zibetta*)
Coati ("*Vulpi congener*") - Jonston: Q
Coluber - Bartholomaeus: Anim.
Corocrotes - Thomas: Q, [T: Solinus, Jacobus]
Corocotta - Solinus (*C. monstrum*)
Cricetus - Thomas: Q (*Crichetus*), Albertus: Q, Gesner: Q,Qp
Crichetus - Thomas: Q (*Cricetus*), [T: Lib. rer.]
Crichos - Hortus sanitatis: Pisc. (*Circhos*)
Cricos - Thomas: Monstr., Megenberg: Meerw. (*Denckfuss*), [T: Aristoteles]
Critetus - Hortus sanitatis, [Ho: Albertus, Solinus]
Crocuta - Vincentius: Best., Plinius: An. terr., Hortus sanitatis (sub *Cephos* et *centrocota*), [Ho: Solinus]
Cuniculus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Gesner: Q, Jonston: Q, [Ho: Plinius, Varro, Autor, Lib. nat. rer., Isaac], Solinus
Cuniculus porcellus - Gesner: Qp
Cynocephalus - Isidorus: Best., Gesner: Q, Jonston: Q, Solinus (*C. simia*)
Cyrocrothes - Albertus: Q
Cyrogrillus: Thomas: Q, Vincentius: Best., Albertus: Q

*

Dama - Hortus sanitatis (sub *Damula*), Gesner: Q, Jonston: Q
Dama plinii - Gesner: Q,Qp
Dama veterum - Gesner: Q
Dama vulgaris - Gesner: Q, Jonston: Q
Damma - Albertus: Q, Hortus sanitatis ("Adgazel" arabico), [Ho: Plinius], Solinus
Damma - Thomas: Q (*D.* vel *dammula,* sub *dammula*), [T: Plinius]
Dammula - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., [T: Experimentator], Albertus: Q (*Dampnia*), Hortus sanitatis (sub *Dromeda*), [Ho: Glossa, Plinius, Avicenna, Haly]
Dampnia - Albertus: Q (*Dammula*)
Damula - Hortus sanitatis (*Dama*), Megenberg: Landt. (*Dammen*), Bartholomaeus: Anim. (*Dama*), [Ho: Isidorus, Papias (*Capra agrestis*), Martianus, Plinius]
Dasypus - Aristoteles, Jonston: Q
Daxus - Thomas: Q, Albertus: Q, Megenberg: Landt. (*Dachss*), Hortus sanitatis, [T: Lib. rer., Aesculapius]
Delphin - Thomas: Monstr. (*Delphinus*), Solinus, Hortus sanitatis: Pisc., [Ho: Actor, Lib. nat. rer., Aristoteles, Plinius, Physiologus]
Delphini alterius generis - Thomas: Monstr., Pisc.,
Delphinus - Isidorus: Pisc., Thomas: Monstr., Pisc. (*Delphin*), Hortus sanitatis, Vincentius: Pisc., Monstr., Plinius: An.aqua, Megenberg: Meerw., Fisch. (*Delphyn*), Solinus, Jonston: Pisc., [T: Jacobus, Aristoteles, Experimentator, Fabianus]
Delphis - Aristoteles
Delphyn - Megenberg: Meerw., Fisch. (*Delphinus*)
Demma - Thomas: Q
Dictyes - Gesner: Q
Digitata semifera - Jonston: Q
Dipsas - Bartholomaeus: Anim.
Dorcas - Gesner: Q
Dorkas - Aristoteles
Draco - Isidorus: Serpent., Bartholomaeus: Anim., Plinius: An. terr., Hortus sanitatis (serpens!), [Ho: Physiologus, Lib. nat. rer., Augustinus, Ambrosius, Aristoteles, Socrates, Petrus Damianus, Solinus, Actor]
Draco marinus - Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Isidorus, Plinius, Avicenna]
Dromeda - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis
Dromedarios - Hortus sanitatis (sub *Camelus*)
Dromedarius - Megenberg: Landt., Bartholomaeus: Anim.
Duran - Thomas: Q, Vincentius: Best., Hortus sanitatis, Megenberg: Landt., Albertus: Q, [Ho: Aristoteles, Lib. nat. rer., Actor]

Fiber - Isidorus: Best. (*Canis ponticus*), Solinus (*F. ponticum*)
Ficarius - Bartholomaeus: Anim.
Finge - Thomas: Q, Albertus: Q, [T: Plinius]
Foca - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Felchus*), [Ho: Isidorus, Lib. nat. rer., Dioscorides]
Focha - Thomas: Monstr. (*Bos marinus*), [T: Experimentator, Aristoteles, Liber Kyrannidarum]
Forca - Megenberg: Meerw. (*Mörrynd*)
Formica - Isidorus: Minut., Bartholomeus: Anim., Hortus sanitatis (Ins.!), [Ho Aristoteles, Rasi, Lib. nat. rer.]
Formica maior - Hortus sanitatis (F. dicuntur esse ad formam maximi canis), [Ho: Solinus, Lib. nat.. rer, Joannes de Manda]
Formicoleon - Isidorus: Minut., Bartholomaeus: Anim.
Fucus - Bartholomaeus: Anim.
Furetus - Thomas: Q (*Furunculus*)
Furion - Megenberg: Landt.
Furions - Thomas: Q (*Furionz*)
Furionz - Thomas: Q (Index: *Furions*), [T: Aristoteles]
Furioz - Albertus: Q
Furo - Isidorus: Best., Vincentius: Best., Albertus: Q (*Furunculus*)
Furunculus - Thomas: Q (text: vulg. *furetus*, Vincentius: Best., Albertus: Q (*Furo*), Megenberg: Landt. (*Grütz*), Hortus sanitatis, [Ho: Lib. nat. rer.]
Furus - Hortus sanitatis, [Ho: Isidorus]

*

Gala - Hortus sanitatis, [Ho: Isidorus]
Galalca - Thomas: Monstr., [T: Aristoteles]
Galata - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Felchus*), [Ho: Lib. nat. rer.]
Gale - Aristoteles
Gali - Thomas: Q, Vincentius: Best., Albertus: Q, [T: Aristoteles]
Galy - Megenberg: Landt.
Gazelle - Hortus sanitatis, [Ho: Serapius, Avicenna]
Gazella - Gesner: Qp (*Caprea moschi*), Jonston: Q
Genetha - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Gesner: Q, [Ho: Isidorus]
Genethocatus - Jonston: Q
Genetta - Jonston: Q, Gesner: Q
Ginnos - Aristoteles
Ginnus - Gesner: Q (*Hinnus, Innus*)
Gladius - Thomas: Monstr., Megenberg: Meerw. (*Schwertnissel*), [T: Plinius, Isidorus]
Glamanez - Thomas: Monstr. (index: *Glamenez*), [T: Aristoteles]
Glanos - Aristoteles
"***Glires***" - Plinius: Ann. terr., Bartholomaeus: Anim.
Glis - Isidorus: Minut., Thomas: Q, Vincentius: Best., Albertus: Q, Megenberg: Landt. (*Ratz*), Gesner: Q, Jonston: Q, [T: Lib. rer.]
Griphus - Bartholomaeus: Anim.
Gryllus - Isidorus: Minut.
Grypes - Isidorus: Best.
Guesi - Megenberg: Landt. (*Rösel*)
Guesseles - Thomas: Q (*Roserula*), Albertus: Q
Gulo - Gesner: Q, Jonston: Q

