

The Ravin de la Coueste section (Digne, SE France): proposed location for the GSSP of the Upper Bajocian basal boundary

Giulio PAVIA¹

Thirty years since the informal proposal for the Global Stratotype Section and Point of the Upper Bajocian Substage to be fixed in the Ravin de la Coueste section at Bed 281 (Dietl, Pavia, 1994), it appears time to go back to that definition, accepting recommendations of the Jurassic Subcommittee to standardize the Substage GSSPs (*e.g.*, Morton, 2003; Meister, 2007). In this regard, the recent paper by Pavia and Zunino (2012) gives a definitive contribution to confirm and fix the biostratigraphy on which the Upper Bajocian GSSP may be defined.

The thick Middle Jurassic “Marno-calcaires à *Cancellophycus*” Formation of the Subalpine Basin (southeastern France) has been known for the past century and considered (*e.g.* Arkell, 1956) as the best record to be used as a tool for any (chrono)stratigraphic purpose. Actually, the rich ammonite assemblages and their distribution in the continuous, cyclic limestone-marl alternation offer the ideal condition to produce a reference biostratigraphy, particularly for the middle and upper parts of the Bajocian Stage. The value of that ammonite record is enhanced by the high correlation potential due to the co-occurrence of biota belonging to different Tethyan palaeobioprovinces, and to the central position of the Subalpine Basin within the Tethyan Realm and in connection with the mid-Jurassic of the East Pacific Realm via the Central Atlantic.

Pavia and Zunino’s paper (2012) describes the ammonite record at the transition from Lower to Upper Bajocian based on correlated sections of Ravin du Feston, Les Dourbes, and Ravin de la Coueste, which have been fully documented in the past by Pavia (1973, 1983). The ammonite distribution is reported in a composite biostratigraphic log based on selected ammonite groups useful for biozonal characterization (Fig. 1).

Distribution of taxa shows a large renewal of the Ammonitida assemblages at the passage from the uppermost Humphriesianum to the lowermost Niortense zones. In particular, this stratigraphic interval registers the decline of Stephanoceratinae, which predominated in most of the Lower Bajocian, and their replacement by Leptosphinctinae, stem group of the superfamily Perisphinctoidea, beginning from final Early Bajocian. The transition from Humphriesianum to Niortense zones is particularly marked by the biostratigraphic sequence of the peculiar macroconch taxon *Caumontisphinctes*, with its microconch counterpart *Infraparkinsonia*, whose allocation within Stephanoceratidae is supposed due to the phyletic relationship with the genus *Phaulostephanus*.

The Digne succession clearly documents the *Caumontisphinctes* evolutionary lineage. Many taxa follow one another in rapid succession from the dimorphic *C. garnieri* which represents the onset of the genus, especially in the Subalpine Basin. The next dimorphic species is *C. diniensis*, directly derived from the former as already supposed by Pavia (1973) and by Dietl (1980). Subsequent taxa are well known from previously published work and mark ammonite biohorizons and subzones within the Niortense Zone.

