

## ON THE FORAMINIFERAL GENERA *SCYTHIOLINA* AND *HISTEROLINA* (NEAGU, 2000)

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**Abstract.** The genera *Scythiolina* and *Histerolina* described from the lowermost Cretaceous of Dobrogea (Romania) have very similar morphological and structural characteristics. The extremely rich population from which the species of the two genera were described presents a morphological continuum of conical, ellipso-conical, to slightly flabelliform forms. The other structural characteristics (e.g., presence of beams and sporadic rafters in the late ontogenetic stage) are practically identical. This leads me to infer that we are dealing with a single genus, *Scythiolina* having priority. In addition, detailed observations in thin sections of the original material have shown that the test wall has a microgranular structure and not finely canalliculate („pseudokeriothecal”) as specified in the original description. As such, an emended diagnosis for the genus *Scythiolina* is presented, and for the type species, *Scythiolina flabellii*.

**Keywords:** Benthic foraminifera, wall structure, taxonomy, emendation, lowermost Cretaceous

### INTRODUCTION

The carbonate deposits of the Tethyan lowermost Cretaceous (Berriasian-Valanginian) contain rich associations of cuneolinid benthic foraminifera, some of which are of biostratigraphic importance (Granier, 2019; Bucur et al., 2020, and references therein). Neagu (2000) described a rich association of benthic foraminifera attributed to two new genera of cuneolinids: *Scythiolina* and *Histerolina*, from the Berriasian-Valanginian of South Dobrogea (SE Romania). In this note I present some remarks on the two genera, based on observations made on the topotype material and on numerous specimens observed in thin sections through limestones of the lowermost Cretaceous of the Dâmbovicioara region (Southern Carpathians).

### PALEONTOLOGICAL REMARKS

Neagu (2000, p.366 and p. 369 respectively) gave the following descriptions for the two genera:

Genus *Scythiolina* Neagu 2000

Type species: *Scythiolina flabellii*, Neagu, 2000

**Description.** „Test free, small, smooth to slightly rough, flattened, flabelliform, triangular to elongated-triangular in outline. Early stage coiled in a very short planispiral with 3-5 chambers in the plane of biseriality. Primary chambers arched and broader than high. Aperture arched, slightly depressed. Wall comprised of a very thin compact epidermal layer and a thicker reticulate hypodermal layer. Interior of the primary chambers divided by vertical-radial septula into small rectangular chamberlets. Aperture an interiomarginal slit. The apertural face of the last two chambers with a pronounced convex shape (to the larger specimens the aperture might become crenellate but is never a row of apertural pores)”.

Genus *Histerolina* Neagu 2000

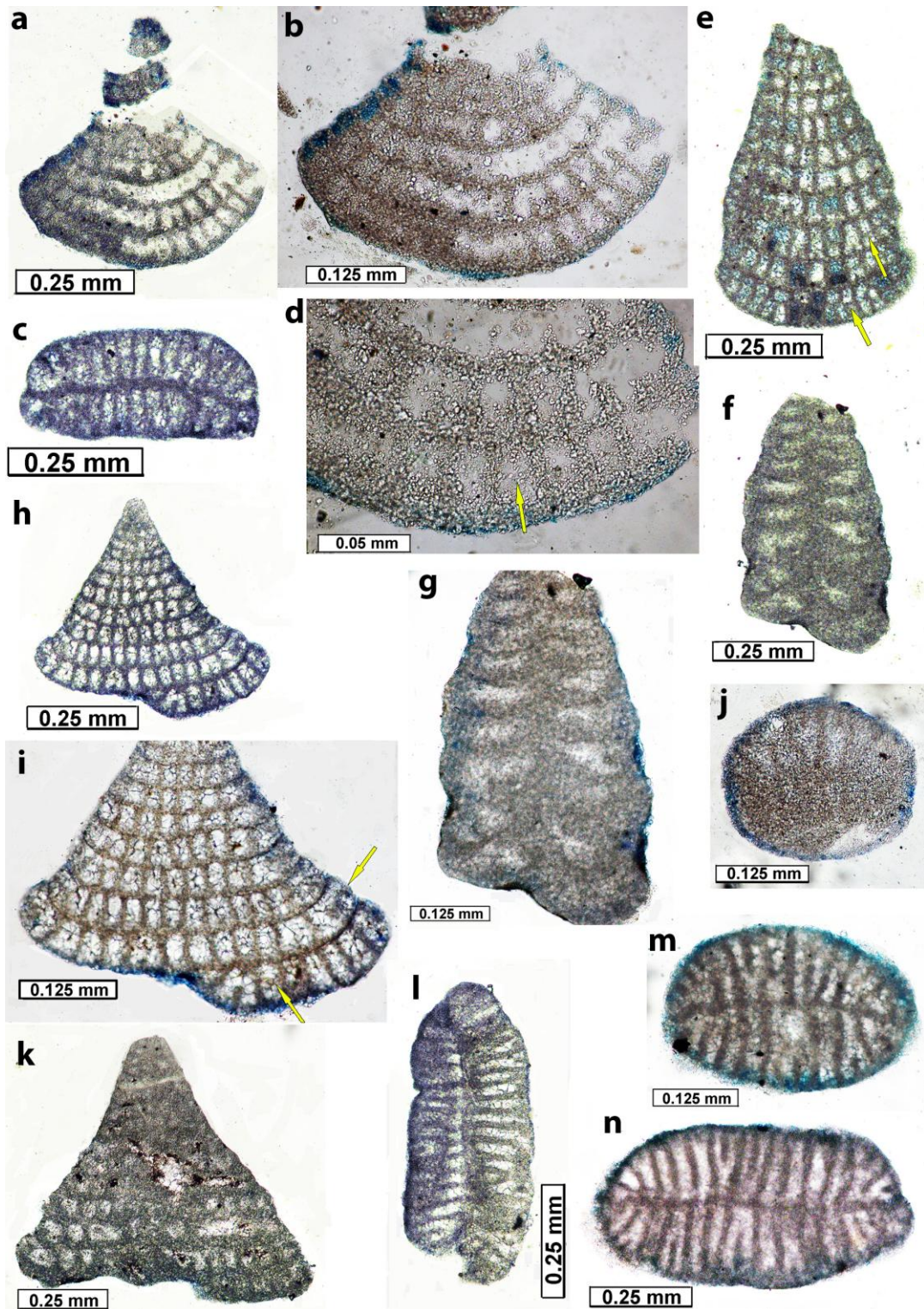
Type species: *Histerolina pileiformae* Neagu, 2000

