# IDOCERATINAE (*PRESIMOCERAS*, *TRENERITES* AND *LESSINICERAS* GENERA) FROM "*ACANTHICUM* BEDS" OF THE HĂGHIMAŞ MTS. (THE EASTERN CARPATHIANS – ROMANIA)

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**Abstract.** This paper deals with the paleonthological study on the Idoceratinae species (for *Presimoceras*, *Trenerites* and *Lessiniceras* genera) found in the Kimmeridgian deposits from Ghilcoş and Ciofronca (Hăghimaş Mts). The number of the identified species reaches 11 taxa. Also, there have been revised all species described by the previous authors: Herbich, Neumayr and Preda.

**Keywords:** Idoceratinae, taxonomy, Hăghimaş.

**Rezumat. Idoceratinae (genurile *Presimoceras*, *Trenerites* şi *Lessiniceras*) din „Stratele cu *Acanthicum*" din Munţii Hăghimaş (Carpaţii Orientali – România).** În lucrare este prezentat studiul taxonomic al speciilor din familia Idoceratinae (genurile *Presimoceras*, *Trenerites* şi *Lessiniceras*) găsite in depozitele kimmeridgiene din Ghilcoş şi Ciofronca (Munţii Hăghimaş). Numărul speciilor identificate a ajuns la 11 taxoni. De asemenea, în lucrare sunt revizuite toate speciile descrise de autorii anteriori: Herbich, Neumayr şi Preda.

**Cuvinte cheie:** Idoceratinae, taxonomie, Hăghimaş.

## INTRODUCTION

The outcrops (F1, F2, F17 in GRIGORE et al., 2009) from which the studied fauna was collected are situated in the Hăghimaş Mts. Some of them (F1, F2) are included in the Cheile Bicazului – Hăghimaş National Park. From this region only 4 species from *Presimoceras* genus were known until now while other two genera *Trenerites* and *Lessiniceras* are documented. The number of identified species arises now to 11 taxa. Three holotypes are known from this region, being described by the previous authors.

### Systematics

Abbreviations for the measurements, collections and outcrops:

Dmax = maximal diameter
Dph = phragmocone diameter
D = measured diameter
U = diameter of umbilicus
H = height
W = width
$N_i$ = number of inner ribs (primary)
(for one whorl or a half of this)
$N_e$= number of external ribs (secondary)
(for the same whorl as $N_i$ or a half of this)

GIR = Geological Institute of Romania
GIA = Geological Institute of Austria (Bundesanstalt)
UBB = "Babeş Bolyai" University from Cluj Napoca
LGB = Geology Laboratory of Bucharest University
LPB = Paleontology Lab. of Bucharest University
MNSPN = Museum of Natural Sciences - Piatra Neamţ
F1 = Outcrop from western Ghilcoş walls
F2 = Outcrop from north-western Ghilcoş slope
F17 = Outcrop from "Ciofronca" all in GRIGORE et al, 2009
A, D… K = studied profiles (in GRIGORE, 2002; in press)

Suprafamily Perisphinctaceae STEINMANN, 1890
Family Perisphinctidae STEINMANN, 1890
Subfamily Idoceratinae SPATH, 1924
Genus *Presimoceras* SARTI, 1990
*Presimoceras herbichi* (VON HAUER, 1866) in NEUMAYR, 1873
Pl. 1, Figs. 2, 4, 6, 7

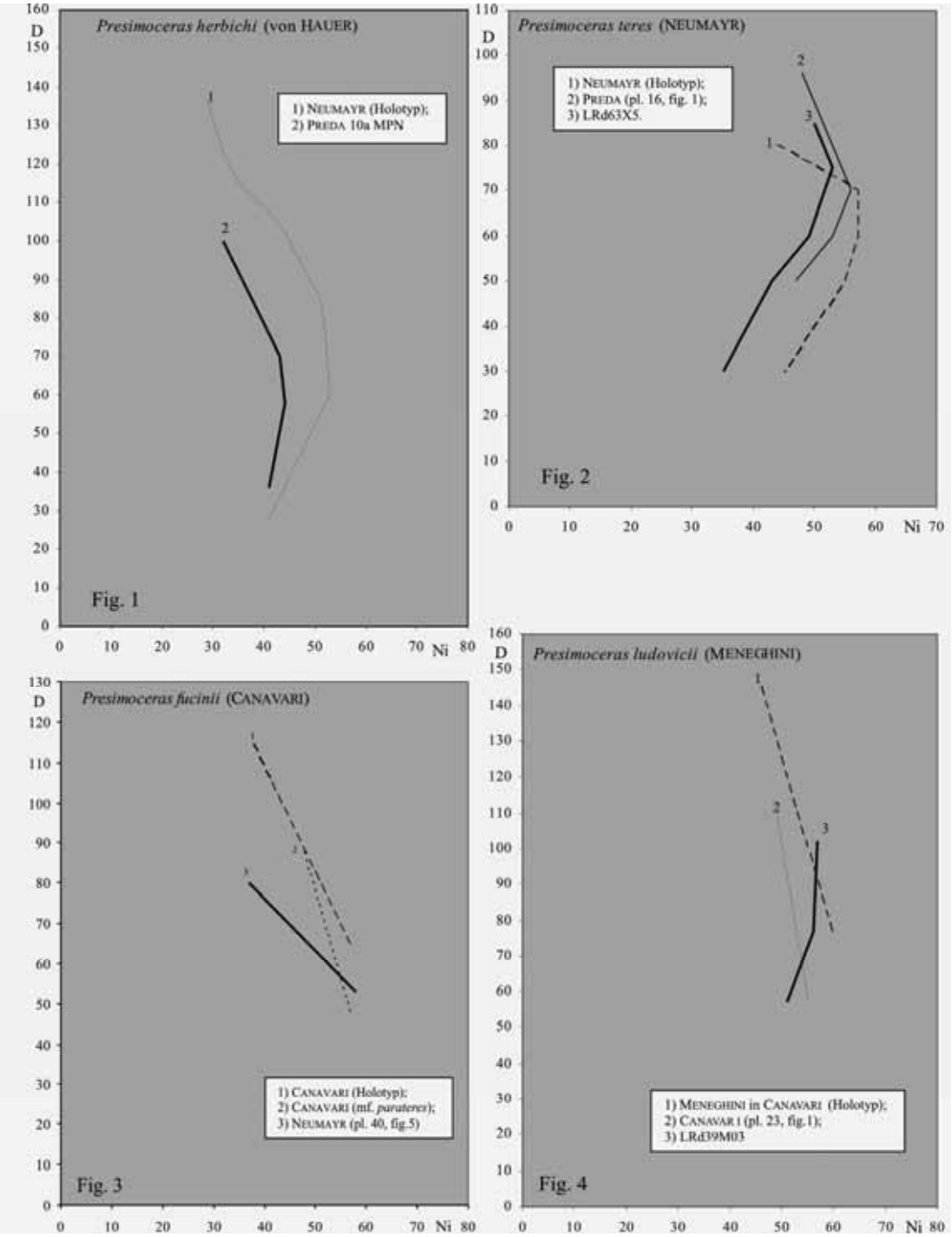
1866 *Ammonites Herbichi* HAUER; p. 194
*1873 *Simoceras Herbichi* HAUER - NEUMAYR; p. 186; Pl. 40, Figs. 1, 2 (Holotype)
1878 *Simoceras Herbichi* HAUER–HERBICH; p. 168
1973 *Simoceras herbichi* (HAUER) - PREDA; Pl. 16, Fig. 2
1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 4
1990 *Presimoceras herbichi* (HAUER) - SARTI; p. 44, Fig. 10

