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**FAUNAL ASSEMBLAGES IN THE KALKSCHIEFERZONE (MERIDE  
LIMESTONE, UPPER LADINIAN) OF MERIDE (CANTON TICINO,  
SWITZERLAND)**

In these last years particular attention has been paid to the youngest levels of Meride Limestone, the Kalkschieferzone, which crops out between Valceresio (Varese - Italy) and Canton Ticino (Switzerland), in order to study the faunal composition. Fossil collection in this unit has been random until the beginning of the 80's when systematic field works have been started with a joint project set up by the Civico Museo Insubrico di Storia Naturale di Induno Olona in the locality of Ca' del Frate (Viggiù - Varese) (Tintori et al. 1985; Tintori 1990a). The Ca' del Frate fauna has been subject of many studies: about 3000 fishes, rare reptiles and numerous crustaceans have been found (Tintori & Renesto 1983, 1990; Tintori 1990b; Tintori 1990c; Renesto 1993; Lombardo 1997). Concerning the Swiss side, in 1994 the Museo Cantonale di Storia Naturale di Lugano and the Paläontologisches Institut und Museum der Universität in Zürich made an excavation in the upper part of middle Kalkschieferzone of Val Mara (Furrer 1995; Bürgin 1995). Since some differences in faunal composition from the different localities were noticed, a field work in the upper part of the lower Kalkschieferzone of Val Mara, which has not been taken into consideration in previously excavations (Furrer 1995; Bürgin 1995), was started in 1997 by the Museo Cantonale di Storia Naturale di Lugano and the Dipartimento di Scienze della Terra dell'Università degli Studi di Milano (Tintori et al. 1999). The fossiliferous levels of this site (identified with letter D), intercalated to barren beds, are placed between layer 102 of Scheuring (1978) and layer 60 of Wirz (1945). The choice of this site has been decided after the find of some new species of the genus *Peltopleurus* and of a lower jaw of *Saurichthys*, genus reported for the first time in the Kalkschieferzone. Besides fishes, conchostracans (freshwater crustaceans) are randomly diffuse, sometimes concentrated in mass mortality layers and terrestrial plants are very common.

Within this part of the series characteristic assemblages have been identified, with species exclusive of certain levels and others which show a wider distribution and which were also found in other localities of the middle Kalkschieferzone. This fauna is characterised by the genus *Peltopleurus*, which is present with several species different in the scales pattern, teeth morphology and shape of the body. *Peltopleurus* is widely spread in the Kalkschieferzone, but in these levels it shows a great specific variability.

Fig. 1 summarises the results of both the campaigns of 1997 and 1998: the different assemblages have been emphasised but in some cases they could be further divided in other subgroups. The first assemblage includes the lower part of the series (D30 - D26):

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finds are represented by some specimens of *Peltopleurus* (sp. n. C and D) besides a specimen of *Perleidus altolepis* and the lower jaw of *Saurichthys* sp. The genus *Peltopleurus* characterises also the second assemblages (D22 - D20) with at least two species, *Peltopleurus* sp. n. D and E; it must be stressed, however, that kind of preservation often does not allow a specific determination of the specimens belonging to this genus. *Allolepidotus nothosomoides* is also present within these layers. At least two species of *Peltopleurus* (sp. n. B and sp. n. D) are typical of the third assemblages (D15 - D14), which includes also a single specimen of *Allolepidotus nothosomoides* and ?*Furo*. The fourth assemblage (D10 - D7) is characterised by *Allolepidotus nothosomoides* (the only species found throughout the series), *Perleidus altolepis*, *Perleidus* sp.n. A, Gen. n. A sp. n (this latter with specimens found on the same bed) and *Peltopleurus* sp.. As a matter of fact, the single layer D7 could be constitute an assemblage of its own, being characterised by *Allolepidotus*, *Perleidus* and gen. n. A. From layer D9 comes a large specimen of *Saurichthys* (the other specimen, represented by the isolated lower jaw comes from D30) and isolated scales. The last assemblage, typical of the higher levels (D3 - DA), is made up by *Prohalecites porroi*, a new species of *Peltopleurus* (*Peltopleurus* sp. n. C) and *Allolepidotus nothosomoides*.

Some general observations can be made on the grounds of the data collected so far in this site. First of all, the finds in the lower Kalkschieferzone of Val Mara add some information on the vertical distribution of the single species. One of the most interesting results concerns the occurrence of *Prohalecites porroi*: this species, which constitutes about the 95% of the Ca' del Frate fauna, is found only in the very upper part of the series here considered, while it is missing in the lower part of the lower Kalkschieferzone. At the same time, species which are usually associated to *Prohalecites* (*Allolepidotus nothosomoides*, *Perleidus altolepis*, gen.n A sp. n.) in the Ca' del Frate layers are also found in the lower levels of site D of Val Mara: this could mean the appearance of the genus *Prohalecites* in correspondence of the layer D3. *Allolepidotus nothosomoides*, which is quite common in the Kalkschieferzone of Ca' del Frate, is reported for the first time in Val Mara and in the lower Kalkschieferzone; also the presence of *Perleidus altolepis* in layers D7 and D 29 and of Gen. n. A sp. n. in D7, increases the vertical distribution of these species, found for the first time in the lower Kalkschieferzone. As mentioned before, the genus *Peltopleurus* shows in this site a great specific variability, with at least three species exclusive of these levels (*Peltopleurus* sp. n. C, *Peltopleurus* sp. n. D and *Peltopleurus* sp. n. E), while the most common species found at Ca' del Frate, *Peltopleurus nuptialis* (Lombardo, in press) is lacking. With the exception of *Peltopleurus* sp. n. B, which has been found in the whole Kalkschieferzone, the other species of *Peltopleurus* have a restricted vertical distribution and they seemingly exclude one another. Studies on peltopleurids of the Kalkschieferzone are still in progress, but the sequence of different species of *Peltopleurus* in a relatively short time span could be indicative of a rapid evolution of the genus. Interesting is also the presence in these levels of *Saurichthys*, well represented in almost all the Middle Triassic ichthyofaunas, but apparently missing in the Kalkschieferzone until the finds in Val Mara.

The two campaigns in the site D of Val Mara have confirmed the great variability of the faunal composition of the different fossiliferous levels of the Kalkschieferzone; this variability seems to be essentially due to the instability of the depositional basin, besides



the rapid evolution of at least one genus, *Peltopteurus*. Field work will continue in the summer of 2000 and new data will be added to those collected so far; moreover, stratigraphical distribution of the different species is articulated and it could be further on specified in the future.

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