*

Haane - Megenberg: Landt.
Haedus - Isidorus: Pecor.
Hahane - Albertus: Q
Helcus - Thomas: Monstr., [T: Lib. rer., Plinius]
Hemiones - Aristoteles ?
Hemtra - Thomas: Q, [T: Lib. rer.]
Henichires - Thomas: Q, [T: Aristoteles]
Hericius - Vincentius: Best., Hortus sanitatis, Bartholomaeus: Anim., [Ho: Aristoteles, Plinius, Jorathus, Avicenna, Lib. nat. rer.]
Herinaceus - Plinius: An. terr.
Herinacius - Bartholomaeus: Anim., Hortus sanitatis (*Icinus, echinus, ericius*)
Hiena - Bartholomaeus: Anim.
Hinnulus - Isidorus: Pecor., Bartholomaeus: Anim., Jonston: Q
Hinnus - Gesner: Q (*Innus, Ginnus*)
Hippos - Aristoteles
Hippardion - Aristoteles (?= *Pardion*, ?"*Giraffa*")
Hippelaphos - Aristoteles
Hippelaphus - Gesner: Qp (*Caprea platyceros*), Jonston: Q
Hippos potamios - Aristoteles

Hippopotamus - Isidorus: Pisc.(Amph.) (*Equus fluvialis*), Plinius: An. terr., Jonston: Q
Hircocervus - Gesner: Q (*Tragelaphus*)
Hircus - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [Ho: Lib. nat. rer., Actor, Isaac, Plinius, Avicenna]
Hircus bezoarticus - Jonston: Q
Hircus domesticus - Jonston: Q
Histrix - Hortus sanitatis, [Ho: Hieronymus, Lib. nat. rer.]
Hoedus - Gesner: Q, Jonston: Q
Homo - Thomas: Lib. I-III., Megenberg (Mensch), Hortus sanitatis, [Ho: Isidorus, Hypocrates, Avicenna, Dioscorides, Serapius, Galenus]
Homo silvestris - Thomas: Q (*Pilosus*)
Hyaena - Plinius: An. terr., Gesner: Q,Qp, Jonston: Q, Solinus
Hyaina - Aristoteles
Hyena - Thomas: Q, Vincentius: Best., Hortus sanitatis, [T: Plinius, Solinus, Jacobus, Aristoteles], [Ho: Hyeronimus, Lib. nat. rer.]
Hynnulus - Hortus sanitatis, [Ho: Bartholomaeus, Isidorus, Aristoteles, Plinius]
Hys - Aristoteles
Hys agrios - Aristoteles
Hystrix - Aristoteles, Isidorus: Best, Vincentius: Best., Plinius: An. terr., Gesner: Q, Jonston: Q, Solinus

*

Iber - Megenberg: Landt. (*Alch*)
Ibex - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis (sub *Caprea*), Gesner: Q, Jonston: Q, [T: Gregorius, Plinius, Magister: Hist.]
Ibrida - Thomas: Q (*Ybrida*), Albertus: Q, Megenberg: Landt., [T: Isidorus]
Ichneumon - Aristoteles, Isidorus: Best., Plinius: An. terr., Gesner: Q,Qp, Jonston: Q, Solinus
Icinus - Vincentius: Best., Hortus sanitatis (*echinus, ericius, herinacius*), [Ho: Isidorus, Actor, Avicenna, Plinius, Dioscorides]
Icinus marinus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Isidorus, Actor]
Iena - Albertus: Q
Ignavus - Jonston: Q
Iktis - Aristoteles
Inachlin - Vincentius: Best., Hortus sanitatis (sub *Icinus*),, [Ho: Plinius]
Innos - Aristoteles
Innulus - Vincentius: An. terr.
Innus - Gesner: Q (*Hinnus*, *Ginnus*)
Inveca - Bartholomaeus: Anim.
Ipotamus - Thomas: Monstr. (text: *Ipothamus*)
Ipothamus - Thomas: Monstr. (index: *Ipotamus*), [T: Plinius]
Istrix - Thomas: Q (*porcus spinosus*), Albertus: Q, Megenberg: Landt. (*Dornschwein*), [T: Solinus, Plinius, Jacobus]

*

Jena - Megenberg: Landt. (*Grabthier*)
Juvenca - Bartholomaeus: Anim.

*

Kamelos - Aristoteles
Karabo - Thomas: Monstr., [T: Aristoteles]
Kastor - Aristoteles
Kapros - Aristoteles
Karabo - Vincentius: Monstr.
Kebos - Aristoteles
Kilion - Megenberg: Meerw. (*Killen, Kill*)
Killon - Megenberg: Meerw. (*Kill*, *Kilion*)
Kochi - Thomas: Monstr. (text: *Koki*)
Koki - Thomas: Monstr. (index: *Kochi*), Vincentius: Monstr., [T: Aristoteles]
Koky - Hortus sanitatis: Pisc., [Ho: Aristoteles, Lib. nat. rer.
Krios - Aristoteles
Kylion - Thomas: Monstr., [T: Aristoteles]
Kylon - Vincentius: Monstr.
Kynokephalos - Aristoteles
Kyon - Aristoteles

*

Lacta - Thomas: Q (Index: *Lachta*), Albertus: Q, [T: Glossa]
Lagos - Aristoteles

Lamia - Thomas: Q, Vincentius: Best., Albertus: Q, Megenberg: Landt. (*Lamy*), Gesner: Q, [T: Lib. rer, Aristoteles, Jeremias, Glossa], Hortus sanitatis, [Ho: Lib. nat. rer.]
Lamy - Megenberg: Landt. (*Lamia*)
Lanzan[um] - Thomas: Q, [T: Solinus, Jacobus], Hortus sanitatis, [Ho: Lib. nat. rer.]
Latax - Aristoteles, Gesner: Q (*Satherium*, *Satyrius*)
Lauzani - Vincentius: Best., Albertus: Q.
Leaena - Isidorus: Best., Solinus
Leaina - Aristoteles
Leena - Bartholomaeus: Anim.
Leo - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Plinius, Megenberg: Landt., Gesner: Q, Jonston: Q, [T: Jacobus, Solinus, Aristoteles, Augustinus, Lib. rer., Adelinus, Ambrosius, Experimentator], [Ho: Jorachus, Rasi in Almansore, Aesculapius, Isaac, Haly, Dioscorides], Solinus
Leo marinus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Isidorus, Ambrosius]
Leocahen - Megenberg: Landt. (*Leocaphana*)
Leocaphana - Megenberg: Landt. (*Leocahen*)
Leocroctha - Albertus: Q
Leon - Aristoteles, Bartholomaeus: Anim.
Leoncophona - Albertus: Q, Thomas: Q, [T: Solinus, Jacobus]
Leonthophonos - Hortus sanitatis, [Ho: Isidorus, Solinus, Plinius]
Leontophonos - Isidorus: Best., Vincentius: Best.
Leontophonus - Plinius: An. terr., Solinus
Leopardus - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt., Bartholomaeus: Anim., Gesner: Q (*Panthera, Pardus, Pardalis*), [T: Solinus, Plinius, Ambrosius], [Ho: Lib. nat. rer., Physiologus, Avicenna, Aesculapius, Razi]
Lepus - Isidorus: Pecor., Thomas: Q, Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Hasen*), Bartholomaeus: Anim., Gesner: Q, [T: Lib. rer., Ambrosius, Experimentator, Aesculapius, Basilius], [Ho: Actor, Terentius, Ambrosius, Isaac, Avicenna]
Lepus marinus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Isidorus, Plinius, Avicenna]
Leucrocota - Thomas: Q, [T: Jacobus, Plinius], Solinus
Leucrocuta - Vincentius: Best., Hortus sanitatis (sub *Leonthophonos*), Plinius: An. terr., [Ho: Solinus, Actor]
Leviathan - Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Isidorus]
Licaon - Thomas: Q (Index: *Lycaon*)
Lichaon - Vincentius: Best., Hortus sanitatis, [Ho: Lib. nat. rer.]
Limax - Bartholomaeus: Anim.
Lincisius - Thomas: Q, [T: Experimentator, Johannes de Oignies]
Linsius - Megenberg: Landt.
Lintiscus - Vincentius: Best., Hortus sanitatis (sub *Luchaon*), [Ho: Plinius, Lib. nat. rer., Isidorus]
Lintisius - Albertus: Q
Linx - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Luchs*), Bartholomaeus: Anim., [T: Plinius, Jacobus, Lapidarius (=Marbod?), Philosophus], [Ho: Isidorus, Algazel, Lib. nat. rer., Plinius, Jorathus]
Locusta (quadrupes!) - Vincentius: Best., Megenberg: Landt., Thomas: Q, [T: Jacobus, Johannes bapt., Augustinus], Hortus sanitatis, [Ho: Lib. nat. rer., Aristoteles]
Locusta - Vincentius: Pisc.
Loligine - Vincentius: Monstr.
Lucae boves - Solinus (*Elephanti*)
Luchaon - Hortus sanitatis (sive *Lichaon*, *Lintiscus*), [Ho: Lib. nat. rer.]
Lucusta bestia - Thomas: Q
Ludolachra - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Leviathan*), [Ho: Isidorus]
Ludolacra - Thomas: Monstr., [T: Aristoteles]
Ludolochra - Megenberg: Meerw. (*Lautlacher*)
Luligo - Thomas: Monstr., [Adelinus]
Lupus - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Wolff*), Bartholomaeus: Anim.,