¹ Dipartimento di Scienze della Terra, Torino University

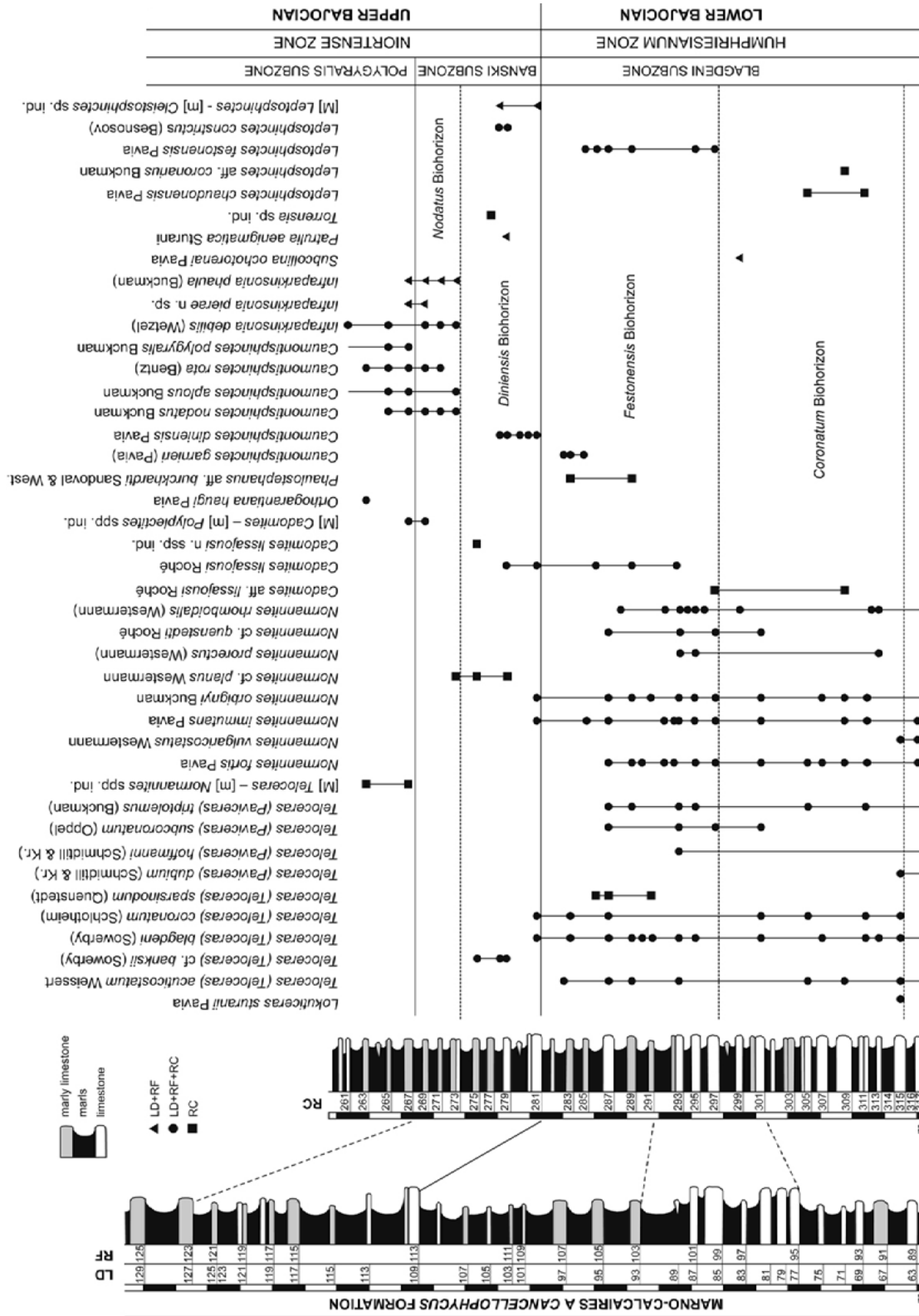


Fig. 1. Composite biostratigraphic data at the Lower to Upper Bajocian transition based on the Ravin du Feston (RF), Les Dourbes (LD) and Ravin de la Coueste (RC) sections, restricted to Stephanoceratidae, Leptosphinctinae and connected taxa



Fig. 2. Beds at the Lower/Upper Bajocian boundary in the Ravin de la Coueste section. Bed RC-281 marks the lower boundary of the Banksi Subzone, at the base of the Niortense Zone; it is proposed as the GSSP of the Upper Bajocian Substage. Bed RC-267 marks the lower boundary of the Polygyralis Subzone

The small square in the upper-right corner locates a car parked at the side of the road Chaudon-Norante, 500 m far from the outcrop. Easy accessibility is one of the IUGS requirements for GSSP proposal

The first occurrence of *Caumontisphinctes diniensis* [M]+[m] at Bed 281 of the Ravin de la Coueste section (and equivalent beds from the other sections described at Digne) is confirmed as the marker taxon of the base of the Niortense Zone, thus of the Upper Bajocian Substage. At present, the species (or rather, the *Diniensis* biohorizon) is known within the western Tethyan Subrealm, from the Submediterranean (Southern Germany: Dietl, 1980) and the NW European provinces (Dorset, England: Parsons, 1976). Data from the Iberian Range (Fernández-López, 1985) and from the northeastern Tethyan border (Besnosov & Mitta, 1998) increase the correlation potential.

In conclusion, the continuous lithostratigraphic succession without discontinuities, the abundance of fossils sufficiently preserved to be identifiable, the homogeneous preservation of fossils testifying re sedimentation (preburial reworking) without any reelaboration confirm the suitability of the Ravin de la Coueste section to support the proposal of Upper Bajocian GSSP, that would be fixed at Bed 281 of that section (Fig. 2). Overall, the degree of documentation satisfies a large part of the requirements of the International Commission on Stratigraphy for GSSP formalisation. Nevertheless further data are expected from investigation on microfossil biostratigraphy, chemostratigraphy, and cyclostratigraphy, apart from magnetostratigraphy that does not work in the whole Mesozoic successions due to demagnetisation processes.

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