

Ostracode assemblages from the Upper Devonian and Dinantian of Maastricht (the Netherlands)

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In 1981, the Upper Famennian to Middle Visean rocks in the subsurface of Maastricht (southeastern Netherlands) have been explored by two boreholes (Heugem-1/1a and Kastanjelaan-2; BLESS, BOONEN, BOUCKAERT *et al.*, 1981). A large number of rock samples has yielded ostracodes. Three assemblages can be distinguished: *Cryptophyllus-Knoxiella* assemblage in the Upper Famennian and Strunian (Fa2c-Tn1a), *Pseudoleperditia-Bairdia* assemblage in the Lower to Middle Tournaisian (Tn1b-Tn2a), and Paraparchitacean-Kirkbyacean assemblage in the Middle Visean (V2a). The last assemblage includes a new paraparchitacean ostracode species: *Shivaella heugemensis* Bless nov. sp.

The *Cryptophyllus-Knoxiella* assemblage (fig. 1 l-o) characterizes calcareous siltstones and mudstones as well as argillaceous limestones of the Upper Famennian and Strunian (Fa2c-Tn1a) rocks in the 450-470 m interval of Kastanjelaan-2. Comparable assemblages have been described from predominantly intertidal (near-shore) deposits of the same age in Belgium (BECKER, BLESS, STREEL & THOREZ, 1974). The genus *Beyrichiopsis* appears to be a minor constituent of this association. Other fossil groups are rare or even absent.

The *Pseudoleperditia-Bairdia* assemblage (fig. 1f-k) occurs in calcareous mudstones and argillaceous limestones of the Lower to Middle Tournaisian (Tn1b-Tn2a) in the 380-445 m interval of Kastanjelaan-2. Similar assemblages are known from essentially subtidal, carbonate-rich strata in the Federal Republic of Germany (KUMMEROW, 1939) and Belgium (BECKER, BLESS, STREEL & THOREZ, 1974). This assemblage includes *Pseudoleperditia venulosa*, *Bairdia*, *Bairdiocypris*, *Bairdiocypris* and Paraparchitacean ostracodes (amongst which *Shishaella* and *Shivaella*). Other frequently occurring fossil groups are crinoids and corals, whereas also brachiopods, gastropods, conodonts and foraminifers are present.

The Paraparchitacean-Kirkbyacean assemblage (fig. 1a-e) characterizes

the Middle Visean (V2a) carbonates in the 310-502 m interval of Heugem-1/1a. Paraparchitacean ostracodes (amongst which *Shishaella* and *Shivaella* predominate. These are regularly associated with kirkbyacean (a.o. *Kummerowia*, *Amphissites*) ostracodes. Some samples have also yielded beyrichiopsids and *Libumella*. Bairdiacean and knoxiellid ostracodes are extremely rare. The associated fossil assemblage is rich in plurilocular foraminifers, algae and sponge spicules, along with radiolarians and abundant sphaeromorphs. Megafossils (a few corals and crinoids) are rare. This assemblage suggests a shallow-marine,

near-shore environment. The practical absence of bairdiacean ostracodes may point to somewhat more restricted facies conditions.

A new *Shivaella* species

One of the *Shivaella* specimens in these Middle Visean carbonates appears to belong to a new species, *Shivaella heugemensis* Bless, nov. sp. This species is described here.