Gesner: Q, Jonston: Q, [T: Jacobus, Experimentator, Lib. rer.], [Ho: Lib. nat. rer, Aristoteles, Ambrosius, Aesculapius, Actor, Philosophus, Avicenna, Physiologus, Physicus, Pythagoras], Solinus
Lupus - Vincentius: Pisc.
Lupus Aethiopicus - Solinus
Lupus aureus - Gesner: Qp
Lupus cervaricus - Gesner: Q (*Lynx* et *Chaos*), Solinus
Lupus marinus - Hortus sanitatis: Pisc., [Ho: Isidorus, Plinius, Aristoteles, Ambrosius]
Lupus schyticus - Gesner: Q
Luter - Albertus: Q, Megenberg: Landt. (*Otter*), Thomas: Q (*Lotter*, *Luther*), [T: Lib. rer., Plinius]
Luther - Vincentius: Best., Hortus sanitatis, [Ho: Lib. nat. rer.]
Lutra - Plinius: An. terr., Gesner: Q,Qp
Lusani - Megenberg: Landt.
Lycaon - Thomas: Q (index; text: *Licaon*), Plinius, Solinus
Lyciscus - Isidorus: Best.
Lykos - Aristoteles
Lynx - Aristoteles, Isidorus: Best., Plinius, Gesner: Q (=*Lupus cervarius, Chaos*), Jonston: Q, Solinus
Lytra – Solinus

*

Maesolus - Gesner: Q
Machlis - Plinius: An. terr.
Mammonetus - Thomas: Q (index; text: *Mamonetus*), Vincentius: Best., [T: Lib. rer.]
Mamonetus - Thomas: Q, Albertus: Q, Hortus sanitatis (*Mumunetus*), [T: Isidorus]
Manatus Indorum - Jonston: Pisc.
Mantichora - Plinius, Solinus
Manticora - Thomas: Q, Vincentius: Best., Albertus: Q, [T: Solinus, Plinius], Hortus sanitatis (sub *Mumunetus*), [Ho: Isidorus, Avicenna]
Marcatus - Hortus sanitatis, [Albertus]
Martichoras - Aristoteles
Maricomorion - Hortus sanitatis, [Ho: Albertus]
Maricon morion - Albertus: Q
Maricorion - Hortus sanitatis (*Manticora*)
Martarus - Albertus: Q
Martes - Gesner: Q
Martichora - Hortus sanitatis
Mauricomorion - Thomas: Q, Aristoteles
Meles - Plinius: An. terr., Gesner: Q
Melo - Isidorus: Best., Vincentius: Best., Hortus sanitatis, [Ho: Glossa, Lib. nat. rer.]
Melosus - Vincentius: Best., Hortus sanitatis, [Ho: Isidorus]
Migale - Thomas: Q (*Mygale*), Vincentius: Best., Albertus: Q, Hortus sanitatis, [Ho: Actor, Rudolphus, Avicenna]
Monachus marinus - Vincentius: Monstr., Megenberg: Meerw. (*Mörmünch*), Hortus sanitatis: Pisc., [Ho: Lib. nat. rer.]
Monachus maris - Thomas: Monstr.
Moniceros - Gesner: Q
Monoceron - Hortus sanitatis: Pisc. (sub. *Monachus marinus*), [Ho: Lib. nat. rer.]
Monoceros - Thomas: Monstr. (index: = *Unicornis maris*), Vincentius: Best., Pisc., Albertus: Q, Hortus sanitatis (sub *Melo*), Plinius: An. terr., Gesner: Q,Qp, Jonston: Q, [T: Lib. rer.], [Ho: Isidorus, Jacobus, Physiologus], Solinus
Monocerotes - Thomas: Q (text; index: *Monocheros*), Vincentius: Monstr., [T: Solinus, Plinius, Jacobus]
Monocheros - Thomas: Q (index; text: *Monocerotes*)
Molosus - Thomas: Q, Albertus: Q, Megenberg: Landt. (*Rüd*), [T: Adelinus]
Moschus capreolus - Gesner: Q
Mulus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Hortus sanitatis, Plinius, Megenberg: Landt. (*Maul*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [Ho: Lib. nat. rer., Avicenna, Belbetus (=? Berberus), Aesculapius]
Mumunetus - Hortus sanitatis (sive *Mamonetus*; M. est symia minus), [Ho: Isidorus]
Mures diversae - Gesner: Q
Murilegus - Thomas: Q (*Musio*, *Cattus*), Albertus: Q (*Musio*, *Cattus*), Megenberg: Landt. (*Musio*, *Cattus*)
Mus - Isidorus: Minut.,Thomas: Q, Vincentius: Best., Albertus: Mus, Hortus sanitatis, Megenberg: Landt. (*Mauss*), Bartholomaeus: Anim., Gesner: Q, [T:

Avicenna, Lib. rer., Aristoteles, Basilius, Plinius, Palladius], [Ho: Lib. nat. rer., Razi in Almansor]
Mus agrestis - Gesner: Q
Mus agrestis maior - Gesner: Q
Mus alpinus - Gesner: Q
Mus araneus - Gesner: Q
Mus aquaticus - Gesner: Qp
Mus avellanarius - Gesner: Q
Mus domesticus major - Gesner (*Rattus*): Q
Mus indicus - Gesner: Qp
Mus lassicius - Gesner: Q
Mus marinus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Isidorus, Plinius]
Mus napella - Gesner: Q
Mus noricus - Gesner (*Citellus*): Q
Mus peregrinus - Gesner: Q
Mus ponticus - Plinius: Q
***Mus ponticus** (venetus)* - Gesner: Q
Mus sylvaticus - Gesner: Q
Mus talpinus - Plinius
Musculus - Isidorus: Pisc. (*Ballenae*)
Muscus - Hortus sanitatis (sub *Musquelibet*), [Ho: Isidorus, Constantinus, Dioscorides]
Muscus - Vincentius: Best.
Musio - Isidorus: Best. (*Cattus*), Albertus: Q (*Murilegus*, *Cattus*), Thomas: Q (*Murilegus*, *Cattus*), Vincentius: Best., Hortus sanitatis (*Murilegus*), Megenberg: Landt. (*Murilegus*, *Cattus*), [T: Jacobus, Experimentator], [Ho: Lib. nat. rer.]
Musmon - Plinius: An. terr., Gesner: Q,Qp
Musquelibet - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt., [T: Platearius], [Ho: Isidorus]
Mustela - Isidorus: Minut., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Wisel*), Bartholomaeus: Anim., Gesner: Q, [T: Lib. rer., Experimentator, Solinus, Liber Kyrannidarum, Clemens papa], [Ho: Lib. nat. rer., Avicenna, Aesculapius, Plinius], Solinus
Mustela - Vincentius: Pisc., Hortus sanitatis: Pisc. (sub *Mus marinus*), [Ho: Aristoteles]
Mustela silvestris - Isidorus: Minut.
Mustela sobella - Gesner: Q
Mustela sylvestris - Gesner: Q
Myes arouranoi - Aristoteles
Mygale - Thomas: Q (*Migale*), [T: Glossa, Experimentator, Hugo]
Mys - Aristoteles
Mys pontikos - Aristoteles
Mys to kitos – Aristoteles

*

Nabun - Solinus (*Camelopardalis*)
Najas - Gesner: Q (*Neas*, *Neis*)
Neas - Gesner: Q(*Neis*, *Najas*)
Nebros - Aristoteles
Neis - Gesner: Q (*Najas*, *Neas*)
Neomon - Thomas: Q, Albertus: Q, Hortus sanitatis, [T: Isidorus]
Nereides - Thomas: Monstr., Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho:Isidorus], [T: Plinius]
Nerides - Megenberg: Meerw. (*Klagant*)
Noerza - Gesner: Q
Nykteris – Aristoteles

*

Ois - Aristoteles
Onacenthaurus - Megenberg: Landt. (*Wunderthier*)
Onager - Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Waldesel*), Jonston: Q, Thomas: Q, [T: Isidorus, Solinus, "Ypocras", Experimentator, Vitalis], [Ho: Lib. nat. rer., Plinius, Avicenna, Actor]
Onager - Isidorus: Pecor. (*Asinus ferus*)
Onager - Thomas: Q (*Asinus sylvestris*), Gesner: Q (*Asinus sylvestris*)
Onager Indiae - Thomas: Q, Albertus: Q (*indicus*), [T: Aristoteles, Adelinus]
Onocenthaurus - Hortus sanitatis, [Ho: Lib. rer. nat., Adelinus, Albertus]
Onocentaurus - Thomas: Q, Vincentius: Best., Albertus: Q, Bartholomaeus: Anim., Gesner: Q, [T: Isidorus, Adelinus, "Jeronimus", Antonius, Experimentator]
Onos - Aristoteles, Thomas: Monstr. (=*Asinus marinus*), [T: Liber Kyrannidarum]
Onos agrios - Aristoteles
Onos indikos - Aristoteles
Orafflus - Hortus sanitatis, [Ho: Albertus]
Oraflus - Thomas: Q, Albertus: Q
Orasius - Vincentius: Best., Hortus sanitatis (sub *Onocenthaurus*), [Ho: Isidorus, Albertus]

Orca - Plinius: An. aqua.
Orcha - Thomas: Monstr., Vincentius: Monstr., [T: Plinius], Hortus sanitatis: Pisc. (ub *Nereides*), [Ho: Lib. nat. rer., Plinius
Oreys - Aristoteles
Orix - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Bartholomaeus: Anim., [T: Ysaias], [Ho: Actor, Lib. nat. rer.]
Oryx - Gesner: Q, Jonston: Q
Oryx- Aristoteles
Ovis - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Albertus: Q, Megenberg: Landt. (*Schauff*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, [T: Philosophus, Aristoteles, Experimentator, Plinius, Palladius, Ambrosius]

*

Pan - Gesner: Qp (*Satyrus*, *Sphinx*)
Panther - Aristoteles
Panthera - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Panterthier*), Bartholomaeus: Anim., Gesner: Q (*Pardalis, Pardus, Leopardus*), Solinus, [Ho: Lib. nat. rer., Isidorus, Glossa, Avicenna, Physiologus]
Papio - Tomas: Q, Albertus: Q, Gesner: Qp
Papro - Hortus sanitatis, [Ho: Albertus]
Parander - Thomas: Q (text: *Pirander*), Vincentius: Best.
Parandrus - Hortus sanitatis, Solinus
Pardalis - Aristoteles, Gesner: Q (*Pardus, Panthera, Leopardus*)
Pardio - Aristoteles
Pardus - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis (sub *Parandrus*), Megenberg: Landt. (*Pard*), Bartholomaeus: Anim., Gesner. Q (*Panthera, Pardalis, Leopardus*), Jonston: Q, [T: Jacobus, Experimentator], [Ho: Basilius, Plinius, Solinus, Lib. nat. rer., Aristoteles]
Pathio - Thomas: Q, Albertus: Q
Pathyo - Vincentius: Best.
Pathyon - Hortus sanitatis, [Ho: Albertus]
Pediculus - Bartholomaeus: Anim.
Pegasus - Thomas: Q, Albertus: Q, Hortus sanitatis
Pester - Thomas: Monstr. (text: *Pister*)
Phalaina - Aristoteles
Phoca - Isidorus: Pisces, Solinus, Jonston: Pisc. (*Vitulus marinus*)
Phocaena - Jonston: Pisc.
Phokaina - Aristoteles
Phoke - Aristoteles
Physeter - Plinius: An. aqua., Solinus, Jonston: Pisc.
Pigargus - Hortus sanitatis, Bartholomaeus: Anim., [Ho: Deuteronomium]
Pigmei (*Pigmeos*) - Hortus sanitatis, Bartholomaeus: Anim., [Ho: Papias, Augustinus, Hugo, Plinius, Aristoteles]
Pilosus - Thomas: Q (*Homo silvestris*), Vincentius: Best., Albertus: Q, Hortus sanitatis, Megenberg: Landt. (*Pilos*), Bartholomaeus: Anim., [T: Jeronimus], [Ho: Lib. nat. rer., Isaias, Hieronymus]
Pirader - Albertus: Q
Pirander - Thomas: Q (index: *Parander*), [T: Solinus]
Pirolus - Thomas: Q (*Pyrolus*), Vincentius: Best., Albertus: Q, Hortus sanitatis (*Pilosus*), Megenberg: Landt. (*Eychorn*), [Ho: Lib. nat. rer.]
Pister - Thomas: Monstr. (index: *Pester*), Vincentius: Monstr., [T: Plinius], Hortus sanitatis: Pisc. (*Pistris*), [Ho: Albertus]
Pithekos - Aristoteles
Pitornius - Megenberg: Landt. (*Iltis, Eltech*)
Platanista - Thomas: Monstr., Vincentius: Monstr., [T: Plinius], Hortus sanitatis: Pisc., [Ho: Albertus]
Poephagus - Gesner: Q
Poledrus - Bartholomaeus, Hortus sanitatis, [Ho: Albertus, Aristoteles, Isidorus]
Porcos - Gesner: Q (*Latax, Satyrius, Satherium*)
Porcus - Thomas: Q (*Aper domesticus*, *Sus*), Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., [Ho: Lib. nat. rer., Actor, Aristoteles, Physiologus, Avicenna]
Porcus marinus - Vincentius: Pisc., Hortus sanitatis: Pisc., [Ho: Isidorus, Lib. nat. rer., Plinius]
Porcus spinosus - Thomas: Q (*Istrix*)
Pristis - Plinius: An. aqua.
Probaton - Aristoteles

