

**Discussion of: Problems in the identity of
"Crioceras" barremense KILIAN, 1895
(Ancyloceratida, Late Barremian), and their proposed resolution,
by D. BERT et alii (CG2010_A01)**

[Alternative title: The nomenclatural status and
the acceptation of the genus *Barrancyloceras* VERMEULEN, 2000,
and of its type species]

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Abstract: This work is a reply to the paper of BERT et alii (2010) who contested the validity of the genus *Barrancyloceras* and its type species. The answers and precisions brought up herein deal with:

- the nomenclatural status of *Barrancyloceras barremense* (KILIAN, 1895);
- the nomenclatural status of the genus *Barrancyloceras* VERMEULEN, 2000;
- the understanding of the species *Barrancyloceras barremense* (KILIAN, 1895);
- the value, as a subzone index species of subzone, of *Barrancyloceras barremense* and *B. alpinum*.

Key Words: Hemihoplitidae; *Barrancyloceras*; Upper Barremian.

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Résumé : Discussion sur : Le problème de l'identité de "Crioceras" barremense KILIAN, 1895 (Ancyloceratida, Barrémien supérieur), et ses possibles solutions, par D. BERT et alii (CG2010_A01) [Titre alternatif : Le statut nomenclatural et la compréhension du genre *Barrancyloceras* VERMEULEN, 2000, et de son espèce-type].- Ce travail est une réponse au travail de BERT et alii (2010) qui ont discuté la validité du genre *Barrancyloceras* et de son espèce-type. Les réponses et précisions apportées ici concernent :

- le statut nomenclatural de *Barrancyloceras barremense* KILIAN, 1895 ;
- le statut nomenclatural du genre *Barrancyloceras* VERMEULEN, 2000 ;
- la compréhension de l'espèce *Barrancyloceras barremense* (KILIAN, 1895) ;
- la valeur, en tant qu'espèces-index de sous-zone, de *Barrancyloceras barremense* et de *B. alpinum*.

Mots-Clefs : Hemihoplitidae; *Barrancyloceras*; Barrémien supérieur.

Introduction

The nomenclatural validity of the genus *Barrancyloceras* VERMEULEN, 2000, and its species-type, *Barrancyloceras barremense* KILIAN, 1895, has been recently questioned by BERT et alii (2010). On the basis of a careful examination, I believe that the arguments exposed by these authors are obviously either invalid or not accurate. The aim of this paper is to bring new light and precisions on the nomenclatural status of the concerned taxa. Besides, connected topics will be discussed such as the identity and understanding of *Barrancyloceras barremense*, and the value, as biostratigraphical index species, of *B. barremense* and *B. alpinum*.

1. The nomenclatural status of the species *barremense* (KILIAN, 1895)

BERT et alii (2010, p. 1) recommend that "the use of the species "Crioceras" barremense be avoided, in particular as an index species, along with that of the genus *Barrancyloceras* VERMEULEN for which "C." barremense is used as reference". In order to understand better the nomenclatural status of the species *barremense* KILIAN, 1895, and, consequently the nomenclatural status of the genus *Barrancyloceras* VERMEULEN, 2000, it is necessary to follow step by step, including comments, the successive stages of the original story of this species.

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1888 (1887): UHLIG describes, compares and illustrates (1887, p. 95, Pl. IV, fig. 3.a, b, c), under the name "*Crioceras* sp. ind. aff. *Römeri* NEUM. UHL.", a specimen of the KLIPSTEIN's collection from Gardenazza. In agreement with the original designation, this specimen is left by its author in open nomenclature.

1895: In the report of an excursion from Barême to Blieux and Castellane, close to the hamlet La Maurelière, ZÜRCHER (1895, p. 905) mentions, among the collected material, "*Crioceras barremense* KILIAN [= *Crioc.* n. sp. aff. *Roemeri* UHLIG (Gardenazza)]". At this time, this specimen which, according to ZÜRCHER, was identified by KILIAN, is thus referred only to that of UHLIG (1887, Pl. IV, fig. 3.a, b, c).