Material (*Presimoceras* cf. *herbichi*): LRd55W5.0, LRd46A, LRd51A11, LRd65J, LRd64T1.0 Grigore Collection in GIR; Holotype (NEUMAYR 1873): inv. 2051 UC in the Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop; Preda's specimens (1973): inv. 10a MPN (Pl. 1, Fig. 2) in the Collection of MNSPN, it originates from grey nodular limestones and "D1" MPN ("*Simoceras teres*" Pl. 1, Fig. 4) probably moved in the Collection of LGB; it originates from grey nodular limestones – both specimens from Ghilcoş outcrop.

Table 1. Measurements of *Presimoceras herbichi* (VON HAUER, 1866) specimens.
Tabel 1. Măsurători ale exemplarelor de *Presimoceras herbichi* (VON HAUER, 1866).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 140 | 95 | 140 | 85 | 31 | 29 | 0.61 | 0.22 | 0.21 | 0.94 | 26 |
| Preda 10a MPN | 101 | 93 | 101 | 59 | 22 | 22 | 0.58 | 0.22 | 0.22 | 1 | 32 |
| Preda "D1 MPN" | 103 | - | 103 | 61 | 26 | - | 0.59 | 0.25 | - | - | - |

Remarks: my specimens represent fragments of whorls from big phragmocones. They have been assigned to this species on the base of comparison at similar whorl heights of holotype. The 10aMPN specimen (Preda Collection) is medium sized and well preserved. It has 1/5 from the body chamber and its section is more isometric that at holotype. The D1MPN specimen (Preda) is a half from a medium sized conch which preserves 1/3 from the body chamber. Both preserve well the specific ornamentation (ribbing curves in Fig. 1).




Figures 1, 2, 3, 4: ribbing curves - 1) *Presimoceras herbichi*; 2) *Presimoceras teres*; 3) *Presimoceras fucinii*; 4) *Presimoceras ludovicii.* / Figurile 1, 2, 3, 4: curbe de costatie - 1) *Presimoceras herbichi*; 2) *Presimoceras teres*; 3) *Presimoceras fucinii*; 4) *Presimoceras ludovicii.*

Occurrence: Early Kimmeridgian–Divisum Zone in F1, F2 and F17 outcrops (W, T, A and J profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

*Presimoceras teres* (NEUMAYR, 1871)

1871 *Perisphinctes* (?) *teres* NEUMAYR; p. 23
1873 *Simoceras teres* NEUMAYR - NEUMAYR; p. 187; Pl. 40, Fig. 4, *non* Fig. 5 (= *Presimoceras fucinii*)
1878 *Simoceras teres* NEUMAYR - HERBICH; p. 169 (only specimen "A", "B" specimen is *P. fucinii*)
*Non* 1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 3 (= *Presimoceras* cf. *planulacinctum*)
*Non* 1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 14, Fig. 4 (= *Presimoceras herbichi*)
1973 *Simoceras teres* NEUMAYR - PREDA; Pl. 16, Fig. 1
1990 *Presimoceras teres* (NEUMAYR) - SARTI; p. 45; Fig. 9A
1993 *Presimoceras teres* (NEUMAYR) - SARTI; p. 110

Material: LRd63X5; *Presimoceras* cf. *teres*: LRd48A10 Grigore Collection in GIR; Neumayr's holotype (1873): in the Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Herbich's "A" specimen: in the Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop; Preda's specimen (figured in 1973, Pl. 16, Fig. 1): "D2" MPN in Collection of MNSPN moved in LGB, it originates from grey nodular limestones of Ghilcoş outcrop.

Table 2. Measurements of *Presimoceras teres* (NEUMAYR, 1871) specimens.
Tabel 2. Măsurători ale exemplarelor de *Presimoceras teres* (NEUMAYR, 1871).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 78 | - | 78 | 48 | 16 | - | 0.61 | 0.21 | - | - | 46 |
| Herbich "A" | 79 | - | 79 | 47 | 17 | 20 | 0.60 | 0.22 | 0.25 | 1.20 | - |
| Preda "D2" MPN | 96 | - | 96 | 56 | 23 | - | 0.58 | 0.24 | - | - | - |
| LRd63X5 | ~80 | 80 | 70 | 39 | 18 | 18 | 0.56 | 0.26 | 0.26 | 1 | 50 |

Remarks: the LRd63X5 specimen is a large phragmocone with the ornamentation well preserved. It differs from Neumayr's specimen by number of bifurcated ribs, by the presence of radial constrictions and a narrow umbilicus. The assigned specimen represents a large whorl from a body chamber with the specific ornamentation well preserved. Herbich's specimen is large sized, well preserved, and that of Preda's („D"MPN) is a half of a large sized conch, which preserves 1/3 from the body chamber (ribbing curves in Fig. 2).