Prox - Aristoteles
Putorius - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis (sub *Pilosus*), Gesner: Q, [T: Lib. rer.], [Ho: Isidorus]
Pygargus - Gesner: Q, Jonston: Q
Pyrolus - Thomas: Q (*Pirolus*)

*

Rangifer - Hortus sanitatis, Gesner: Q, Jonston: Q, [Ho: Albertus]
Rangiver - Thomas: Q, Vincentius: Best.
Rangyfer - Albertus: Q
Rattus - Vincentius: Best., Hortus sanitatis (sive *Glis*!), Gesner: Q (*Mus domesticus major*), [Ho: Actor, Lib.nat. rer.]
Rhinocephalus - Vincentius: Best.
Rhinoceros - Isidorus: Best., Gesner: Q, Jonston: Q, Solinus
Rinocephalus - Hortus sanitatis, Plinius: An. terr., [Ho: Physiologus]
Rinoceron - Bartholomaeus: Anim., Hortus sanitatis (*Rinoceros;* sub *Rinocephalus*), [Ho: Physiologus, Isidorus, Lib. nat. rer.]
Rinoceros - Vincentius: Best., Hortus sanitatis
Roserula - Thomas: Q (*Guesseles*)
Rosurella -Vincentius: Best., Hortus sanitatis (sub *Rangifer*), [Ho: Isidorus]
Rupicapra - Thomas: Q (*Capreolus*, *Capra silvestris*), Jonston: Q, Hortus sanitatis (sub *Caprea*)

*

Salamandra - Isidorus: Serpent., Bartholomaeus: Anim., Hortus sanitatis, [Ho: Aristoteles, Alexander papa, Plinius, Dioscorides] (lacerta?)
Sanguisuga - Bartholomaeus: Anim.
Satherion - Aristoteles
Satherium - Gesner: Q (*Latax*, *Satyrius*, *Porcos*)
Satyrion - Aristoteles
Satyrius - Gesner: Q (*Latax*, *Satherium*, *Porcos*)
Satyrus - Isidorus: Best., Bartholomaeus: Anim., Gesner: Q, Qp (*Pan, Sphinx*), Solinus (*S. simia*)
Scilla - Thomas: Monstr., Vincentius: Monstr., Megenberg: Meerw. (*Mörjunckfraw*), Hortus sanitatis: Pisc. (sub *Serra*), [T: Adelinus, Lib. rer.], [Ho: Lib. nat. rer.]
Scinnocus - Thomas: Monstr. (index: *Scyncius*)
Sciurus - Plinius: An. terr., Gesner: Q.
Sciurus getulus - Gesner: Qp
Scolopendra - Jonston: Pisc., Hortus sanitatis: Pisc., [Ho: Plinius]
Scurulus - Vincentius: Best.
Scynnocus - Thomas: Monstr. (?= *Scinnocus*)
Scyurus - Vincentius: Best.
Semifera - Plinius: An. terr.
Serra - Thomas: Monstr., Vincentius: Monstr., [T: Isidorus], Hortus sanitatis: Pisc., [Ho: Physiologus]
Serra alterius speciei - Thomas: Monstr., [T: Isidorus, Plinius]
Simea - Megenberg: Landt. (*Aff*), Bartholomaeus: Anim.
Simia - Isidorus: Best., Vincentius: Best., Plinius: An. terr., Gesner: Q, Solinus
Simia caudata barbata - Gesner: Q (*Callitrix*)
Simia prasianus - Gesner: Q (*Cercopithecus* p.), Solinus (*callithriches*)
Simia - Solinus (*Cynocephalus simiae*)
Simia diversae (*Pan, Satyrus, Sphinx*) - Gesner: Qp
Simivulpa - Gesner: Q
Siren - Megenberg: Meerw. *(Mörweib)*
Sirena - Vincentius: Monstr., Bartholomaeus: Anim.
Solifuga - Isidorus: Minut., Hortus sanitatis (sub *Seta*)
Sorex - Isidorus: Minut., Vincentius: Best., Hortus sanitatis (sub *Rattus*), Gesner: Q, [Ho: Isidorus, Belberus, Plinius, Dioscorides]
Sphinx - Isidorus: Best., Plinius: An. terr., Gesner: Q (*Simiarum genus*), Gesner: Qp (*Pan, Satyrus*)
Spinges - Solinus
Stellio - Plinius: An. terr., Bartholomaeus: Anim.
Stinchus - Megenberg: Meerw. (*Stinh*)
Stincus - Vincentius: Monstr., Hortus sanitatis: Pisc. (*Stoncus*), [Ho: Dioscorides, Albertus]
Strepsiceros - Gesner: Q,Qp, Jonston: Q
Strix - Vincentius: Best.
Suhak Scytharum - Jonston: Q

Sus - Isidorus: Pecor., Thomas: Q (*Aper domesticus, porcus*), Vincentius: An. terr., Plinius: An. terr., Bartholomaeus: Anim., Gesner: Q, Jonston: Q
Sys agrios - Aristoteles
Symia - Thomas: Q, Albertus: Q, Hortus sanitatis, [T: Experimentator, Jacobus, Solinus, Lib. rer., Plinius, Aristoteles], [Ho: Lib. nat. rer., Alexander, Isidorus]
Syren - Thomas: Monstr., [T: Physiologus, Adelinus, Isidorus]
Syrena - Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Physiologus]