**Description.** „Test small, smooth to weakly rough, conical to ellipso-conical, never flattened. Early stage very short with 3-5 planispiral chambers. Sutures weakly depressed and arcuate. Wall structure of the test presents an epidermal thin, compact layer and a thicker reticulate hypodermal one. The apertural face of the last two chambers presents a clear flat-concave shape with an external acute periphery. The interior of the primary chambers is subdivided by radial-vertical septula into rectangular chamberlets. Aperture interiomarginal, a simple elongated slit becoming crenelated in larger specimens but never as a basal row of pores”.

In the remarks that follow the two descriptions, Neagu (2000) compared *Scythiolina* with the genus *Cuneolina*, from which it should differ by the structure of the initial stage (planispiral), the smaller size and the absence of horizontal septa. The genus *Histerolina* was in turn compared with *Pseudotextulariella salevensis* Charollais et al., 1966, from which it should differ by the structure of the initial stage, the wall structure and the vertical-radial septa, and with the genus *Montsalevia* Zaninetti et al., 1987, from which it should differ by the structure of the initial stage and the wall structure. Following Neagu (2000), the genus *Histerolina* differs from the genus *Scythiolina* “by the general conical or ellipso-conical shape of the test (never flattened) and by the flat-concave apertural face with an acute peripheral margin”. However, the type species of the genus *Histerolina* (*H. pileiformae*) presents a test visibly compressed in the plane of biseriality (evidently flattened; see Text-Fig.3, and plate 7, figs. 25, 28, and 31 of Neagu 2000). Moreover, in Fig. 3 (Neagu, 2000) which illustrates species of the genus *Histerolina*, there is a morphological variation from conical forms (Fig. 3E to H) to flattened

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**Fig. 1.** Thin sections of some specimens of *Scythiolina* and *Histerolina* illustrated by Neagu (2000, pl. 7). **a-d.** *Scythiolina flabelii* Neagu (figs. 1 and 5 in pl. 7, Neagu, 2000). **a, b, d**, longitudinal section; **c**, cross section. Close-up view in **b** and **d** showing the microcrystalline structure of the wall. Arrow in **d** points to a small horizontal septula (rafter). **e.** *Scythiolina cuneata* Neagu (fig. 18 in pl. 7, Neagu, 2000). Longitudinal section. Arrows point to small rafts. **f-g.** *Scythiolina camposaurii* (Sartoni & Crescenti) (fig. 8 in pl. 7, Neagu, 2000). Sagittal (subaxial) section. Close-up view in **g** showing the microcrystalline structure of the wall. **h-i.** *Scythiolina cuneata* Neagu (fig. 16 in pl. 7, Neagu, 2000). Longitudinal section. The arrows in **i** point to the small rafts. **j.** *Scythiolina paxilliformae* (Neagu) nov. comb. (fig. 37 in pl. 7, Neagu, 2000 as *Histerolina paxilliformae*). Note the circular outline of the cross section. **k, l, n.** *Scythiolina pileiformae* (Neagu) nov. comb. (figs. 29, 25 and 31 respectively in pl. 7, Neagu, 2000 as *Histerolina pileiformae*). Note the flattened aspect of the cross sections in **l** and **n**. **m.** *Scythiolina ellipsiformae* (Neagu) nov. comb. (fig. 43 in pl. 7, Neagu, 2000 as *Histerolina ellipsiformae*). Note the elliptical outline of the cross section.

forms (Fig. 3A-D) contrary to what Neagu specified in the description.