Occurrence: Early Kimmeridgian–Divisum Zone in F1, F2 and F17 outcrops (A, X profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

*Presimoceras explanatum* (NEUMAYR, 1871)

1871 *Perisphinctes* (?) *explanatus* NEUMAYR; p. 23
1873 *Simoceras explanatum* NEUMAYR - NEUMAYR; p. 187; Pl. 40, Fig. 3
1878 *Simoceras explanatum* NEUMAYR - HERBICH; p. 169
1973 *Simoceras explanatum* NEUMAYR - PREDA; Pl. 15, Fig. 2

Material: Neumayr's Holotype: in Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Preda's specimen (1973): "D3" MPN (here) in the Collection of MNSPN was refigured by M. Pelin (1976; Pl. 5, Fig. 1) and moved in the Collection of LGB; it originates from grey nodular limestones of Ghilcoş outcrop.

Table 3: Measurements of *Presimoceras explanatum* (NEUMAYR , 1871) specimens.
Tabel 3. Măsurători ale exemplarelor de *Presimoceras explanatum* (NEUMAYR, 1871).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 126 | 126 | 126 | 69 | 29 | 21 | 0.55 | 0.23 | 0.17 | 0.72 | 41 |
| Preda "D3" MPN | 94 | 94 | 92 | 49 | 23 | 20 | 0.53 | 0.25 | 0.22 | 0.87 | 38 |

Remarks: Preda's specimen ("D3" MPN) is a large phragmocone with subrectangular cross-section, flat flanks and tabulated venter. Its ornamentation differs from Neumayr's specimen by more rigid ribs and the point for decrease of density marked from 76 mm in diameter (not at 100 mm).

Occurrence: Early Kimmeridgian–Divisum Zone from F2 and F17 outcrops; Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

*Presimoceras fucinii* (CANAVARI, 1898)

1873 *Simoceras teres* NEUMAYR - NEUMAYR; Pl. 40, Fig. 5
1878 *Simoceras teres* NEUMAYR - HERBICH; p. 169
*1898 *Simoceras Fucinii* nov. sp. - CANAVARI; p. 253; Pl. 22, Fig. 2 (Holotype)
1898 *Simoceras parateres* nov. sp. - CANAVARI; p. 255; Pl. 22, Fig. 1 *non* Pl. 23, Fig. 3
1990 *Presimoceras fucinii* (CANAVARI) - SARTI; p. 45, Fig. 3

Material: LRd53A7 (*Presimoceras* cf. *fucinii*) Grigore Collection in GIR; Neumayr's (as *Simoceras teres,* Pl.

40, Fig. 5) specimen: in Collection of GIA, it originates from red nodular limestones of Ciofronca outcrop; Herbich's (as *Simoceras teres*) specimen: "B" (here) in Collection of UBB, it originates from grey nodular limestones of Ghilcoş outcrop.

Table 4. Measurements of *Presimoceras fucinii* (CANAVARI, 1898) specimens.
Tabel 4. Măsurători ale exemplarelor de *Presimoceras fucinii* (CANAVARI, 1898).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 120 | 90 | 120 | 72 | 26 | 30 | 0,60 | 0.22 | 0.25 | 1.15 | 36 |
| Neumayr sp. | ˜80 | - | 68 | 38 | 15 | 20 | 0.56 | 0.22 | 0.29 | 1.33 | - |
| Herbich "B" | 57 | - | 57 | 34 | 12 | 17 | 0.59 | 0.21 | 0.29 | 1.40 | - |

Remarks: my specimen is assigned to this species because it is only a whorl fragment which presents specific features at similar heights of whorls (compared to holotype). Revising the specimens of *Simoceras teres* described by Herbich and Neumayr, we found more similitudes with this *P. fucini* in morphology and in evolution of the ribs (Fig. 3).

Occurrence: Early Kimmeridgian–Divisum Zone in F2 and F17 outcrops; Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

*Presimoceras ludovicii* (MENEGHINI, 1879)
Pl. 1, Figs. 1, 5

1879 *Simoceras Ludovicii* nov.sp. MENEGHINI; p. 138; Pl. 10, Figs. 4, 5; in Canavari refig: Pl. 23, Fig. 2 (Holotype)

1900 *Simoceras Ludovicii* MENEGHINI - CANAVARI; p. 257; Pl. 23, Figs. 1, 2

1990 *Presimoceras ludovicii* (MENEGHINI) - SARTI; p. 45, Fig. 4

Material: LRd39M0.3, LRd58X5 Grigore Collection in GIR.

Table 5. Measurements of *Presimoceras ludovicii* (MENEGHINI, 1879) specimens.
Tabel 5. Măsurători ale exemplarelor de *Presimoceras ludovicii* (MENEGHINI, 1879).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 144 | - | 144 | 84 | 35 | 28 | 0.58 | 0.24 | 0.19 | 0.80 | 61 |
| LRd39M0.3 | 102 | 100 | 102 | 54 | 27 | 25 | 0.53 | 0.26 | 0.24 | 0.92 | 59 |
| LRd58X5 | -- | - | - | - | 31 | 24 | - | - | - | 0.77 | - |

Remarks: my specimen (LRd39M0.3) is a large phragmocone which preserves well the ornamentation. Compared with the holotype it has narrower umbilicus and the section depressed. The LRd63X5 specimen is a whorl fragment of large size, with features comparable with that of the holotype (Fig. 4). Both specimens have characteristic sutures for this species.

