



Cephalopods of the Triassic-Jurassic boundary in west-central Argentina

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Existence of marine upper Triassic and lowermost Jurassic strata was first recorded in the Andes of Argentina in 1986 (cf. Riccardi et al., 1988, 1991, 1997) at Arroyo Alumbre, in the Atuel River area, Malargue province. The section, exposed in an anticline nucleus, consists of a c. 300 m thick continuous succession of uppermost Triassic and basal Jurassic strata, ascribed to the Arroyo Malo Formation, containing a relatively diverse, but rather scarce and poorly preserved fauna of marine invertebrates. Since then, this section has been sampled several times and its sedimentology, biostratigraphy and fossil content exposed in a number of papers (cf. Riccardi et al., 2004; Lanés, 2005; Riccardi, 2008; Damborenea & Manceñido, 2012). Although presence of identified ammonoids was then (cf. Riccardi & Iglesia Llanos, 1999) restricted to *Choristoceras* cf. *marshi* Hauer and *Psiloceras* cf. *rectocostatum* Hillebrandt, other cephalopods are present at different levels, as mentioned below. The sequence lower half contains a succession of levels with different taxa, at the base: ?*Rhabdoceras* sp., ?*Peripleurites* sp., *Aulacoceras* cf. *carlottense* Whiteaves, and *Choristoceras* cf. *marshi* Hauer. Higher up are other levels with *Psiloceras* *tilmanni* Lange, *Psiloceras* cf. *planocostatum* Hillebrandt, *Psiloceras* cf. *polymorphum* Guex, and *Psiloceras* cf. *rectocostatum* Hillebrandt. *Choristoceras* cf. *marshi* is indicative of the Upper Rhaetian Marshi Zone, and the taxa occurring below indicate that the lowermost part of the section is Norian-Lower Rhaetian, whereas the taxa of the overlying beds are indicative of the Tilmanni, Primocostatum and Rectocostatum Zones of the Hettangian South American zonation (cf. Hillebrandt, 2000). The Triassic-Jurassic boundary is located between the occurrences of *Choristoceras* cf. *marshi* and *Psiloceras* *tilmanni*. This fauna can be referred and/or correlated with those recorded at the Triassic-Jurassic boundary in Chile, Peru and North America (cf. Hillebrandt, 1994a, b; González-León et al., 2000; Lucas et al., 2007; Schaltegger et al., 2008; Schoene et al., 2010).

Key words: Triassic-Jurassic boundary; ammonoids, coleoids, Argentina

References

- Damborenea, S.E. & Manceñido, M.O. 2012. Late Triassic bivalves and brachiopods from southern Mendoza, Argentina. *Revue de Paléobiologie*, Vol. spec. 11, 317-344.
- González-León, C.M., Stanley, G.D. & Taylor, D.G. 2000. Ammonoid discoveries in the Antimonio Formation, Sonora, Mexico: new constrains on the Triassic-Jurassic boundary. *Journal of South American Earth Sciences*, 13, 491-497.

- Hillebrandt, A.v. 1994a. The Triassic/Jurassic boundary in northern Chile. *Cahiers de l'Université catholique de Lyon*, sér. Sciences 3, 27-53.
- Hillebrandt, A.v. 1994b. The Triassic/Jurassic boundary and Hettangian biostratigraphy in the area of the Utcubamba Valley (northern Peru). *Geobios*, M.S. 17, 297-307.
- Hillebrandt, A.v. 2000. Die Ammoniten-Fauna des Südamerikanischen Hettangium (basaler Jura). *Palaeontographica* A258 (4-6), 65-116.
- Lanés, S. 2005. Late Triassic to Early Jurassic sedimentation in northern Neuquén Basin, Argentina: Tectosedimentary Evolution of the First Transgression. *Geologica Acta*, Barcelona, 3 (2), 81-106.
- Lucas, S.G., Taylor, D.G., Guex, J., Tanner, L.H., Krainer, K. 2007. *The proposed Global Stratotype Section and Point for the base of the Jurassic System in the New York Canyon area, Nevada, USA*. Pp. 139-161 in S.G. Lucas and J.A. Spielmann (eds.) 2007, Triassic of the American West. New Mexico Museum of Natural History and Science Bulletin 40.
- Riccardi, A.C. 2008. El Triásico marino del arroyo Alumbre. El océano perdido. Pp. 220-236, in A. Ardolino and H. Lema (coord.) 2008, *Sitios de interés geológico de la República Argentina*. Servicio Geológico Minero Argentino, Buenos Aires.
- Riccardi, A.C. & Iglesia Llanos, M.P. 1999. Primer hallazgo de amonites en el Triásico de la Argentina. *Revista de la Asociación Geológica Argentina* 54 (3), 298-300.
- Riccardi, A.C., Damborenea, S.E., Manceñido, M.O. & Ballent, S.C. 1988. Hettangiano y Sinemuriano marinos en Argentina. *5 Congreso Geológico Chileno*, Santiago de Chile, 2, 359-373.
- Riccardi, A.C., Damborenea, S.E., Manceñido, M.O. & Ballent, S.C. 1991. Hettangian and Sinemurian (Lower Jurassic) biostratigraphy of Argentina. *Journal of South American Earth Sciences*, 4 (3), 159-170.
- Riccardi, A.C., Damborenea, S.E., Manceñido, M.O., Scasso, R., Lanés, S., & Iglesia Llanos, M.P. 1997. Primer registro de Triásico marino fosilífero de la Argentina. *Revista de la Asociación Geológica Argentina* 52 (2), 228-234.
- Riccardi, A.C., Damborenea, S.E., Manceñido, M.O., & Iglesia Llanos, M.P. 2004. The Triassic-Jurassic boundary in the Andes of Argentina. *Rivista Italiana di Paleontologia e Stratigrafia* 110, 69-76.
- Schaltegger, U., Guex, J., Bartolini, A., Schoene, B. & Ovtcharova, M. 2008. Precise U-Pb age constrains for end-Triassic mass extinction, its correlation to volcanism and Hettangian post-extinction recovery. *Earth and Planetary Science Letters* 267, 266-275.
- Schoene, B., Guex, J., Bartolini, A., Schaltegger, U. & Blackburn, T.J. 2010. Correlating the end-Triassic mass extinction and flood basalt volcanism at the 100 ka level. *Geology* 38 (5), 387-390.