

Reply to the comment by Stinnesbeck *et al.* on “The oldest stratigraphic record of the Late Cretaceous shark *Ptychodus mortoni* Agassiz, from Vallecillo, Nuevo León, northeastern Mexico”

Alberto Blanco-Piñón^{1,*} and Luis M. Garibay-Romero²

¹Centro de Investigaciones en Ciencias de la Tierra, Universidad Autónoma del Estado de Hidalgo,
Apdo. Postal 1-288, Admón. 1, 42001 Pachuca, Hidalgo, Mexico.

²Universidad Autónoma de Guerrero. Unidad Académica de Ciencias de la Tierra,
Ex-Hacienda de San Juan Bautista, Taxco el Viejo, Guerrero, Mexico.

* albblanc@yahoo.com.

The comments by Stinnesbeck *et al.* (2007) to our manuscript (Blanco-Piñón *et al.*, 2007) refer to four main points:

1. Stinnesbeck *et al.* (2007) question the validity of the FCT acronym that we used for our description of the specimen of *Ptychodus mortoni* Agassiz, 1843. The acronym used for this specimen is FCT-341, and we believe it is valid as far as a formal acronym for the paleontological collection of Facultad de Ciencias de la Tierra, Universidad Autónoma de Nuevo León has not yet been assigned.

2. The first works suggesting anoxic conditions in the Vallecillo Member were published by Blanco *et al.* (2001), Blanco (2003), Blanco-Piñón (2003), and Blanco-Piñón *et al.* (2002, 2005). Later, Blanco *et al.* (2006) suggested that anoxic conditions observed in Vallecillo and in other three Mexican assemblages could be related to the Oceanic Anoxic Event 2. The last reference was not included because the work was under revision at the time we submitted Blanco-Piñón *et al.* (2007). Concerning the works of Ifrim *et al.* (2005) and Ifrim (2006), we did not omit intentionally those works as suggested by Stinnesbeck *et al.* (this issue). Ifrim (2006) is the PhD thesis of Christina Ifrim at Karlsruhe University. By the time we submitted our manuscript (February 7, 2006), we did not have access to that thesis because it was defended on a later date (April 26, 2006). Ifrim *et al.* (2005) was published in the first issue of a novelty journal of restricted circulation that was not accessible to us before submitting Blanco-Piñón *et al.* (2007) for revision.

3. Stinnesbeck *et al.* disagreed with the observation we cited after Cappetta (1987) that *Ptychodus* was a durophagous shark in the phrase “*Ptychodus* is a highly specialized

durophagous shark that lived during the Late Cretaceous” and instead they note that “studies on the gastric contents of extant pycnodont fishes (*e.g.*, *Sparassius*) demonstrated that these fishes are omnivorous and well able to prey on fishes and other food items (Ifrim *et al.*, 2005)”. We disagree on this observation because:-

- a) Pycnodonts (formally into the order Pycnodontiformes) are all extinct fishes.
 - b) We could not find references to a fish genus named *Sparassius* (= *Sparassis*), because this name correspond to a fungus and not to a fish (Dai *et al.*, 2006).
 - c) Ptychodontids are sharks having a characteristic crushing dentition that allowed the shark to feed on hard bodied preys, such as mollusks. This is clearly attributed to Cappetta (1987), actually a world specialist on sharks.
 - d) Nowhere in Blanco-Piñón *et al.* (2007) we wrote “pycnodonts”, and the triangulation *Ptychodus*-Pycnodontids-*Sparassius* expressed by Stinnesbeck *et al.* is out of order. After the carefully review of Ifrim *et al.* (2005), we consider that this mainly arises from their report of some similarities in the body form of *Nursallia* and *Sparus* (not *Sparassius*). However, we did not find any analysis to support the comparison of the diet, food habits or mouth mechanisms between *Sparus*, pycnodonts, and sharks. Actually, the comparison between the dentition and diet of these osteichthyans (*Nursallia* and *Sparus*), and that of chondrichthyes (*Ptychodus*) is not easily supported nor formally published. Finally, Blanco and Frey (2001) provided a discussion about the diet of *Nursallia* sp., which was not cited in Ifrim *et al.* (2005).
4. Concerning the stratigraphic control of *Ptychodus mortoni* within the Vallecillo Member, we would like to reply

the following:

- a) *Ptychodus mortoni* was reported in Blanco *et al.* (2001), and Blanco-Piñón *et al.* (2002) as a part of the Vallecillo Member assemblage and W. Stinnesbeck, L.G. Lopez Oliva and D. Frey were co-authors in those publications. In Blanco-Piñón *et al.* (2007) we reported that FCT-341 was collected from the uppermost part of the Vallecillo Member (and not discovered in a small museum situated at Vallecillo, as mentioned by Stinnesbeck *et al.*), almost in contact with the dark-gray, non-platy unit of the Agua Nueva Formation. That could explain the grayish micrite matrix of the rock that contains the teeth of FCT-341 (see Blanco-Piñón, 1998).
- b) Stinnesbeck *et al.* argued that we omitted to refer “the record of *P. mortoni* from the El Rosario quarry, Coahuila, described by Stinnesbeck *et al.* (2005)”. However, the latter authors just provided imprecise and/or tentative identification of the fish fauna in this locality when wrote “These fishes have apparently been collected randomly at El Rosario and other quarries in the area from coeval sediments of the same depositional area. The following taxa have been tentatively identified by one of us (L. Cavin) on the basis of photographs: *Ptychodus* cf. *P. mortoni* Agassiz, 1843 (Figure 4a)” (Stinnesbeck *et al.* 2005, p. 407). In addition, the tooth in their fig. 4a does not show the characters of *P. mortoni*.
- c) The assignation of FCT 341 as the oldest record of *P. mortoni* in the world was based on the presence of *Watinoceras coloradoense*. This ammonite was collected from the same level where FCT 341 was collected and was housed in the Colección Paleontológica de la FCT as unidentified specimen under the catalogue number FCT-257. Later, the specimen was identified by Wolfgang Stinnesbeck as *Watinoceras coloradoense*, and this is the data we used in Blanco-Piñón *et al.* (2007). Besides, such species of ammonites has been considered as a Lower Turonian ammonite (see *e.g.*, Aguilera-Franco, 2003).
- d) The paper by Ifrim and Stinnesbeck (2007), with information about a detailed taxonomic and biostratigraphic distribution of the ammonites of the Vallecillo Formation at Nuevo León, was published in June, 2007, and was thus not available at the time our manuscript was accepted for publication (November, 2006).

Finally, we deeply thank Stinnesbeck *et al.* (2007) for his comments on the article and for providing new information concerning the Vallecillo assemblage.

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