Occurrence: Early Kimmeridgian–Divisum Zone in F2 outcrop (X and M profiles); Early Kimmeridgian–Herbichi Zone in Italy and Divisum Zone in Spain, Germany.

*Presimoceras benianum* (CATULLO, 1853)

1853 *Ammonites benianus* CATULLO; Pl. 2, Fig. 2

1872 *Simoceras benianum* (CATULLO) - GEMMELLARO; p. 54; Pl. 12, Fig. 1

1897 *Simoceras benianum* CATULLO - CANAVARI; p. 231; Pl. 30, Fig. 1

1873 *Simoceras benianum* CATULLO - NEUMAYR; p. 186

1878 *Simoceras benianum* CATULLO - HERBICH; p. 168

Material: Herbich's specimens: in Collection of UBB, it originates from red nodular limestones of Ciofronca outcrop.

Remarks: the specimens of Herbich's are known only from his paper (1878) and they are poorly described. It is noted the specific feature of ribs, which over passes ventral region only.

Occurrence: Early Kimmeridgian–Divisum Zone in F17 outcrop; Early Kimmeridgian–Herbichi Zone in Italy.

*Presimoceras* cf. *planulacinctum* (QUENSTEDT, 1888)
Pl. 1, Fig. 3

1888 *Ammonites planulascinctus* nov.sp. QUENSTEDT; p. 978; Pl. 108, Fig. 14

1959 *Nebrodites* (*Mesosimoceras*) *planulascinctus* (QUENSTEDT) - ZIEGLER; p. 42; Pl. 1, Fig. 20

1973 *Simoceras teres* NEUMAYR - PREDA; pl. 14, Fig. 3

1978 *Nebrodites* (*Mesosimoceras*) *planulascinctus* (QUENSTEDT) - OLORIZ; p. 191; Pl. 16, Figs. 3 a, b

1990 *Presimoceras planulacinctum* (QUENSTEDT) - SARTI; p. 45; Pl. 45, Fig. 3

Material: Preda's specimen: 44 MPN in the Collection of MNSPN, it originates from red nodular limestones of Ghilcoş outcrop.

Remarks: Preda's specimen (44MPN) represents a segment of a conch, which preserves a part of the body chamber. The ornamentation is well preserved. Compared with the holotype it has a more compressed section and a slightly increased density of the ribs.

Occurrence: Kimmeridgian, Divisum Zone probably from F1 outcrop of Ghilcoş Mts.; Early Kimmeridgian–Herbichi Zone Italy and Divisum Zone in Spain, Germany.

Genus *Trenerites* SARTI, 1993

*Trenerites enayi* SARTI, 1993

1993 *Trenerites enayi* nov. sp. - SARTI; p. 107; Pl. 21, Figs. 1 a, b; Pl. 22, Figs. 2 a-d; text Figs. 51, 52

Material: LRd21F3 and *Trenerites* cf. *enayi*: LRd13F2, LRd12F4, LRd4F5, LRd5F1 and LRd70W1.0 Grigore Collection in GIR.

Table 6. Measurements of *Trenerites enayi* SARTI, 1993 specimens.
Tabel 6. Măsurători ale exemplarelor de *Trenerites enayi* SARTI, 1993.

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D |
|---|---|---|---|---|---|---|---|---|
| Holotype | 155 | 93.3 | 33.8 | 27 | 0.60 | 0.22 | 0.17 | 1.26 |
| LRd21F3 | - | - | 30 | 23 | - | - | - | 1.30 |

Remarks: the LRd21F3 specimen represents a fragment from a large phragmocone and others five specimens are small - representing juveniles. The first was analyzed by comparison of its external features (whorl section, ribbing) and sutures with that of the holotype at comparable heights. The LRd13F2 and LRd12F4 are deformed; LRd70W1.0 is better preserved and all three are comparable with the Paratype features.

The LRd4F5 and LRd5F1 specimens differ from this species trough a more compressed section under 30 mm diameter.

Occurrence: Early Kimmeridgian-Platynota (in top)/Strombecki (in base) interval in F1, F2 and F17 outcrops (F, W profiles); Early Kimmeridgian-Silenum Zone (*Trenerites* Subzone) in Italy.

*Trenerites* sp.

1993 *Trenerites* nov.sp.idet. SARTI; p. 106; Pl. 22, Figs. 1 a, b; text Figs. 50, 52 B

Material: LRd8E1, LRd7E2 Grigore Collection in GIR.

Table 7. Measurements of *Trenerites* sp. specimens.
Tabel 7. Măsurători ale exemplarelor de *Trenerites* sp.

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D |
|---|---|---|---|---|---|---|---|---|
| Sarti sp. (P135A) | 44 | 26.7 | 7.5 | - | 0.61 | 0.17 | - | - |
| LRd8E1 | 25 | 15 | 6 | 6 | 0.60 | 0.24 | 0.24 | 1 |
| LRd7E2 | 28 | 15 | 7 | 7.5 | 0.54 | 0.25 | 0.27 | 0.93 |

Remarks: two juvenile specimens with similar parameters of *Trenerites* sp. indet. (SARTI). Specimen LRd8E1 differs by an ogivale section and a medio-ventral groove; LRd7E2 has the ribs more projected.

Occurrence: Early Kimmeridgian-Platynota Zone (in top) in F2 outcrop (E profile); Early Kimmeridgian-Silenum /Strombecki interval in Italy.

