
Late Triassic conodonts from New York Canyon, Nevada, and their relevance to the position of the Norian-Rhaetian Boundary

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Abstract

Sections of the Gabbs Formation exposed in the vicinity of New York Canyon, Nevada, have long been recognized as important sites for Late Triassic and Early Jurassic stratigraphy, with the section at Muller Canyon previously being proposed as the stratotype section for the base of the Hettangian. The Norian-Rhaetian parts of these sections continue to be important for the ongoing work of defining this boundary. The two candidate sections for the base of the Rhaetian are at Pignola Abriola in Italy and Steinbergkogel in Austria; both sections utilize the first occurrence of the conodont species *Misikella posthernsteini* as a proxy for the boundary, although there is disagreement between the sections as to when this species first appears. Although not a candidate section, data from New York Canyon will help to determine the most suitable position for the Norian-Rhaetian Boundary (NRB), especially in Panthalassa.

Previous reports of conodonts from a composite New York Canyon section recognized a relatively depauperate fauna consisting primarily of *Mockina englandi*, *Mo. bidentata* and morphotypes of *Mo. mosheri* in the Nun Mine Member, succeeded by isolated occurrences of *Zieglericonus rhaeticum* and *Mi. posthernsteini* in the Mount Hyatt and Muller Canyon members. On the basis of the conodont biostratigraphy developed in the Tethys region, the NRB in New York Canyon would be placed at the first occurrence of *Mi. posthernsteini*. However, this species was recovered well above the first occurrences of Rhaetian ammonoids (*Paracochloceras amoenum*, near the base of the Nun Mine Member) and together with radiolarians of the tozeri zone, commonly thought to be high within the Rhaetian of North America. Its occurrence is also above excursions in Sr- and C-isotopes recorded in the section, both of which may indicate correlation with co-eval excursions in Tethys at the NRB. Therefore, some authors place the NRB much lower in North America, coinciding with the first occurrence of the radiolarian *P. moniliformis* and the conodont *Mo. mosheri* morphotype C.

To help reconcile the biochronological and geochemical data from the New York Canyon area, new conodont samples have been collected from throughout the Nun Mine and Mt Hyatt members at the New York Canyon Road and Luning Draw sections. These collections include examples of *Mo. englandi*, *Mo. bidentata*, and *Mo. mosheri* morphotypes B and C, all previously reported from New York Canyon, although this is the first record of *Mo. mosheri*

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morphotype C from the Nun Mine Member. There are also examples of *Parvigondolella* spp. B and C from much lower in the Nun Mine Member than previously reported. Finally, there are examples of *Pa. andrusovi*, which has not previously been recorded from North America, and specimens of *Mo. bidentata* with only one denticle, perhaps transitional to *Parvigondolella*. Overall, this fauna records a progression from the *Mo. bidentata* Zone to the *Mo. mosheri* Zone of North America, equivalent to the *Mo. bidentata* and *Pa. andrusovi* zones of Tethys and indicative of a Sevatian fauna. This would be consistent with a higher placement of the NRB at New York Canyon; however, if the NRB is to be recognized at the first occurrence of *Mo. mosheri* morphotype C, then the boundary must be lower than previously thought, within the Nun Mine Member.

Keywords: Conodont, Norian, Rhaetian, New York Canyon, Panthalassa