

Middle Lochkovian conodonts in the Rio Malinlier section

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Locality - Along the road connecting Paularo to the Passo del Cason di Lanza, just west of the Rio Malinlier waterfall, at coordinates N 46°34'48", E 13°7'53".

Lithostratigraphic unit - Nölbling Fm., La Valute Fm.

Age - Lochkovian (Lower Devonian); lcr. postwoschmidt 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 Malinlier 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 Malinlier waterfall, at altitude 1159 m (Fig. 1).



Figure 1. Location map of the Rio Malinlier 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 Corrigan (2011) and Corrigan 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.

Palaeoenvironment

The Nölbling Fm. deposited 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 (Corrigan et al., 2012).

Conodonts

Twelve conodont samples have been collected from the Rio Malinlier 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.



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

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).

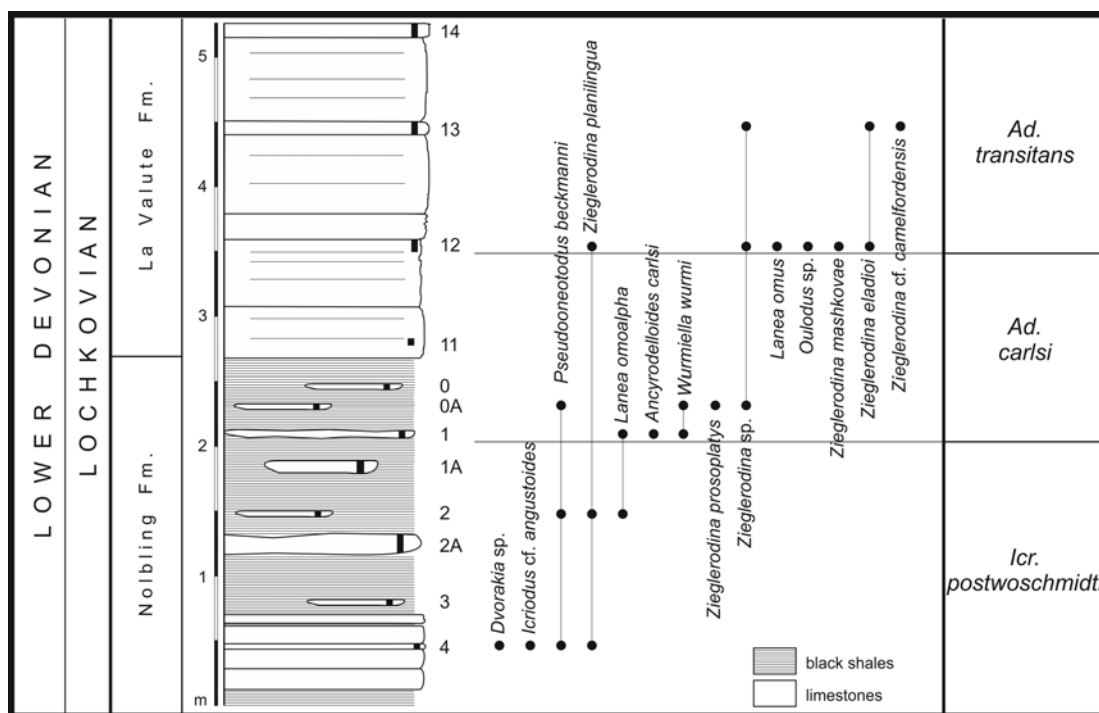


Figure 3. Stratigraphic column of the Rio Malinlier section and conodont distribution (modified after Corrigan et al., 2012).

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 (Corrigan et al., 2014).

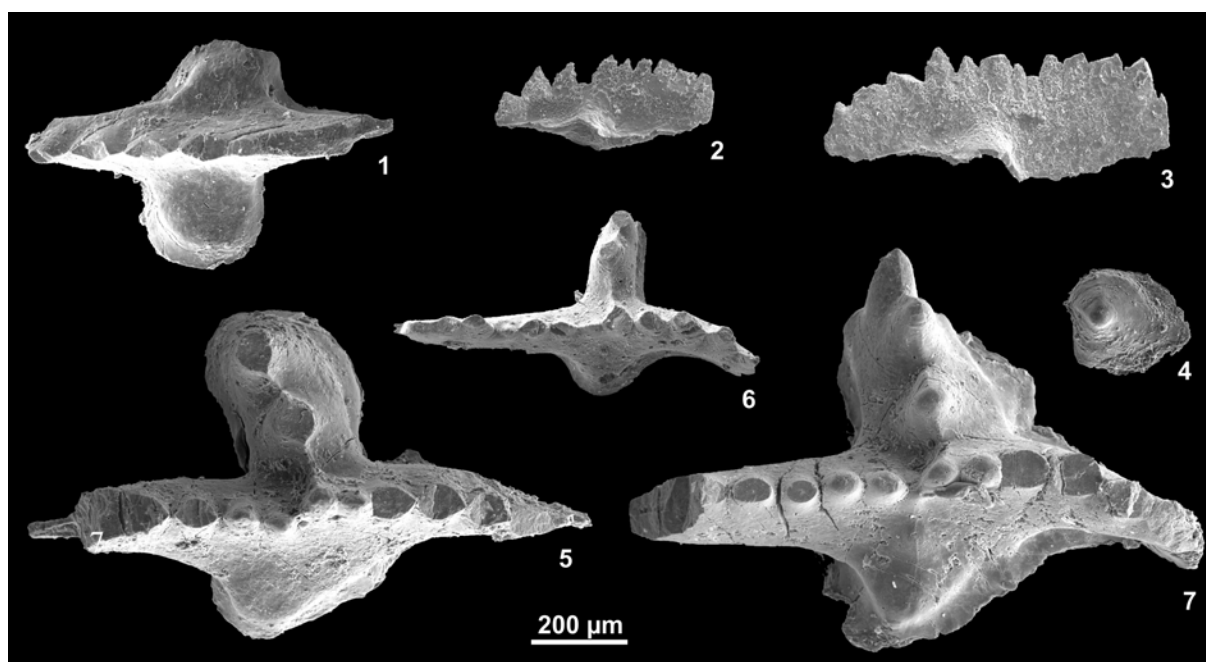


Figure 4. Conodonts from the Rio Malinfier section (all refigured after Corrigan et al., 2012).

1. *Lanea omoalpha* Murphy & Valenzuela-Rios, P1 element MDLCA 30192, upper view, sample RM 1. 2. *Zieglerodina eladioi* (Valenzuela-Rios), 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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