#### FURTHER REMARKS

The observations made on the numerous topotype specimens in the Th. Neagu collection from the Paleontology Laboratory of the University of Bucharest, as well as on numerous specimens examined in thin sections from the upper Berriasian limestones of the Dâmbovicioara area (e.g., Grădinaru et al., 2016), leads to the following remarks:

1. There is a morphological continuum, from conical specimens, to ellipsoidal-conical to conical-flattened. Contrary to the statement of Neagu (2000, p. 369), specimens attributed to the genus *Histerolina* have a elliptical to elliptical-flattened cross section which would characterize the genus *Scythiolina* (e.g. figs. 25, 28 and 31 in pl. 7, Neagu, 2000; **1** and **n** in Fig. 1 of the present note).

2. The morphology of the apertural face varies from slightly convex to flat, to slightly concave.

3. The test wall is not composed of two layers, a thin epidermal layer and a thicker reticulate hypodermal layer. As shown by the thin sections made by Neagu himself from topotype specimens (Pl. 7 in Neagu, 2000; Fig. 1, in the present note), as well as the numerous specimens observed in thin sections through the limestones of the lowermost Cretaceous in the Dâmbovicioara area (e.g., Fig. 2 in the present note), both the specimens assigned to the genus *Scythiolina* and those assigned to the genus *Histerolina* have a homogeneous microgranular, non-reticulated (respectively non-canalculated) calcareous wall.

4. The last chambers frequently present short horizontal septa (e.g., figs. 18, 23, 34 of plate 7 in Neagu, 2000; Figs. 1 and 2 in the present note) contradicting the statement of Neagu, 2000, p. 366).

Based on these observations, I propose the following:

1. The specimens assigned to the two genera actually belong to a single genus. Priority in this case is given to the genus *Scythiolina*, the first described in the work by Neagu (2000, p. 366).

2. The morphological variation, as well as the lack of the reticulate (canalculated) structure of the test wall, make necessary the following emended diagnosis of the genus *Scythiolina* and the type species, *Scythiolina flabelii*.

#### **Emended diagnosis of the genus *Scythiolina*, Neagu 2000:**

Test free, small, smooth to slightly rough, conical, ellipso-conical to slightly flattened. Early stage very short with 3-5 planspiral chambers. Wall calcareous, microgranular. The interior of the chambers subdivided by radial-vertical septula (beams) into rectangular

chamberlets. Short horizontal septula (rafters) are present in the marginal zone of the last chambers. Aperture an interiomarginal slit.

#### **Emended diagnosis of the type species, *Scythiolina flabelii* Neagu 2000:**

Test small, free, flattened, flabelliform. Early stage very short and planspiral with 3-5 chambers; early part of the biserial stage with a conical-elliptical shape from which chambers become gradually flattened and progressively more arched to crescentic, lower than broad. Sutures weakly depressed. Apertural face of the last two chambers convex with a rounded external periphery. Aperture a low interiomarginal slit. Wall calcareous, microgranular. Interior of the chambers divided by vertical-radial septula (beams) into rectangular chamberlets. Small horizontal septula (rafters) in the last chambers.