1896 (1895): In a work dealing with the Neocomian of the vicinity of Moustiers Sainte-Marie (locality Nauvin) located in the department of Basses-Alpes), KILIAN and LEENHARDT (1895, p. 978) list among the collected species (translation): "*Crioceras barremense* KILIAN (species of the group of *Cr. hammatoptychum* N. et UHLIG and *Roemeri* N. et UHLIG). This species, that would be of interest to fully describe, was illustrated under the name *Cr. ind. aff. Roemeri* by Mr. UHLIG (Gardenazza, Pl. IV, fig. 3). It also occurs at Blieux". Such an unquestionable reference to the work of UHLIG implies that the specimen described, compared and illustrated by this author (1887, p. 95, Pl. IV, fig. 3.a, b, c) represents *Crioceras barremense* KILIAN, 1895, by the reference of KILIAN to the work of UHLIG. In the work of KLEIN *et alii* (2007) to which I contributed with, among others, BUSNARDO and DELANOY, this reference is regarded as an original designation.

1899: SIMIONESCU briefly describes and illustrates two specimens (1899, p. 488, Pl. 1, figs. 4-5), under the name *Crioceras barremense* KIL. Following the original concept, this author indicates, without ambiguity, the specimen of UHLIG as the type of *Crioceras barremense* KIL. (translation): "the type of this species was illustrated by Mr. UHLIG under the name *Crioc. ind. aff. Roemeri*" and quotes, by a bibliographical reference in an infrapaginal note, the work of UHLIG "1887, Pl. IV, fig. 3".

The original specimen of UHLIG (1887, p. 95, Pl. IV, fig. 3.a, b, c) is thus the lectotype (KILIAN & LEENHARDT, 1895; SIMIONESCU, 1899) of the species *Crioceras barremense* KILIAN, 1895, and the type locality of this species is Gardenazza (Tyrol). There is no need to establish the identity of KILIAN's species by new collections at Nauvin for it is not the type locality.

2. The nomenclatural status of the genus *Barrancyloceras* VERMEULEN, 2000

1998: VERMEULEN and BERT introduce the genus *Barrancyloceras* with *Barrancyloceras barremense* (KILIAN, 1895) as its type species. *Bar-*

rancyloceras hoheneggeri (UHLIG, 1883), *Barrancyloceras hammatoptychum* (UHLIG, 1883), *Barrancyloceras klipsteini* (UHLIG, 1887) and *Barrancyloceras bailense* (VERMEULEN, 1996) are also included in this genus. At this date, this genus is a *nomen nudum* (KLEIN *et alii*, 2007, p. 223) because the distinctive criteria, according to article 13.1.1. of the I.C.Z.N. code, are not specified.

2000: VERMEULEN (2000, p. 127) gave the diagnosis of the genus *Barrancyloceras* and thus validates the nomenclatural status, as specified by KLEIN *et alii* (2007, p. 223) specify it.

2007: VERMEULEN and LAZARIN (2007, p. 33) carried out the first revision of the type species, *Barrancyloceras barremense* (KILIAN, 1895), by providing an emendation of the original diagnosis, including new precisions. Because the lack of all original syntype, later confirmed by BERT *et alii* (2010), these authors describe a neotype.

Some of the arguments brought up by BERT *et alii* (2010) regarding the validity of this neotype are subject to discussion:

- the article n° 75 of the I.C.Z.N. codes recommends preliminary contacts before designation of a neotype. This article, even not applicable to the current situation, was respected by a preliminary a priori advertisement and illustration of that standard specimen in a publication (VERMEULEN, 2005);
- in the case of a priori advertisement, the article 75 of the I.C.Z.N. code does not invalidate the specimen priori indicated, contrary to what is affirmed by BERT *et alii* (2010, p. 5-6), but only the designation;
- currently, some species with tripartite coiling can be maintained in the genus *Barrancyloceras* VERMEULEN, 2000, with a status of peripheral taxa, by their characteristics ornaments of the spire; they also must be maintained in this genus by the fact that no new characteristic taxa, of generic and of specific rank, were ever described or figured to accommodate these forms with whorl, shaft, bend and retroversum;
- the genus *Barrancyloceras* VERMEULEN, 2000, whose type is clearly defined and definition respects the articles of the I.C.Z.N. code, is a valid genus.