Genus *Lessiniceras* PAVIA et al., 1987 emended by SARTI, 1993

*Lessiniceras ptychodes* (NEUMAYR 1873)

Pl. 2, Fig. 1

1873 *Perisphinctes ptychodes* nov.sp. NEUMAYR; p. 175; Pl. 36

1900 *Perisphinctes ptychodes* NEUMAYR - CANAVARI; p. 3; Pl. 2, Fig. 1

1986 *Mesosimoceras ptychodes* NEUMAYR - SARTI; p. 326; Pl. 1

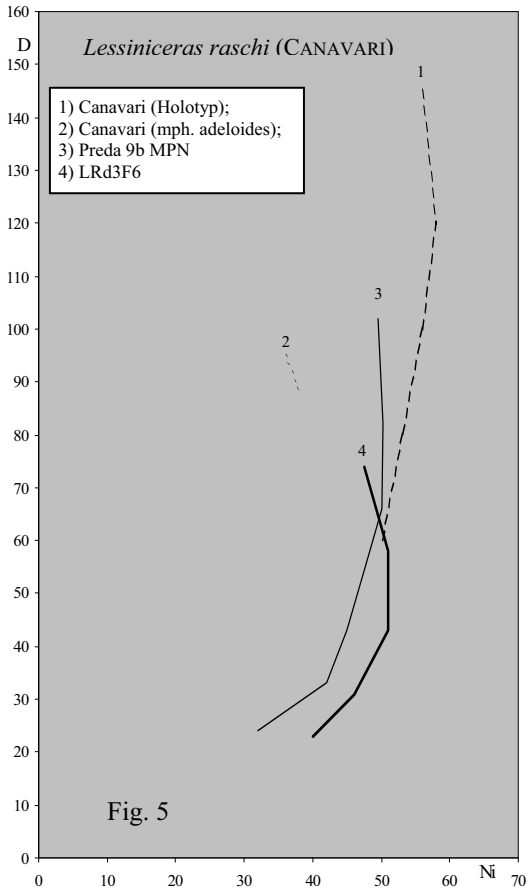
1987 *Idoceras* (*Lessiniceras*) *ptychodes* (NEUMAYR) - PAVIA et al.; p. 76; Pl. 2, Figs. 1, 2

1993 *Lessiniceras ptychodes* (NEUMAYR) - SARTI; p. 111; text Figs. 54 B-C, 55

Material: LRd2E2, LRd1E Grigore Collection in GIR.

Table 8. Measurements of *Lessiniceras ptychodes* (NEUMAYR, 1873) specimens.
Tabel 8. Măsurători ale exemplarelor de *Lessiniceras ptychodes* (NEUMAYR, 1873).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D |
|---|---|---|---|---|---|---|---|---|
| Holotype (ø1) | 240 | 133 | 59 | - | 0.55 | 0.24 | - | - |
| - (ø2) | 181 | 96 | 48 | - | 0.53 | 0.26 | - | - |
| - (ø3) | 132 | 67 | 37 | - | 0.49 | 0.28 | - | - |
| Canavari sp. | 280 | 152 | 75 | 53 | 0.54 | 0.27 | 0.19 | 1.41 |
| LRd2E2 | 140 | 75 | 37 | 27 | 0.53 | 0.26 | 0.19 | 1.37 |
| LRd1E | 130 | 63 | 36 | 25 | 0.48 | 0.28 | 0.19 | 1.44 |




Remarks: the LRd2E2 specimen is half of a big conch, which preserves the final part of the body chamber. The specimen is badly conserved, the ornamentation from the inner whorls being affected. The LRd1E specimen is a phragmocone affected by erosion, but with recognizable features of this species.

Occurrence: Early Kimmeridgian-Platynota Zone (in top) in F2 outcrop (E profile); Early Kimmeridgian-Strombecki/Herbichi interval in Italy.

*Lessiniceras raschii* (CANAVARI, 1879)
Pl. 2, Figs. 2, 3

1879 *Perisphinctes raschii* nov.sp. - CANAVARI; p. 225; Pl. 28, Fig. 1

1987 *Idoceras* (*Lessiniceras*) *raschii* (CANAVARI) - PAVIA et al.; p. 76; Pl. 2, Fig. 3; Pl. 3, Fig. 4

1993 *Lessiniceras raschii* (CANAVARI) - SARTI; p. 112; text Fig. 55

Material: LRd3F6, LRd6F4 Grigore Collection in GIR; Preda's specimen (1973): 9b MPN in the Collection of MNSPN, it originates from grey nodular limestones of Ghilcoş outcrop.

Figure 5. Ribbing curves – *Lessiniceras raschi.*
Figura 5. Curbe de costație – *Lessiniceras raschi.*

Table 9. Measurements of *Lessiniceras raschii* (CANAVARI, 1879) specimens.
Tabel 9. Măsurători ale exemplarelor de *Lessiniceras raschii* (CANAVARI, 1879).

| Specimen | Dmax | Dph | D | U | H | W | U/D | H/D | W/D | W/H | Ni | Ne |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Holotype | 145 | 145 | 145 | 64 | 46 | 32 | 0.44 | 0.32 | 0.22 | 0.70 | 56 | 92 |
| Canavari (*dedaloides*) | 95 | - | 95 | 31 | 37 | 22 | 0.33 | 0.39 | 0.23 | 0.59 | 46 | 72 |
| Sarti sp. (LU108) | 85 | - | 85 | 34 | 29 | 20 | 0.40 | 0.35 | 0.23 | 0.69 | - | - |
| Preda 9b MPN | 102 | 102 | 91 | 40 | 30 | 22 | 0.44 | 0.33 | 0.24 | 0.73 | 51 | 82 |
| LRd3F6 | 74 | 73 | 66 | 26 | 23 | 16 | 0.39 | 0.35 | 0.24 | 0.70 | 46 | 76 |
| LRd6F4 | 49 | - | 34 | 18 | 10 | 9 | 0.53 | 0.29 | 0.27 | 0.90 | - | - |

Remarks: the LRd3F6 is a phragmocone which has well preserved ornamentation. The ribs are more concave than at holotype, similar to Pavia's specimen (1987, Pl. 3, Fig. 4). LRd6F4 specimen is a juvenile that preserves the beginning of the body chamber; to a maximum diameter of 33 mm, it shows a rapid upward trend of whorl height. The ornamentation on the last portion of the whorls becomes concave and projected on ventral edge. Morphometrical parameters and morphology of both specimens fall within the specific variability (ribbing curves in Fig. 5). Preda's specimen is a phragmocone of big size, which preserves well the specific ornamentation.