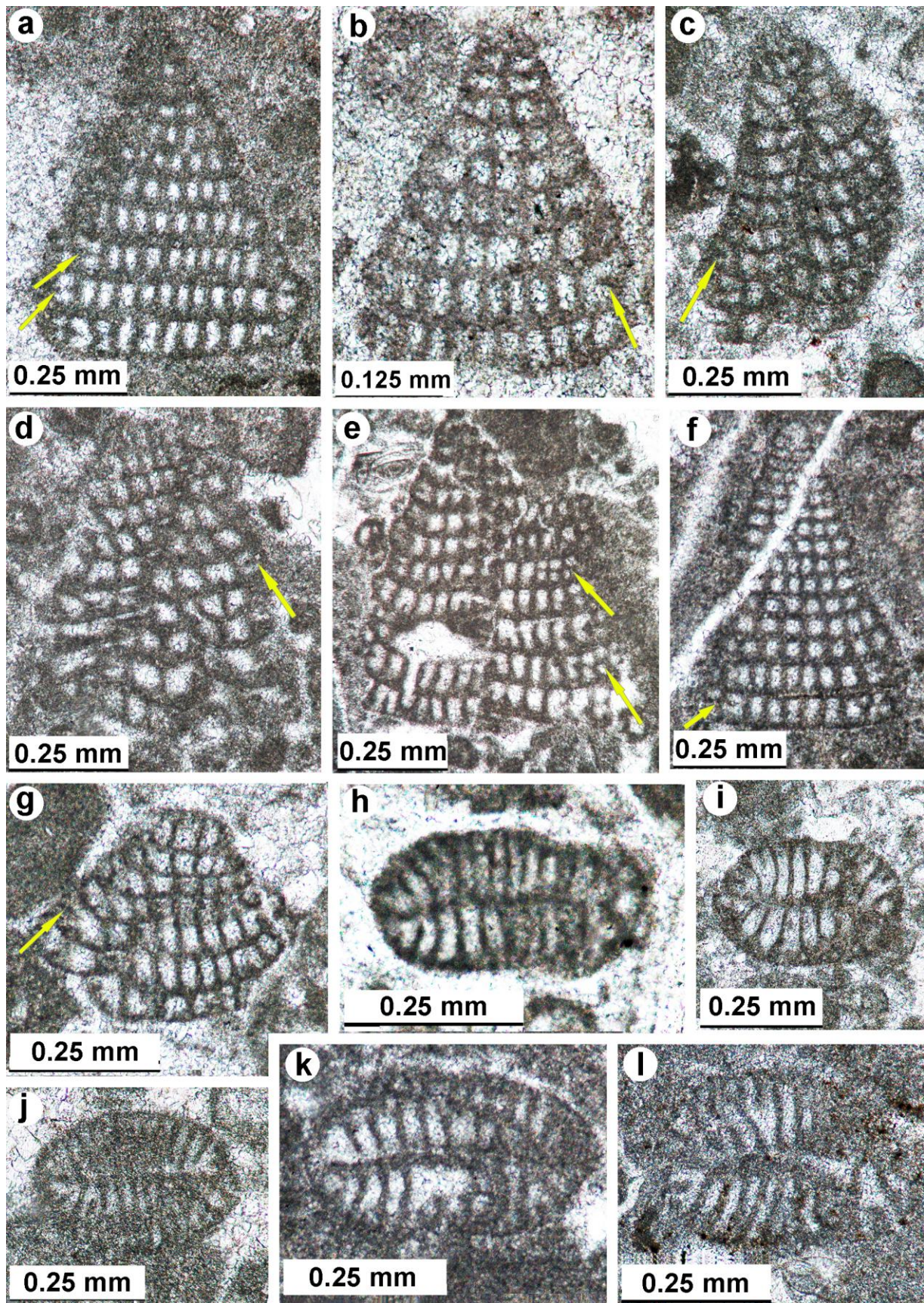
The diagnoses (descriptions) of all cuneolinid species described by Neagu (2000) necessitate an emendation referring to the wall structure (microgranular instead reticulate) and the presence of small horizontal partitions in the last chambers. Comparisons with all other cuneolinid genera would be necessary, but it is not the aim of this note. However, a short comparison with *Cuneolina* d'Orbigny 1939, and *Vercorsella* Arnaud Vanneau 1980 would be necessary. The genus *Scythiolina* Neagu 2000 emend differs from both genera *Cuneolina* and *Vercorsella* by the structure of its aperture: an interiomarginal slit in *Scythiolina* versus a row of pores at the base of the septal face in *Cuneolina* and *Vercorsella* (e.g. Arnaud-Vanneau & Slitter, 1995; Simmons et al., 2025). It is worth mentioning however that the closest genus is *Montsalevia* Zaninetti et al., the differences consisting in the smaller general dimensions and the total absence of horizontal partitions (rafters) in the latter genus.

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**Fig. 2.** *Scythiolina* specimens from the lowermost Cretaceous (upper Berriasian) of the Dâmbovicioara zone (Southern Carpathians, Romania). **a, b, f.** Longitudinal sections; **c-e, g.** Sub-sagittal (sub-axial) sections; **h-l.** Cross sections. Note the microcrystalline structure of the wall in all specimens. Arrows in **a** to **g** in pl. 7 point to the small rafters. **a**, thin section 12825; **b**, thin section 14207; **c**, thin section 12206; **d-f, k**, thin section 12824(5); **g**, thin section 14204; **h**, thin section 14165; **i**, thin section 12318; **j, l**, thin section 12562(3).

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