Family PARAPARCHITIDAE SCOTT 1959
Genus *Shivaella* Sohn 1971

Shivaella heugemensis Bless nov. sp.
figures 2 - 4

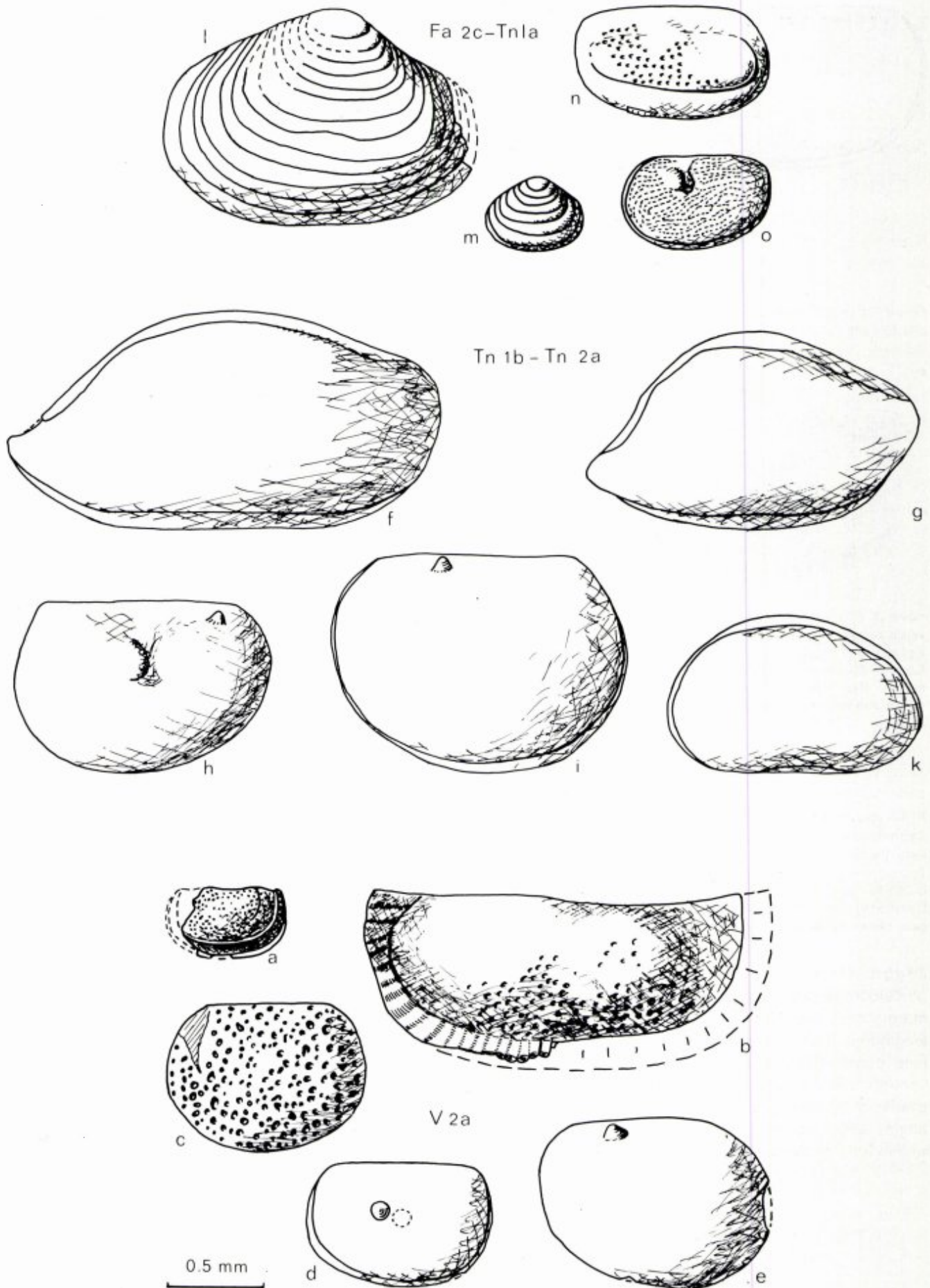
non *Paraparchites ventriosus* nov. sp.; TSCHIGOVA 1960, p. 177 - 178, p.4, figs. 1 - 2, VNII-Trudy 30.

? *Paraparchites ventriosus* Tschigova 1960; BUSHMINA 1970, p. 11, pl. 2, fig. 4, Trudy Instit.Geol.Geophys.Siberian Branch Acad. NAUK SSSR, vol 125.

