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Middle Lochkovian conodonts in the Rio Malinfier section

Maria G. Corriga[1], Carlo Corradini[1], Monica Pondrelli[2] & Luca Simonetto[3]

[1]Dipartimento di Scienze Chimiche e Geologiche, Università di Cagliari, via Trentino 51, I-09127 Cagliari, Italy. corrigamaria@hotmail.com; corradin@unica.it
[2]IRSPS, Università d'Annunzio, viale Pindaro 42, I-65127 Pescara, Italy. monica@irsps.unich.it
[3]Museo Friulano di Storia Naturale, via Sabbadini 22-32, I-33100 Udine, Italy. luca.simonetto@comune.udine.it

Locality *- Along the road connecting Paularo to the Passo del Cason di Lanza, just west of the Rio Malinfier waterfall, at coordinates N 46°34'48", E 13°7'53".*
Lithostratigraphic unit *- Nölbling Fm., La Valute Fm.*
Age *- Lochkovian (Lower Devonian);* Icr. postwoschmidti *Zone to* Ad. transitans *Zone.*
What to see *- Sharp transition between the Nölbling Fm and the La Valute Fm.*

How to get there

The Rio Malinfier section can be reached from Passo del Cason di Lanza moving for about 4 km along the road to Paularo. The section is located just west of the bridge on Rio Malinfier waterfall, at altitude 1159 m (Fig. 1).

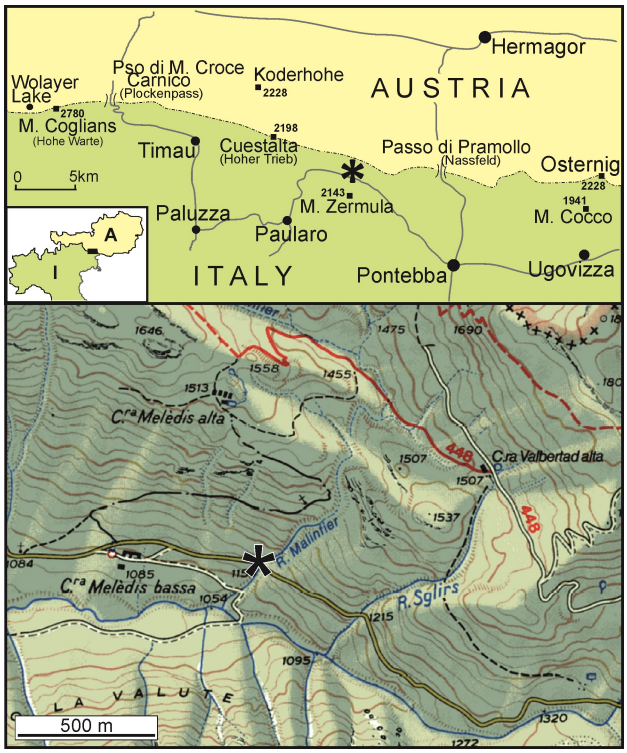

Figure 1. Location map of the Rio Malinfier section.

Historical outline

The locality is known since long time for producing a few pyritized fossils, but the stratigraphy and conodonts were studied recently by Corriga (2011) and Corriga et al. (2012).

Lithology and fossil content

The section has a total thickness of about 5 m and exposes an overturned sequence of rocks belonging to the Nölbling (Schönlaub et al., 2015) and the La Valute (Corradini et al., 2015) formations. The section starts with 2.7 m of dark limestones and shales of the Nölbling Fm. The calcareous content decreases in the upper part of the unit, where the shales are dominant and only a few limestone lenses are present. A few orthoceratid nautiloids from the limestone are the only macrofossils observable in the field; a rich pyritized microfauna (bivalves, gastropods, brachiopods, cephalopods and ostracods) is present in some levels.

The upper part of the section is represented by about 2.5 meters of well-bedded light grey limestone of the La Valute Fm., which stay on top of the Nölbling Fm with a sharp transition. Rare, poorly preserved orthoceratid nautiloids are the only fossils present in these limestones.

The top of the section is interrupted by a minor local fault and by the road.