3. The acceptance of *Barrancyloceras barremense* KILIAN, 1895

Regarding the identity and the acceptance of *Barrancyloceras barremense*, new comments are to be put forward. Despite what was affirmed by BERT *et alii* (2010, p. 6):

- the neotype described by VERMEULEN and LAZARIN (2007) is a little more robust than the specimen drawn by UHLIG (1887, Pl. IV, fig. 3a) however its youngest part show the

- same ornamentation, the same regular alternation of intermediate ribs/main ribs, the same stage of appearance of the intermediate ribs and, at about 90 mm of diameter, the same ratio intermediate ribs/main ribs as well as a very close ratio intercalary ribs/main ribs. These similarities imply that the two specimens are conspecific.
- the cross-section of the neotype is (VERMEULEN & LAZARIN, 2007, p. 35, translation): "angular on the principal and intermediate ribs, in particular on the last whorl, and ellipsoidal on the intercalated ribs and in the furrows between the ribs". This is in agreement with the original figure of UHLIG (1887) who also described an oblong section in the text.
 - the specific characters of *Barrancyloceras barremense* were fixed by the first revisers (VERMEULEN & LAZARIN, 2007) in accordance with articles 12 and 24 of the I.C.Z.N. code;
 - the original specimen of UHLIG (1887, Pl. IV, fig. 3), by its dimensions and ratios is closer to the neotype described and illustrated by VERMEULEN & LAZARIN (2007) than the holotype of *Pseudoshasticrioceras bersaci* (BERT et alii, 2010, p. 4, table 1). Similarly, the ornamentation of *Pseudoshasticrioceras bersaci* does not match that of UHLIG's original figure;
 - the very regular alternation between the main trituberculated ribs, bituberculated intermediate ribs and non tuberculated intercalated ribs, is an exclusive character of *Barrancyloceras barremense* photograph and neotype; these peculiar ornamental features, regular and well developed on the last known whorl of this species, are not found in any other species nor in specimens with similar ribbing;
 - the section of the whorl, the trituberculation which persists at least until approximately thirty millimetres height of whorl without sign of weakening (UHLIG, 1887, Pl. IV, fig. 3), the regular distribution of main trituberculated ribs, bituberculated intermediate ribs and non tuberculated intercalated ribs, imply that *Barrancyloceras barremense*, differs significantly from all the species of the genus *Camereiceras* and *Pseudoshasticrioceras*, contrary to what is affirmed by BERT et alii (2010).
 - trying to prove the possible classification of *Barrancyloceras barremense* in both the genera *Camereiceras* and *Pseudoshasticrioceras*, BERT et alii (2010) rather points out that the generic characters of these two genera are ill-defined.

Starting from another remark of these authors, I must specify: if *Leroyceras mascarellii* (VERMEULEN, 2005) is a junior synonym of "*Gassendiceras*" *alpinum* (d'ORBIGNY, 1850), as indicated by BERT et alii (2010), then the genus

Leroyceras VERMEULEN, 2006, is a senior synonym of "*Gassendiceras*" BERT, 2006. Obviously, synonymy *Leroyceras mascarellii* - *Barrancyloceras alpinum* is irrelevant, because these two species differ significantly by the respective ontogenetic developments of their ornamentation, very different one from the other.

4. The biostratigraphical value of *Barrancyloceras barremense* and *B. alpinum*

BUSNARDO (1984), who also co-authors the work of BERT et alii (2010), introduced *Barrancyloceras barremense*, then based on a broad understanding and needing revision, as a zonal index species. Later on, this species was revised by VERMEULEN & LAZARIN (2007), leading to a better understanding of this taxon. It is clear that *Barrancyloceras barremense* is not a good index-species, not because of the difficulty of its identification, as suggested by BERT et alii (2010), but mainly by its scarcity during its acmeic phase. *Barrancyloceras alpinum* too was revised by VERMEULEN & LAZARIN (2007), but this species, if we take into account the specific characters highlighted by these two authors, is also rare and its broad understanding will place it, as an index species, in the same case as the broad understanding of *Barrancyloceras barremense* in the eighties.

Pending the discovery of a better index species, *Barrancyloceras alpinum* can be used instead of *Barrancyloceras barremense*, but the precise origin, the mother species, the geographical distribution and the precise stratigraphical range, of the d'ORBIGNY's species are not known and for these reasons it is not a so good index as BERT et alii (2010) write.

Conclusion

The points herein discussed show:

- the valid nomenclatural status of the genus *Barrancyloceras* VERMEULEN, 2000;
- the valid nomenclatural status of *Barrancyloceras barremense* KILIAN, 1895.

They confirm also the poor value of *Barrancyloceras barremense* as index-species and the poor value of *Barrancyloceras alpinum* for the same use.

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