*

Tajibi - Jonston: Q
Talpa - Isidorus: Minut., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, [T: Lib. rer., Glossa, Experimentator, Aristoteles, Plinius], [Ho: Lib. nat. rer., Rudolphus, Actor, Haly]
Talpha - Megenberg: Landt. (*Molewerffen*)
Tamandua-gracu - Jonston: Q ("*Vulpi congener*")
Tamandua-i - Jonston: Q ("*Vulpi congener*")
Tarandrus - Vincentius: Best.
Tarandus - Plinius: An. terr., Gesner: Q,Qp, Jonston: Q, Hortus sanitatis, [Ho: Actor, Solinus]
Tatu - Gesner: Qp
Tauros - Aristoteles
Taurus - Isidorus: Pecor., Thomas: Q, Albertus: Q, Vincentius: An. terr., Bartholomaeus: Anim., Gesner: Q, [T: Lib. rer., Plinius, Aristoteles, Alcinos, Experimentator, Ambrosius], Solinus
Taurus aethiopae - Plinius: An. terr.
Taurus indicus - Thomas: Q, Vincentius: An. terr., [T: Aristoteles], Solinus
Taxus - Vincentius: Best., Hortus sanitatis, Bartholomaeus: Anim., [Ho: Lib. nat. rer., Isidorus, Aesculapius]
Testeum - Thomas: Monstr., Vincentius: Monstr., Megenberg: Meerw. (*Test*), [T: Aristoteles], Hortus sanitatis: Pisc., [Ho: Albertus]
Testudo - Bartholomaeus: Anim., Vincentius: Monstr.
Tharandus - Hortus sanitatis
Thinnus - Vincentius: Monstr.
Thos - Aristoteles, Plinius: An. terr., Solinus
Thaurus - Hortus sanitatis, Megenberg: Landt. (*Ochs*), [Ho: Lib. nat. rer., Aesculapius, Avicenna, Dioscorides]
Thynnus - Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Plinius, Dioscorides]
Tignus - Thomas: Monstr. (text: *Tygnus*)
Tigris - Aristoteles, Isidorus: Best., Thomas: Q (*Tygris*), Vincentius: Best., Plinius: An. terr., Megenberg: Landt. (*Tygerthier*), Bartholomaeus: Anim., Gesner: Q, Jonston: Q, Solinus
Tigruis - Hortus sanitatis: Pisc., [Ho: Albertus, Solinus]
Tinea - Bartholomaeus: Anim.
Tortuca - Bartholomaeus: Anim.
Tortuca maris - Thomas: Monstr., Vincentius: Monstr., Hortus sanitatis: Pisc., [Ho: Lib. nat. rer.]
Traco maris - Megenberg: Meerw. (*Mörtrack*)
Tranez - Thomas: Q, Albertus: Q, [T: Plinius]
Tragelafus - Albertus: Q
Tragelaphus - Isidorus: Pecor., Thomas: Q, Vincentius: Best., Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Bockhirsch*), Bartholomaeus: Anim., Gesner: Q (*Hircocervus*), Qp, Jonston: Q, [Ho: Lib. nat. rer., Helynandus], Solinus
Tragodita - Hortus sanitatis (sub *Tragelaphus*), [Ho: Lib. nat. rer.]
Tragodite - Thomas: Q (*Trogodite*)
Tragos - Aristoteles
Trogodice - Hortus sanitatis
Trogodice[ae] - Hortus sanitatis, [Ho: Albertus]
Trogodita - Vincentius: Best., [Helynandus, Lib. nat. rer.]
Trogodite - Thomas: Q (*Tragodite*)
Troglodytae - Albertus: Q
Tursio - Plinius: An. aqua.
Tygnus - Thomas: Monstr. (index: *Tignus*), [T: Solinus, Plinius]
Tygris - Albertus: Q, Thomas: Q (text), Hortus sanitatis, [T: Plinius], [Ho: Isidorus, Physiologus, Plinius]

*

Uncia - Vincentius: Best., Hortus sanitatis, [Ho: Isidorus]

Unicorne - Albertus: Q
Unicornis - Thomas: Q, Megenberg: Landt. (*Einhorn*), [T: Isidorus, Liber Kyrannidarum, Jacobus, Isaias)
Unicornis maris - Thomas: Monstr. (index: =*Monoceros*)
Unicornus - Vincentius: Best., Hortus sanitatis, [Ho: Isidorus]
Uranoscupus - Hortus sanitatis: Pisc., [Ho: Plinius]
Uranus scopus - Thomas: Q
Urin - Thomas: Q, Albertus: Q, [T: Solinus, Jacobus, Isidorus (*Boves agrestes*)]
"***Uro***" - Hortus sanitatis (*Urus*)
Ursa - Bartholomaeus: Anim.
Ursus - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis, Plinius: An. terr., Megenberg: Landt. (*Ber*), Bartholomaeus: Anim., Gesner: Q, Johston, [T: Experimentator, Basilius, Liber Kyrannidarum], [Ho: Lib. nat. rer., Aristoteles, Ambrosius, Alexander, Isaac, Physiologus, Aesculapius, Avicenna, Dioscorides, Actor], Solinus
Ursi Numidici - Solinus
Urus - Vincentius: Best., Hortus sanitatis ("*Uro*"), Plinius: An. terr., Gesner: Q,Qp, Jonston: Q, [Ho: Isidorus, Helynandus], Solinus
Urus agrestis - Isidorus: Pecor.

*

Vacca - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., Thomas: Q (sub *Taurus*), Gesner: Q (sub *Bos*), [Ho: Aristoteles, Avicenna (*Taurus*), Plinius]
Vacca agrestis - Bartholomaeus: Anim.
Vacca marina - Thomas: Monstr. (index: *V. maris*), Vincentius: Monstr., Hortus sanitatis: Pisc., [T: Aristoteles], [Ho: Lib. nat. rer.]
Varius - Thomas: Q, Vincentius: Best., Albertus: Q, Hortus sanitatis (sub *Unicornus*), [Ho: Isidorus]
Vervex - Isidorus: Pecor., Vincentius: An. terr., Hortus sanitatis (sive *Aries*), Gesner: Q, [Ho: Lib. nat. rer.]
Vesontes - Thomas: Q, Albertus: Q, Hortus sanitatis, [T: Solinus]
Vespertilio - Isidorus: Aves, Thomas: Aves, Vincentius: Aves, Hortus sanitatis: Aves, Plinius: Aves, Bartholomaeus: Aves, Jonston: Aves, [T: Liber Kyrannidarum]
Vison[tes] - Solinus
Vitula - Isidorus: Pecor.
Vitulus - Isidorus: Pecor., Thomas: Q, Vincentius: An. terr., Hortus sanitatis, Bartholomaeus: Anim., Gesner: Q, [Ho: Aristoteles, Plinius]
Vitulus marinus - Thomas: Monstr., Vincentius: Monstr., Plinius: An. terr, An. aquat., Jonston: Pisc. (*Phoca*), Hortus sanitatis: Pisc. (sub *Vacca*), [Ho: Isidorus, Aristoteles]
Vormela - Gesner: Q
Vulpes - Isidorus: Best., Thomas: Q, Vincentius: Best., Albertus: Q, Bartholomaeus, Gesner: Q,Qp, Jonston: Q, [T: Experimentator, Constantinus, Plinius], Solinus
Vulpes indicus - Jonston: Q
Vulpes marinus - Vincentius: Pisc., Hortus sanitatis: Pisc. (sub. *Uranoscupus*), [Ho: Plinius]
Vulpis - Hortus sanitatis, [Ho: Isidorus, Aristoteles, Ambrosius, Lib. nat. rer., Constantinus, Haly, Avicenna]
Vulpus - Megenberg : Landt. (*Fuchs*)

*

Xifius - Thomas: Monstr. (Index: *Zifius*), [T: Basilius]

*

Ybex - Hortus sanitatis, [Ho: Plinius, Lib. nat. rer.]
Ybrida - Thomas: Q (*Ibrida*)
Ychneumon - Vincentius: Best., Hortus sanitatis, [Ho: Isidorus, Aristoteles]
Ypotamus - Hortus sanitatis: Pisc., [Ho: Lib. nat. rer., Aristoteles, Plinius]
Yppopotamus - Vincentius: Best., Monstr.
Yppotamus - Hortus sanitatis (sub *Ychneumon*), [Ho: Isidorus, Lib. nat. rer.]

*

Zerach - Thomas: Monstr. (index)
Zedrosus - Thomas: Monstr., [Plinius], Vincentius: Monstr., Hortus sanitatis: Pisc. (*Zidrosus*), [Ho: Lib. nat. rer.]
Zetyron - Thomas: Monstr. (text: *Zytiron*)
Zibo - Thomas: Q (text)
Zidrach - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Zedrosus*), [Ho: Lib. nat. rer.]
Zifius - Thomas: Monstr. (text: *Xifius*), Hortus sanitatis: Pisc., [Ho: Albertus]
Zilio - Albertus: Q, Hortus sanitatis
Ziphius - Vincentius: Monstr., Hortus sanitatis: Pisc. (sub *Zedrosus*)
Zitiron - Hortus sanitatis: Pisc., [Ho: Isidorus]
Zubro - Thomas: Q, Vincentius: Best., Hortus sanitatis, [Ho: Lib. nat. rer.]
Zydrach - Thomas: Monstr. (?= index: *Zerach*), [T: Lib. rer.]
Zybo - Thomas: Q (*Zibo*)
Zytiron - Thomas: Monstr., [T: Lib. rer.]