Palaeonvironment

The Nölbling Fm. deposed in a moderately deep shelf to basin dysoxic/anoxic environment. The sharp transition with the La Valute Fm. testify the restoring of oxygenate conditions, possibly connected to a sharp regression (Corriga et al., 2012).

Figure 2. View of the Rio Malinfier section showing the location of the conodont samples.

Conodonts

Twelve conodont samples have been collected from the Rio Malinfier section (Fig. 3). The abundance is always very low, except sample RM 2, and five samples resulted barren of conodonts. In general, the state of preservation is poor, being part of the fauna represented by indeterminable fragments.

Conodont color is black, corresponding to a Color Alteration Index (CAI) of 5, but this value is probably affected by the abundance of organic matter in the shales of the Nölbling Fm.

Twelve taxa belonging to eight genera (*Ancyrodelloides*, *Dvorakia*, *Icriodus*, *Lanea*, *Oulodus*, *Pseudooneotodus*, *Wurmiella* and *Zieglerodina*) have been identified (Fig. 3).

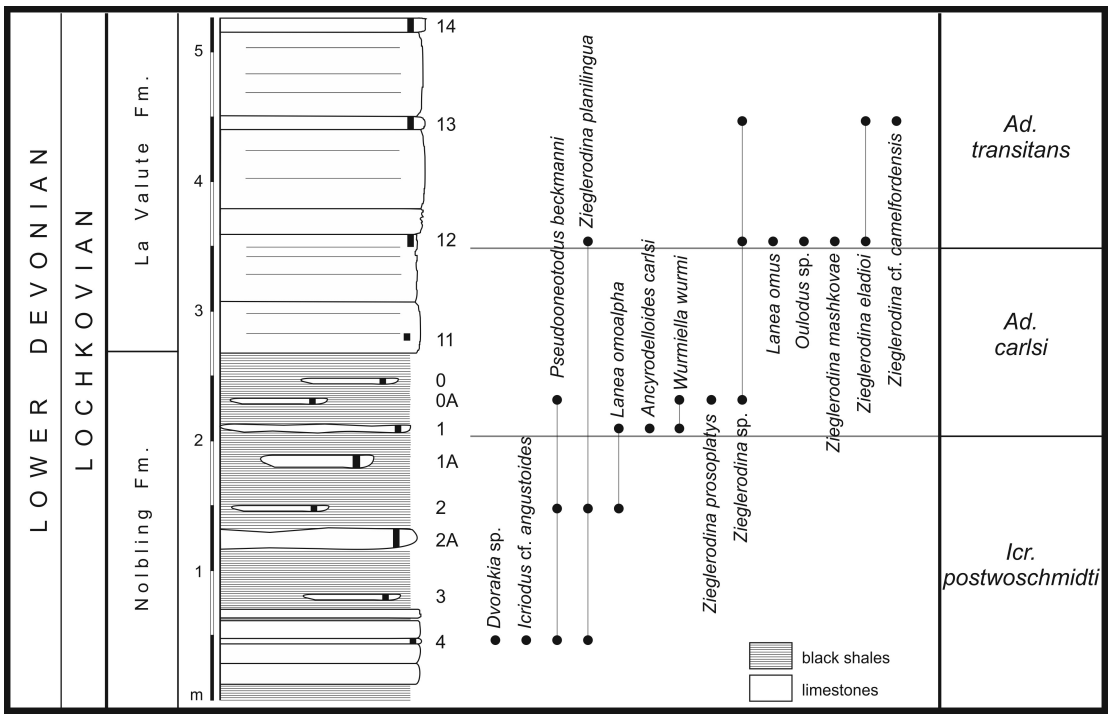

Figure 3. Stratigraphic column of the Rio Malinfier section and conodont distribution (modified after Corriga et al., 2012).

