

DISCUSSION — COMMENT

Comment on “Calpionellid distribution and microfacies across the Jurassic/Cretaceous boundary in western Cuba (Sierra de los Órganos)” by López-Martínez et al. (2013)

ANDRZEJ PSZCZÓLKOWSKI

Institute of Geological Sciences, Polish Academy of Sciences, Warszawa
Present address: Mozarta 6, 02-736 Warszawa, Poland; pszczolkowski@yahoo.com

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The paper by López-Martínez et al. (2013) is a new contribution to the microfossil stratigraphy of the Tithonian-Berriasian limestones in the Los Órganos Succession (Pinar del Río Province, western Cuba). This is the result of a detailed (“bed-by-bed”) study of one section (San Vicente) located in the north-eastern part of the Sierra de los Órganos belt (western Cuba). The description of the El Americano Member (Tithonian-Berriasian, *pro parte*) is extremely concise, being limited to two sentences, only (López-Martínez et al. 2013), probably because this unit was previously characterized in various publications (Houša & Nuez 1972; Pszczółkowski 1978; Myczyński & Pszczółkowski 1990; Pszczółkowski 1999; Cobiella-Reguera & Olóriz 2009; Pszczółkowski & Myczyński 2010; Iturralde-Vinent & Pszczółkowski 2011). However, in this way the authors have omitted some important features of the El Americano Member. In the type section, the El Americano Member deposits were described as dark-grey to black limestones with ammonites (Houša & Nuez 1972).

Unfortunately, Figure 3 (López-Martínez et al. 2013) contains a serious error as the authors claim that it shows “*Calpionellid and ammonite biostratigraphy of the Rancho San Vicente section according to Pszczółkowski & Myczyński (2010)*”. In fact, such a figure does not exist in the cited paper. If Figure 3 of López-Martínez et al. (2013) was extracted from Figure 2 in Pszczółkowski & Myczyński (2010), it should not be restricted to the “Rancho San Vicente section”, as it presents the stratigraphic position of the Guaniguanico units in general, in the Los Órganos and Rosario successions. The upper part of the San Vicente section is shown in Figure 10 (Pszczółkowski & Myczyński 2010), but it contains biostratigraphic data on the Upper Berriasian and Lower Valanginian limestones, only.

The results of the study by López-Martínez et al. (2013) include some claims and conclusions that are certainly acceptable and others which are not convincing. Only a few items can be considered here. The authors do not mention, that at San Vicente the age of the basal part of the bedded limestones named “the Artemisa Formation”, later included in the El Americano Member of the Guasasa Formation, was identified by Pop (1976, fig. 4) as Upper Tithonian (*Crassicollaria*

Zone). Therefore, the Late Tithonian age of the boundary between the San Vicente and El Americano members in the San Vicente section was known after 1976. The new data of López-Martínez et al. (2013) allow us to refine the stratigraphic position of the basal limestones of the El Americano Member in the San Vicente section as the Boneti Subzone of the *Chitinoidea* Zone (Upper Tithonian). However, it is not exactly true that “*In previous works (Pszczółkowski 1978, 1999), the contact between the San Vicente and the El Americano Members was dated as Kimmeridgian–Tithonian*” (López-Martínez et al. 2013, Discussion). In Table 4 (Pszczółkowski 1978), this contact is clearly diachronous and reaches Lower Tithonian (in places); on page 63 there is a conclusion that “... the carbonate bank of Sierra de los Organos had drowned at the Middle Tithonian time which resulted in a considerable uniformity of facies all over the Cordillera de Guaniguanico (Fig. 27)”. Nevertheless, drowning of the carbonate bank had started at the Kimmeridgian–Tithonian boundary (Pszczółkowski 1999; Pszczółkowski & Myczyński 2010). Considering this, the statement of López-Martínez et al. (2013), that “*in more detailed work it is possible to find a diachronism in the appearance of pelagic conditions*” (and so on) is true, but not new (please see Pop 1976 and Pszczółkowski 1978, 1981).

The next claim on page 203 (López-Martínez et al. 2013) concerns the presence of juvenile gastropods and the lack, or extreme scarcity, of adult specimens in the Tithonian limestones (Pszczółkowski & Myczyński 2010). The authors (López-Martínez et al. 2013), interpret this phenomenon in the San Vicente section “*as rather due to taphonomic processes, similar to the interpretations by Fernández-López & Meléndez (1995), than as a consequence of low oxygenation levels*”. However, it seems that gastropods are very rare in the El Americano Member of the San Vicente section (in beds No. 20 and 43, only?), or alternatively, the authors did not consider them to be important enough to illustrate at least a single specimen of these molluscs. Therefore, it is rather strange that the problem of juvenile gastropods was undertaken in the paper by López-Martínez et al. (2013). Originally, the figured juvenile gastropods were found in other sections of

the Guaniguanico megaunit; their occurrence was interpreted in terms of moderate to poor oxygen levels at the sediment-water interface (Pszczółkowski & Myczyński 2010). It does not necessarily mean “*a clear anoxic facies*” expected by López-Martínez et al. (2013). According to Pszczółkowski et al. (2005), dysaerobic conditions at the sediment/seawater interface could be widespread in the northwestern part of the proto-Caribbean seaway around the Jurassic/Cretaceous boundary. According to Moretti et al. (2003), the El Americano (Member) belongs to the Upper Jurassic-Lower Cretaceous carbonate units of post-rift system with good (petroleum) source-rock potential. As a matter of fact, the paper by Fernández-López & Meléndez (1995) concerns Middle Jurassic ammonites, not juvenile gastropods; the term “gastropods” does not appear in this publication.

It seems that some divergent interpretations resulted not only from detailed study of the San Vicente section, but also because the authors (López-Martínez et al. 2013) attempted to extend some claims and conclusions over the whole area of Sierra de los Órganos. Such simple extrapolation does not work, because there are differences between various sections of this belt as shown by the studies of previous authors. Moreover, the authors (López-Martínez et al. 2013) did not take into account some important arguments, which may not confirm their conclusions, for example, the distribution of ammonites and microfacies documented from other sections in previous publications. Finally, the study of the San Vicente section improves but does not change fundamentally the “*good correlation of the Jurassic/Cretaceous Cuban facies with European sections*” (López-Martínez et al. 2013, Conclusions), established by the results of previous studies (Pop 1976, 1986; Pszczółkowski et al. 2005; Pszczółkowski & Myczyński 2010).

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