German names of Conrad von MEGENBERG

Aff - Megenberg: Landt. (*Simea*)
Alch - Megenberg: Landt. (*Iber*)
Auerrind - Megenberg: Landt. (*Bubalus* seu *Busontes, Auerrind, Waldrind*)
Aussgängel - Megenberg: Merw. (*Abibes*)
Ber - Megenberg: Landt. (*Ursus*)
Biber - Megenberg: Landt. (*Castor*)
Bockhirsch - Megenberg: Landt. (*Tragelaphus*)
Dachss - Megenberg: Landt. (*Daxus*)
Dammen - Megenberg: Landt. (*Damula*)
Denkfuss - Megenberg: Meerw. (*Cricos*)
Einhorn - Megenberg: Landt. (*Unicornis*)
Eychorn - Megenberg: Landt. (*Pirolus*)
Eltech - Megenberg: Landt. (*Pitornius*, *Iltis*)
Falen - Megenberg: Landt. (*Falena*)
Fuchs - Megenberg : Landt. (*Vulpus*)
Grabthier - Megenberg: Landt. (Jena)
Hasen - Megenberg: Landt. (*Lepus*)
Helffant - Megenberg (Elephas)
Hörschnabel - Megenberg: Meerw. (*Barchora*)
Hund - Megenberg: Landt.
Hyrss - Megenberg: Landt. (*Cervus*)
Igel - Megenberg: Landt. (*Erniacius*)
Iltis - Megenberg: Landt. (*Pitornius, Eltech*)
Katze - Megenberg: Landt. (*Murilegus*, *Musio*, *Cattus*)
Kämel - Megenberg: Landt.(*Kämlin*)
Kämlin - Megenberg: Landt. (*Kämel*)
Kill - Megenberg: Meerw. (*Kilion*, *Killon*)
Klagant - Megenberg: Meerw. (*Nerides*)
Kül - Megenberg: Meerw. (*Chylon*)
Lautlacher - Megenberg: Meerw. (*Ludolochra*)
Lotter - Thomas: Q (*Luter*, Index: *Luther*)
Luchs - Megenberg: Landt. (*Linx*)
Maul - Megenberg: Landt. (*Mulus*)
Mauss - Megenberg: Landt. (*Mus*)
Meerstrass - Megenberg: Meerw. (*Achinne*)
Molewerffen - Megenberg: Landt. (*Talpha*)
Mörhund - Megenberg: Meerw. *(Canis marinus)*
Mörjunckfraw - Megenberg: Meerw. *(Scilla)*
Mörmünch - Megenberg: Meerw. (*Monachus marinus*)
Mörtrack - Megenberg: Meerw.*(Traco maris)*
Mörynd - Megenberg: Meerw. *(Furca)*
Ochs - Megenberg: Landt. (*Thaurus*)
Otter - Megenberg: Landt. (*Luter*)
Panterthier - Megenberg: Landt. (*Panthera*)
Paralipomena - Gesner: Q
Pard - Megenberg: Landt. (*Pardus*)
Pferd - Megenberg: Landt. (*Equus*)
Pilos - Megenberg: Landt. (*Pilosus*)
Pisemthier - Megenberg: Landt. *(Mus quelibet)*
Ratz - Megenberg: Landt. (*Glis*)
Rech - Megenberg: Landt. (*Capreola*)
Rösel - Megenberg: Landt. (*Guesi*)
Rüd - Megenberg: Landt. (*Molosus*)
Rütschdrill - Megenberg: Meerw. (*Cocodrillus*)
Schauff - Megenberg: Landt. (*Ovis*)
Schwertnissel - Megenberg: Meerw. (*Gladius*)
Stinh - Megenberg: Meerw. (*Stinchus*)
Test - Megenberg: Meerw. (*Testeum*)

Tygerthier - Megenberg: Landt. (*Tigris*)
Wal visch - Megenberg: Fisch. (*Cete*)
Waldesel - Megenberg: Landt. (*Onager*)
Waldrind - Megenberg: Landt. (*Bubalus*, *Busontes*)
Wasserpferdt - Megenberg: Meerw. (*Equus fluminis*)
Wisel - Megenberg: Landt.(*Mustela*)
Wolff - Megenberg: Landt.
Wunderthier - Megenberg: Landt. (*Onacenthaurus*)

Sources

ARISTOTELES (384-322)
a. *Aristotelous Istoriai peri zóón*. Thierkunde. Kritisch-berichtigter Text, mit deutscher Übersetzung, sachlicher und sprachlicher Erklärung und vollständigem Index von H. Aubert und Fr. Wimmer. 1-2. Bd. Leipzig, 1868. Verl. W. Engelmann.
b. *De animalibus historia*. Text. recogn. Leonardus Dittmeyer. Lipsiae, 1907, Teubner. XXVI, 467 p. (Bibliotheca scriptorum graecorum et romanorum Teubneriana.) – Greek text. – Library of the Hungarian Academy of Sciences
c. Aristotle: in twenty-three volumes. Cambridge (Mass.), Harvard Univ. Pr. - London, Heineman. - 9. *Historia animalium in three volumes*. Books I-III. With an English translation by A. I. Peck. Repr. 1989. CIV, 238 p. - 11. History of animals. Books VII-X. Transl. by D. M. Balme. 1991, IX, 605 p. (The Loeb classical library; 437, 439.) – Library of the Hungarian Academy of Sciences.
d. *History of animals*. Harvard University Press, 1979-1993. Eötvös University, Budapest, Medieval collection

Címváltozatok: Peri ta zóa hisztoriai. Hisztoria tón zóon. Ton peri ta dzoia isztoria.

PLINIUS Secundus, Caius (23-79)
a. Caii Plinii Secundi *Historiae naturalis libri XXXVII*. Quos interpretatione et notis illustravit Joannes Harchinus. Ed. nova emend. Tom. 1-2. Parisiis, Imp. Soc. Jesu. 1741. Fol. Tom. 1. 26 , 788 p. Tom. 2. 1279 p.
b. C. Plinii Secundi *Naturalis historiae libri XXXVII*. Lateinisch-deutsch. - 8-11. Buch. Zoologie. Hrsg. u. übers. von Roderich König. München, Heimeran. 8. Buch: Landtiere. 1976. 312 p.; 9. Wassertiere. 1979. 256 p. 10. Vögel. 1986. 238 p. 11. Insekten, 1990. 299 p. (Tusculum Bücherei – later Sammlung Tusculum.) – Library of the Hungarian Academy of Sciences
c. *Historia naturalis*. Stuttgart, Teubner, 1986-1996. – Eötvös University, Budapest, Library of the Department of Latin
d. *Natural history*. With an English transl. in 10 volumes. – Hungarian Academy of Sciences

VIII. Animalia terrestria. IX. Animalia aquatica. X. Animalia volatilia. XI. Animalia parva et reptilia.

SOLINUS, Caius Julius (cc. 275)
C. Julii Solini *Collectanea rerum memorabilium.* Iterum rec. Th[eodor] Mommsen. Ed. altera ... Berolini, 1895. Repr. Berlin, Weidman. 1958. CV, 3, 276 p. – Library of the Hungarian Academy of Sciences

Isidorus Hispalensis (560-636)

a. Isidori Hispalensis episcopi *Etymologiarum sive originum libri XX*." Recognovit ... W.M. Lindsay. Tom. 1-2. Oxford, Univ. Press, 1911. Repr. 1962. – University of Pécs, Faculty of Law

b. ua. Oxford, 1989-1990. – Eötvös University, Budapest.

c. *Etymologies*. Paris, Les Belles Lettres. 12. liv. Des animaux. Texte trad. et comment. par Jacques André. 1986. 309 p. - Francia-latin párhuzamos szöveg. – Library of the Hungarian Academy of Sciences

Lib. XII. De quadrupedibus, reptilibus, piscibus et volatilibus. 1. De pecoribus et jumentis. 2. De bestiis. 3. De minutis animantibus. 4. De serpentibus. 5. De vermibus. 6. De piscibus. 7. De avibus. 8. De minutis volatilibus.