Biostratigraphy

The occurrence of a fragmentary specimen of *Icriodus* cf. *angustoides* Carls & Gandl in sample RM 4 suggest that the lower part of the section belongs to the *Icr. postwoschmidti* Zone. In the upper part of the Nölbling Fm. the entry of *Ancyrodelloides carlsi* (Boersma) in sample RM 1 allows to discriminate the *Ad. carlsi* Zone. The upper part of the section (sample RM 12 and above) may be attributed to the *Ad. transitans* Zone due to the entry of *Ancyrodelloides omus* Murphy & Matti, that is exclusive of this Zone (Corriga et al., 2014).

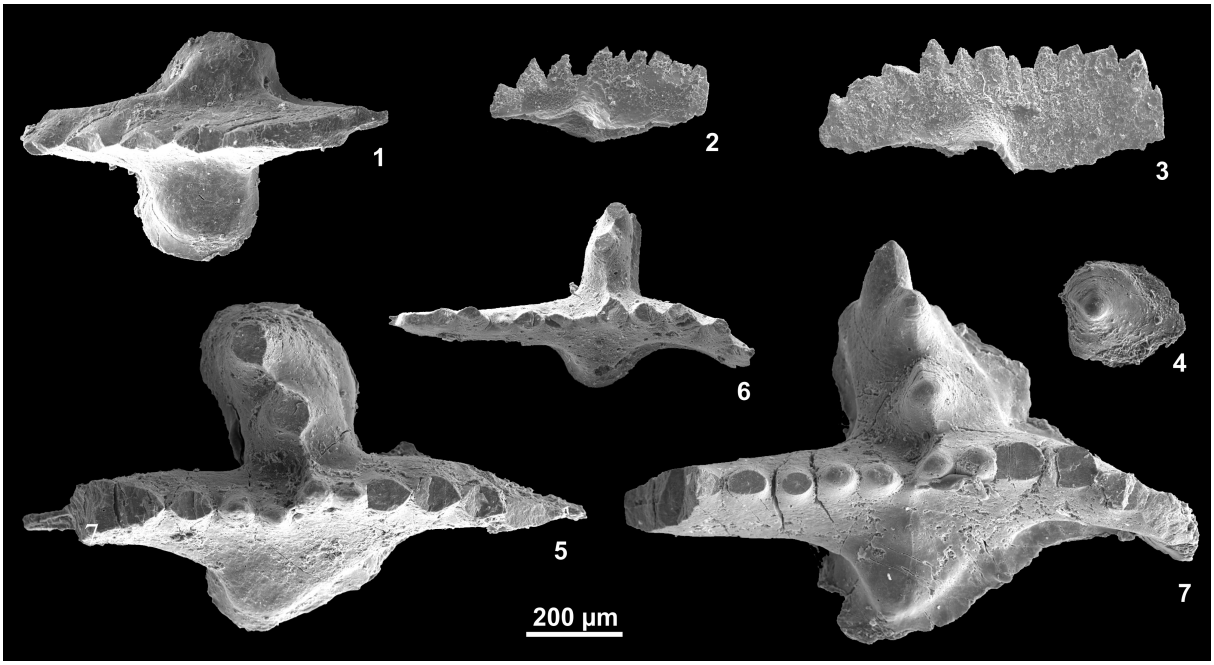

Figure 4. Conodonts from the Rio Malinfier section (all refigured after Corriga et al., 2012).
1. *Lanea omoalpha* Murphy & Valenzuela-Rìos, P1 element MDLCA 30192, upper view, sample RM 1. **2.** *Zieglerodina eladioi* (Valenzuela-Rìos), P1 element MDLCA 30187, lateral view, sample RM 13. **3.** *Ozarkodina* cf. *camelfordensis* Farrell, P1 element MDLCA 30188, lateral view, sample RM 13. **4.** *Pseudooneotodus beckmanni* (Bischoff & Sannemann), MDLCA 30190, upper view, sample RM 2. **5.** *Ancyrodelloides carlsi* (Boersma), P1 element MDLCA 30186, upper view, sample RM 1. **6.** *Ancyrodelloides carlsi* (Boersma, 1973), P1 element MDLCA 30193, upper view, sample RM 1. **7.** *Ancyrodelloides carlsi* (Boersma, 1973), P1 element MDLCA 30194, upper view, sample RM 1.

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