Occurrence: Early Kimmeridgian–Platynota (in top)/Strombecki (in base) interval in F2 outcrop (F profile); Early Kimmeridgian–Silenum (in top)/Strombecki interval in Italy.

## ACKNOWLEDGMENTS

I am grateful to Professor Ilie Turculeț from the University "Al. I. Cuza" - Iaşi and to PhD. Emil Avram from IGR for helping in my studies. Sincere thanks to Reader Sorin Baciu for helping me with the material of Preda Collection from the Natural Science Museum from Piatra Neamț. I would like to thanks Professor Ioan Bucur and Ass. Professor Mirela Popa from "Babeş Bolyai" University - Cluj Napoca (Paleontology Department) for helping me with the material from Neumayr and Herbich collections and for the great hospitality. Same sincere thanks to Professor Vlad Codrea from the same department, also to Professor Eugen Gradinaru from Bucharest University and Mr. Aurelian Popescu, museographer from the Museum of Natural Science from Craiova that made possible the publication of this study.

Part of this study was financially supported by the National Centre for Projects Management (CNMP) in the GEOBIOHAS Project (31-059 CTR/2007).

## REFERENCES


CANAVARI M. 1897. *La fauna degli strati con Aspidoceras acanthicum di Monte Serra presso Camerino. II, (Holcostephanus, Perisphinctes, Simoceras).* Palaeontographica Italica. Pisa. **3**: 201-234.

CANAVARI M. 1898. *La fauna degli strati con Aspidoceras acanthicum di Monte Serra presso Camerino. III, (Simoceras, cont.).* Palaeontographica Italica. Pisa. **4**: 253-262.

CANAVARI M. 1900. *La fauna degli strati con Aspidoceras acanthicum di Monte Serra presso Camerino. IV, (Simoceras, cont., Perisphinctes Appendice).* Palaeontographica Italica. Pisa. **6**: 1-16.

FAVRE E. 1877. *La zone a Ammonites acanthicus dans les Alpes de la Suisse et de la Savoie*. Mémoires de la Société Paléontologique Suisse. Genève. **4**(3): 1-113.

GEMMELLARO G. G. 1872. *Sopra I cefalopodi della zona con Aspidoceras acanthicum Opp. sp. di Burgilami presso Favara, provincia di Grigenti*. Giornale Scienza Naturale Economia. **8**: 30-52.

GRIGORE D. 2002. *Formaţiunea cu Acanthicum din regiunea Lacu Roşu (Msv. Hăghimaş-Carpaţii Orientali) - posibil hipostratotip al limitei Kimmeridgian-Tithonic. Stratigrafie. Paleontologie*. Teză doctorat, Univ. „Al. I .Cuza" Iaşi. 347 pp.

GRIGORE D. in press. *Kimmeridgian – Lower Tithonian Ammonite Assemblages from Ghilcoş - Hăghimaş Massif (Eastern Carpathians – Romania).* Acta Palaeontologica Romaniae. Cluj Napoca. **7**. (in press).

GRIGORE D., LAZAR IULIANA, GRASU C., GHEUCA I., CIOBANETE D., CONSTANTINESCU A., MARCU IULIA. 2009. *Paleontological sites from Cheile Bicazului – Hăşmaş National Park.* Oltenia. Studii şi Comunicări. Ştiinţele Naturii. Muzeul Olteniei Craiova. **25**: 355-365.

HERBICH F. 1878. *Das szeclerland mit Berucksichtigung der Angrezenden Landesteile.* Mittheilungen aus dem Jahrbuch der Koeniglichen Ungarischen geologischen Reichsanstalt in Budapest. **5**: 19-363.

NEUMAYR M. 1871. *Jura Studien. Die Phylloceraten des Dogger und Malm*. Jahrbuch der Kaiserlich-Koniglichen Geologischen Reichsanstalt. Wien. **21**: 297-378.

NEUMAYR M. 1873. *Die Fauna der Schichten mit Aspidoceras acanthicum.* Abhandlungen der kaiserliche und koenigliche geologische Reichsanstalt. Wien. **5**(6): 141-257.

OLORIZ F. 1978. *Kimmeridgiense-Tithonico inferior en el Sector central de las Cordilleras Beticas (Zona subbetica). Paleontologia, Bioestratigrafia.* Tesis Doctoral Universidad Granada. **184**(1-2): 1-758.

PAVIA G., BENETTI A., MINETTI C. 1987. *Il Rosso Ammonitico dei Monti Lessini Veronesi (Italia NE). Faune ad Ammoniti e discontinuita stratigrafiche nel Kimmeridgiano inferiore*. Bolletino Societa Paleontologica Italiana. Modena. **26**(1-2): 63-92.

PREDA I. 1973. *Variaţiile de facies şi biostratigrafia Jurasicului superior din Munţii Hăghimaş*. Studii şi Cercetări de Geologie, Geografie şi Biologie. Seria Geologie Geografie. Piatra Neamţ. **2**: 11-21.

QUENSTEDT F. A. 1888. *Die Ammoniten des Schwabischen Jura. III. Der Weisse Jura.* E. Schweizerbart'sche Verlagshandlung: 817-1140.

SARTI C. 1986. *Considerazioni sul Rosso Ammonitico Veronese del Col santino (M. Pasubio) e raffronti con altre successioni del Trentino*. Atti I Convegno Int. F. E. A. Pergola. **84**: 63-66.

SARTI C. 1990. *Taxonomic revision of the Kimmeridgian (Upper Jurassic) genus Mesosimoceras (Ammonoidea) and institution of the new genus Presimoceras (Ammonitina, Idoceratinae).* Palaontologie Zeit. Suttgart. **64**(1/2): 39-35.