Thomas Cantimpratensis (Thomas von Brabant)(1186-1263)

De natura rerum libri XX. Editio princeps secundum codices manuscriptos. Teil 1. Text. Berlin - New York, 1973. Walter de Gruyter. XI, 431 p. – Eötvös University Library, Library of the Hungarian Academy of Sciences

Title variations: *De rerum natura libri XX*; *Liber de natura rerum*.

Lib. IV. De animalibus quadrupedibus. Lib. V. De natura avium. Lib. VI. De monstris marinis et beluis marinis. Lib. VII. De piscibus marinis sive fluvialibus. Lib. VIII. De serpentibus. IX. De vermibus.

Vincentius Bellovacensis (Vincent de Beauvais) (1190-1264)

a. *Speculum naturale*. Tom. 1-2. Strassburg, c.1481. Typogr. Legendae Aureae. – Eötvös University, Budapest

b. *Speculi maioris* ... tomi quator. Venetiis, 1591. apud Dominicum Nicolinum. [39] 424; [32] 298; [10] 280; [38] 491 ff. – National Széchényi Library, Budapest

c. *Speculum quadruplex sive speculum maius. Teil 1. Speculum naturale.* Duaci, 1624. Nachdruck Graz, Akad. Druck- u. Verlagsanst. 1964. [10], 2480 Sp.

De Bestiis. De animalibus terrestris. De monstris. De piscibus.

Bartholomaeus Anglicus (Bartholomy of Glanville) (cca 1260)

a. *De proprietatibus rerum libri XIX*." Strassburg: [Georg Husner], 1485. 2°. Eötvös University Library, Budapest

b. ua. 1491. – National Széchényi Library, Budapest, Library of the Hungarian Academy of Sciences

c. *Opus de rerum proprietatibus* inscriptum Nuremberg, 1519. Peypus, expensis Koberger. 189 lev. Koll. – Hungarian Academy of Sciences

XVIII. Animalia.

Albertus Magnus (Albert von Bollstädt) (1193-1280)

a. *De animalibus libri XXVI*. Nach der Cölner Urschrift. Hrsg. von Hermann Stadler. Bd. 1-2. Münster, 1916, 1920. Aschendorf. (Beiträge zur Geschichte der Philosophie des Mittelalters. Bd. 15, 16.) – Eötvös University Library, Budapest, Hungarian Academy of Sciences

b. On animals. Vol. 1-2. Baltimore, John Hopkins University. – Eötvös University, Medieval collection

[c. Az állatokról. Vál., utószó, szómagyarázat: Kádár Zoltán. Ford. Magyar László András. Budapest, Balassi Kiadó, 1996.]

Lib. XXII/2. Tractatus de quadrupedibus. Lib. XXIV. Aquaticae.

KONRAD (CONRAD) von Megenberg (1309-1374)
a. *Buch der Natur*. Augsburg, 1499. Hans Schönsperger. etc.
b. Werke. *Buch der Natur*. Stuttgart, Hiersemann, 1977. (Monumenta Germaniae Historica. 500-1500. Staatsschriften des späteren Mittelalters. Bd. 2.) - National Széchényi Library, Budapest, Eötvös University Library, Budapest
c. *Buch der Natur*. Ins Neuhochdeutsche übertragen und eingeleitet von Gerhard E. Sollbach. Frankfurt am Main, 1990.

III. Von Landthieren. IV. Von Vögeln. V. Von Meerwundern. VI. Von Fischen. VII. Von Schlangen. VIII. Von Würmern.

GESNER, Conrad (1516-1565)
a. Historiae animalium. Tiguri, Froschoverus. Liber 1. De quadrupedibus viviparis. 1551. (40), 1104, 12 p. - 2. De quadrupedibus oviparis. 1554. [8], 110 p. + Appendix historiae quadrupedum viviparorum et oviparorum.1554. 27 p. - TIT Központi Könyvtár; Library of the Hungarian Adacemy of Sciences
b. ua. Liber 1. 1620. – Hungarian Natural History Museum Library
c. Thierbuch. Durch C. Forer .. in das Teutsch gebracht. Zürich, 1563. Froschover. LVI-CLXX. lev. – Library of the Hungarian Academy of Sciences
d. Allgemeines Thier-Buch. [Bearb. Georg Horst] 3. Aufl., Nachdruck d. Ausgabe Frankfurt am Main, Serlin, 1669. Hannover, Schlüter, 1983. 392 p.

JONSTONUS, Johannes (Jonston, John; 1603-1673)
a. Historiae naturalis de quadrupedi libri cum aeneis figuris ... Francofurti, 1650. Haeredum Math. Meriani. 231, [15] p. 73 t. - Historia naturalis de avibus libri VI. Francofurti, 1650. Imp. Matthaei Meriani. 227, 17, [7 p.], 62 t. - Historia naturalis de piscibus et cetis libri V. ... Francofurti, Imp Matth. Meriani, 1650. 228, [9] p. 57 t. – Ordo Sancti Benedicti, Pannonhalma
b. Historiae naturalis de quadrupedi. Francofurti, 1652. Haer. Math. Meriani. Mannheim, Univ. 2005. – Electronic library

Hortus sanitatis
a. Hortus sanitatis. [Lat. comp.] [Strassburg: Johann Prüss, c. 1497. 2° 360 ff.] - OSzK
b. [*Hortus sanitatis.*] *Ortus sanitatis*. De herbis et plantis. De avibus et volatilibus. De animalibus et reptilibus. De avibus et volatilibus. De piscibus. De lapidibus.De urinis. Tabula medicinalis. 1517, [Strassburg, Reinhard Beck] [356] ff. – National Széchényi Library, Budapest
There were 33 editions up to 1547. Author unknown, possible Johann de Cube, Johannes de Cuba, Johann von Caub (Kaub) [+ 1503 vagy 1504]. He might be author of a previous German edition discussing plants only (Ein Gart der Gesundheit).

Abbreviations of chapters within major sources

PLINIUS: An. terr. = Animalia terrestria, An. aqua. = Animalia aquatica;
ISIDORUS: Pecor. = De pecoribus et jumentis, Best. = De bestiis, Minut. = De minutis animantibus;
THOMAS: Q = De animalibus quadrupedibus, Monstr. = De monstris marinis;
VINCENTIUS: An. terr. = De animalibus terrestris, Best. = De bestiis;
BARTHOLOMAEUS: Anim. = Animalia;
ALBERTUS: Q = Tractatus de quadrupedibus;
MEGENBERG: Landt. = Von Landthieren, Meerw. = Von Meerwundern;
JONSTON: Q = ... de quadrupedi;
GESNER: Q = De quadrupedibus viviparis, Qp = Appendix.