Figure 1. Characteristic ostracoda assemblages for the Upper Famennian to Middle Visean in the boreholes Haugem-1/1a and Kastanjelaan-2. a-e: Middle Visean of Heugem-1/1a; f-k: Lower to Middle Tournaisian of Kastanjelaan-2; l-o: Upper Famennian to Strunian of Kastanjelaan-2. Fig 1. Ostracodan-associaties, welke karakteristiek zijn voor de afzettingen van het Boven Famennien tot en met Midden Viséan in de boringen Heugem-1/1a en Kastanjelaan-2. a-e: Midden-Viséan (V2a) van Heugem-1/1a; f-k: Onder en Midden Tournaisien (Tn1-Tn2a) van Kastanjelaan-2; l-o: Boven Famennian tot en met Strunien (Fa2c-Tn1a) van Kastanjelaan-2.

- a : *Amphissites* sp., Haugem-1, 318.90 - 319.60 m, NHMM 198230
- b : *Kummerowia* sp., Haugem-1a, 346.40 - 346.55 m, NHMM 198238
- c : *Libumella* sp., Heugem-1, 335.30 - 336.90 m, NHMM 198239
- d : *Shivaella* sp., Heugem-1a, 376.05 - 376.15 m, NHMM 198240

- e : *Shishaella* sp., Heugem-1a, 376.05 - 376.15 m, NHMM 198241
- f : *Bairdia* sp., Kastanjelaan-2, 421.80 - 422.00 m, NHMM 198237
- g : *Bairdia* sp., Kastanjelaan-2, 428.90 - 429.10 m, NHMM 198229
- h : *Pseudoleperditia venulosa*, Kastanjelaan-2, 380.75 - 380.95 m, NHMM 198236
- i : *Shishaella* sp., Kastanjelaan-2, 421.80 - 422.00 m, NHMM 198242
- k : *Bairdiocypris* sp., Kastanjelaan-2, 414.70 - 415.00 m, NHMM 198234
- l : *Cryptophyllus* sp., Kastanjelaan-2, 465.20 m, NHMM 198232
- m : *Cryptophyllus* sp., Kastanjelaan-2, 469.90 - 407.05 m, NHMM 198233
- n : *Beyrichiopsis* glyptopleuroides, Kastanjelaan-2, 452.20 - 452.35 m, NHMM 198227
- o : *Knoxiella* sp., Kastanjelaan-2, 462.85 m, NHMM 198228



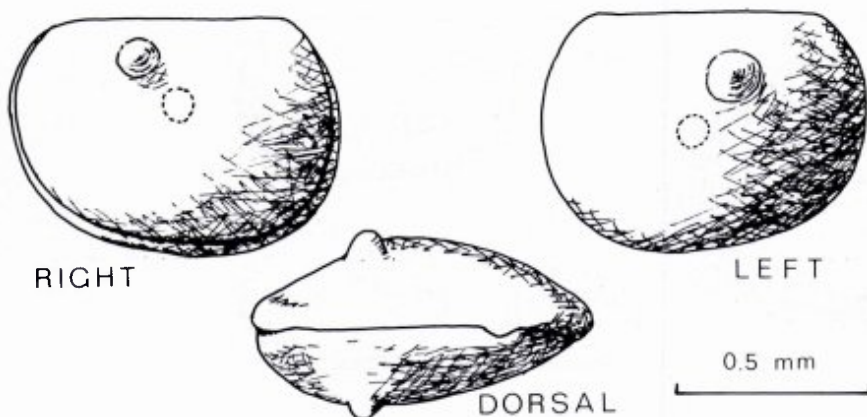


Figure 2. Camera lucida drawing of *Shivaella heugemensis* Bless nov. sp., Holotype, Heugem-1a, 383.40 - 385.55 m.