SARTI C. 1993. *Il Kimmeridgiano delle Prealpi Veneto-Trentine: fauna e biostratigrafia.* Memorie Museo Civico scienze Naturale Verona. Sezione Scienze della Terra. Verona. **5**: 1-144.

ZIEGLER B. 1959. *Idoceras und verwandte Ammoniten-Gattungen im Oberjura Schwabens*. Eclogae geologicae Helvetiae. Basel. **52**(1): 19-56.



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Received: April 29, 2010
Accepted: August 21, 2010

**PLATE 1**

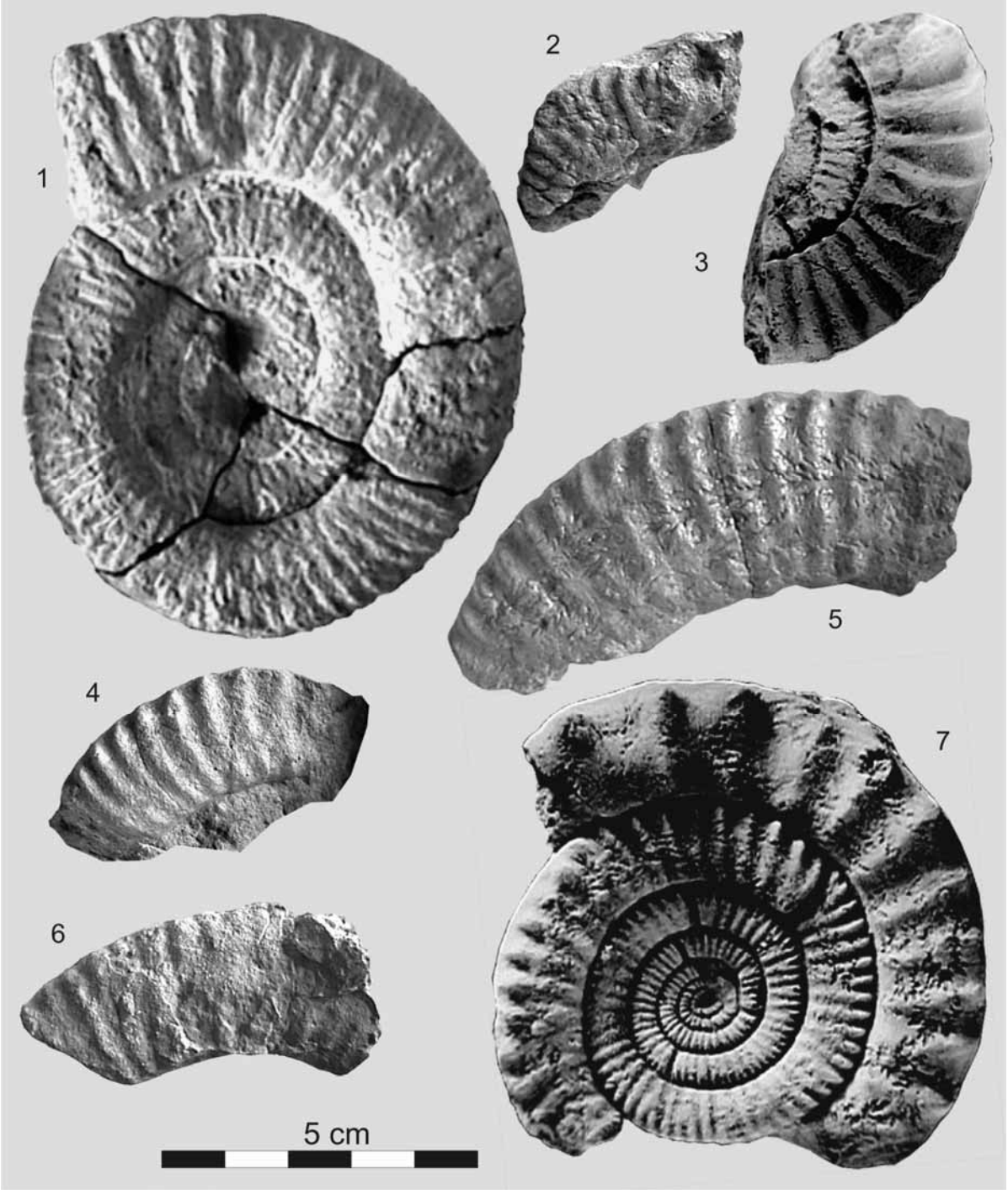


Figure 1. *Presimoceras ludovici* (CANAV.) (LRd39M0.3); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop (x 1). Figure 2. *Presimoceras* cf. *herbichi* (HAUER) (LRd55W5.0); red nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 3. *Presimoceras* cf. *planulacinctum* (QUENST.) (44MPN); green nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 4. *Presimoceras* cf. *herbichi* (HAUER) (LRd46A); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop (x 1). Figure 5. *Presimoceras ludovici* (CANAV.) (LRd58X5); green nodular limestone, Early Kimmeridgian – Divisum Zone, F2-Ghilcoş outcrop. Figure 6 (x 1). *Presimoceras* cf. *herbichi* (HAUER) (LRd64T1.0); green nodular limestone, Early Kimmeridgian – Divisum Zone, F1-Ghilcoş outcrop (x 1). Figure 7. *Presimoceras herbichi* (HAUER) (10MPN); green nodular limestone, Early Kimmeridgian – Divisum Zone; F2-Ghilcoş outcrop (x 1). (original).
Figura 1. *Presimoceras ludovici* (CANAV.) (LRd39M0,3); calc. nodulare verzui, Kimm. inf. - Zona Divisum, afl. F2 (x 1). Figura 2. *Presimoceras* cf. *herbichi* (HAUER) (LRd55W5,0); calcare nodulare rosii, Kimmeridgian inf. - Zona Divisum, afl. F1 (x 1). Figura 3. *Presimoceras* cf. *planulacinctum* (QUENST.) (44MPN); calc. nodulare rosii, Kimm. inf. -Zona Divisum, Ghilcoş (x 1). Figura 4. *Presimoceras* cf. *herbichi* (HAUER) (LRd46A); calcare nodulare verzui, Kimmeridgian inf. - Zona Divisum, afl. F2 (x 1)
Figura 5. *Presimoceras ludovici* (CANAV.) (LRd58X5); calcare nodulare verzui, Kimmeridgian inf. - Zona Divisum, afl. F2 (x 1).
Figura 6. *Presimoceras* cf. *herbichi* (HAUER) (LRd64T1,0); calc. nodulare rosii, Kimm. inf. - Zona Divisum, afl. F1 (x 1).
Figura 7. *Presimoceras herbichi* (HAUER) (10MPN); calcare nodulare verzui, Kimm. inferior - Zona Divisum; afl. F2-Ghilcoş (x 1).