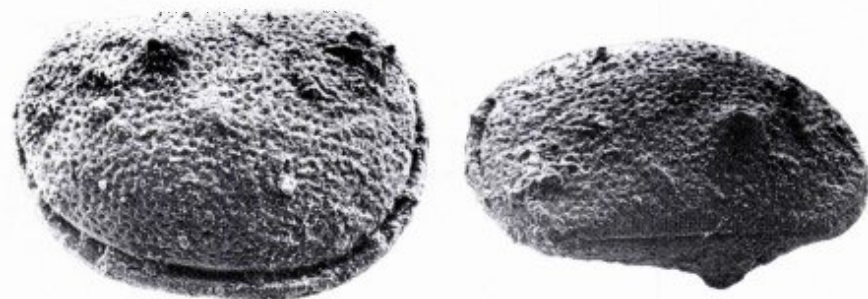


Figure 3. Stereoscanning photograph of *Shivaella heugemensis* Bless nov. sp., holotype, slightly oblique from below, right view.

Figuur 3. Stereoscan foto van *Shivaella heugemensis* Bless nov. sp., holotype, enigszins schuin van onderen gefotografeerd; rechter-zijkant.

Figure 4. Stereoscanning photograph of *Shivaella heugemensis* Bless nov. sp., holotype, oblique view of dorsal portion of right valve and contact with left valve.

Figuur 4. Stereoscan foto van *Shivaella heugemensis* Bless nov. sp., holotype, rechter klep en contact met linker klep schuin van boven gefotografeerd.

Holotype: NHMM 198226

Type-location: Heugem-1a borehole, Maastricht, the Netherlands.

Type-level: Middle Visean (V2a) carbonates in 383.40 - 385.55 m interval.

Derivation of name: After the village of Heugem, part of the municipality of Maastricht.

Diagnosis: A *Shivaella* species with posterodorsal spine on each valve at more than one-third the greatest length from the posterior margin. Surface punctate-reticulate. No incised ventral contact margin; well developed overlap of left over right valve. Cardinal angles about equal. Greatest height well in front of muscle-scar.

Length 0.86 mm. Height 0.62 mm. Width 0.43 mm.

Discussion: This species is distinguished by the surface ornamentation and by the position of the posterodorsal spines. The figure and description of *Paraparchites ventriosus* sensu Bushmina 1970 suggest that this specimen may be close to our species if not conspecific. *Paraparchites ventriosus* Tschigova 1960 is not a *Shivaella* species, but belongs to the genus *Shishaella* because it has only one spine on the right valve. It is not excluded that our specimen is a juvenile because of its small size.

Acknowledgements

I am greatly indebted to Prof. M. Streel and his collaborators of the Liège University for the stereoscanning photographs of *Shivaella heugemensis*. Mrs. Th. Verboeket typed the manuscript. Mr. J.C. Franssen helped with the line-drawings.

Samenvatting

De afzettingen van het Boven Famennien tot Midden Viséen in de ondergrond van Maastricht zijn in 1981 onderzocht door middel van twee 500m diepe boringen, Heugem-1/1a en Kastanjelaan-2 (BLESS, BOONEN, BOUCKAERT *et al.*, 1981). Veel gesteente-monsters bleken ostracoden te bevatten. Drie associaties zijn te onderscheiden: *Cryptophyllus-Knoxella* associatie in het Boven Famennien en Strunien (Fa2c-Tn1a) van de boring Kastanjelaan-2, *Pseudoleperditia-Bairdia* associatie in het Onder en Midden Tournaisien (Tn1b-Tn2a) van Kastanjelaan-2, en *Paraparchitacea-Kirkbyacea* associatie in het Midden Viséen (V2a) van Heugem-1/a. In deze laatste associatie is ook een nieuwe soort van het geslacht *Shivaella* gevonden: *Shivaella heugemensis* Bless nov. sp. Deze soort heeft een schaal met op iedere klep de karakteristieke posterodorsale doorns welke vrij ver van de achterrand afliggen, en een punctate tot reticulate versiering van de kleppen.

References

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