**PLATE 2**

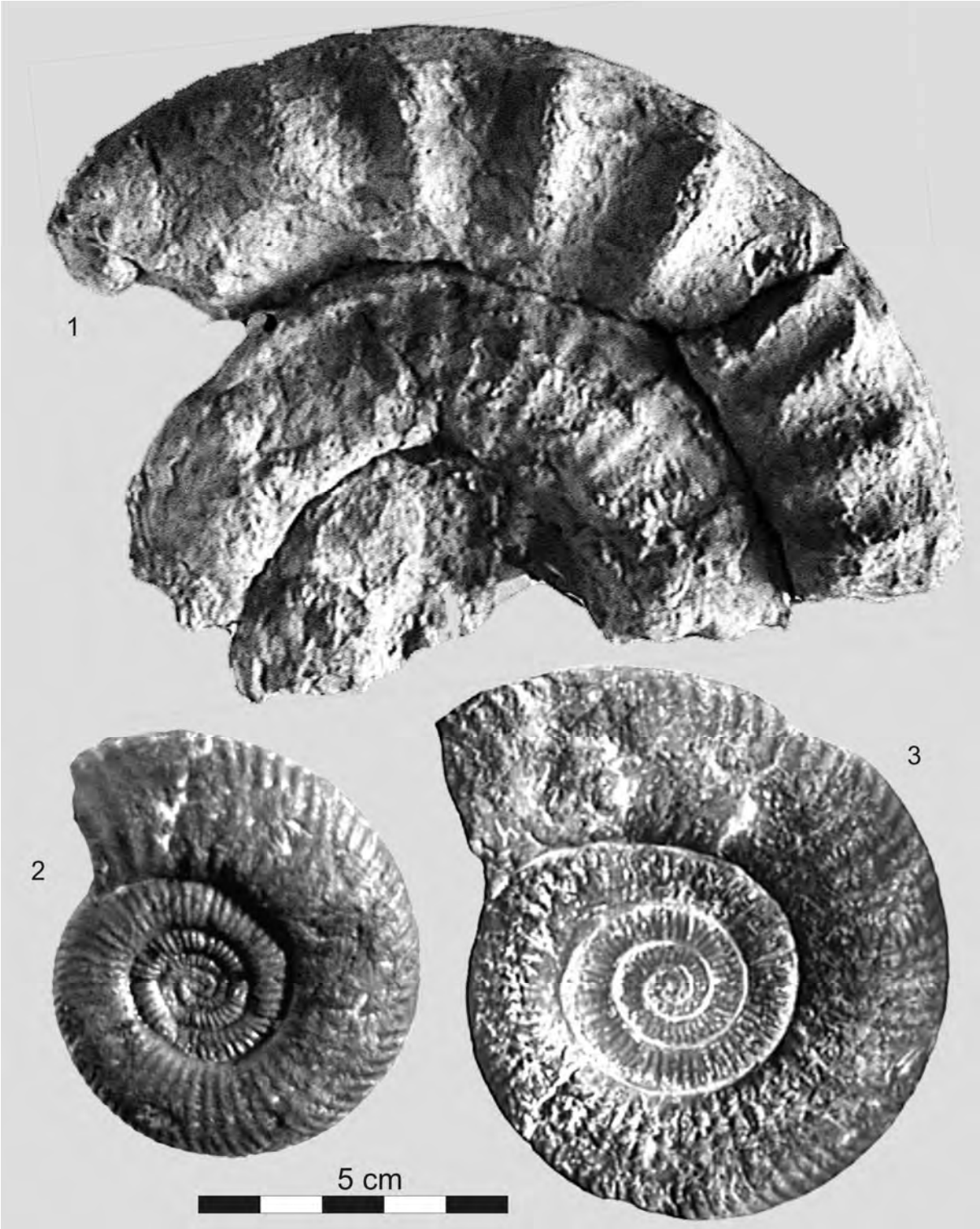


Figure 1. *Lessiniceras ptychodes* (NEUMAYR) (LRd2E2); green nodular limestone, Early Kimmeridgian – Hypselocyclum Zone (/Strombecki) (x 1), F2-Ghilcoş outcrop. Figure 2. *Lessiniceras raschii* (CANAVARI) (LRd3F6); green nodular limestone, Early Kimmeridgian - Hypselocyclum Zone (Strombecki, Raschi Subzone), F2-Ghilcoş outcrop (x 1). Figure 3. *Lessiniceras raschii* (CANAVARI) (Preda's specimen, 9bMPN); green nodular limestone, Early Kimmeridgian - Hypselocyclum Zone (/Strombecki), F2-Ghilcoş outcrop (x 1). (original).

Figura 1. *Lessiniceras ptychodes* (NEUMAYR) (LRd2E2); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (/Strombecki), afloriment F2-Ghilcoş (x 1). Figura 2. *Lessiniceras raschii* (CANAVARI) (LRd3F6); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (Strombecki, Subzona Raschi), afloriment F2-Ghilcoş (x 1). Figura 3. *Lessiniceras raschii* (CANAVARI) expl. Preda (9bMPN); calcare nodulare verzui, Kimmeridgian inferior - Zona Hypselocyclum (/Strombecki), afloriment F2-Ghilcoş (x 1).