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REVIEW OF THE UPPER TRIASSIC BRACHIOPODS IN THE NORTHERN CALCAREOUS ALPS

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Shallow-water Carnian brachiopod fauna of the NCA is relatively poor in its diversity (e.g. *Adygella* and some species of *Cruratula* and koninckinids in the Raibl and Cardita Beds). It is markedly different not only from partially synchronous assemblages of the Hallstatt Limestone, which lived in deeper parts of the Tethys but totally from those of the Norian and Rhaetian. At that time the diversification of the brachiopod assemblages was already more intensive.

The Hallstatt facies yielded already more varied, often smooth fauna of the Carnian and Norian age. The differences in composition between them are rather insignificant.

Some brachiopod taxa (*Camerothyris*, some species of the characteristic genus *Austriellula* – *A*. *nux, A*. *longicollis, A*. *dilatata* etc.) are known from both Carnian and Norian levels, some other (terebratulids *Nucleatula* and *Juvavella*, athyridid *Pexidella strohmayeri*, and rhynchonellids *Austriellula juvavica, A*. *laevis, Norella geyeri* etc.) are reported from the Norian only. Curious local neptunian dyke "Weisser Crinoidenkalk" on the GSSP candidate Steinbergkogel near Hallstatt is according to KRYSTYN et al. (2007a) the youngest fossil horizon of the Hallstatt Limestone (top of *Paracochloceras suessi* Zone). It yielded according to BITTNER (1890) „*Juvavella Suessii, Rhynchonella Geyeri, Rhynchonella nux, Koninckina blandula and Spirigera deslongchampsi",* all of them held for the Norian species.

The Uppermost Triassic brachiopod fauna is most abundant in the intraplatform Kössen Formation represented by basinal Kössen Beds or by reef limestones (Oberrhätkalk). It was studied in detail and modern revision published by PEARSON (1977). Recently were these faunas studied in the Kössen Basin between Kufstein and Bad Ischl by GOLEBIOWSKI (1991 etc.) who according to the dominating genera recognized basing on different palaeoecology and palaeobathymetry stratigraphically oldest *Rhaetina*- biofacies , and then younger *Zugmayerella -, Fissirhynchia*- and *Oxycolpella* biofacies. From his scheme it is well-visible that the short-looped terebratulids prefered shallower environments, while deeper waters were commonly inhabited by spire-bearing athyridids. Other Uppermost Triassic deposits like Zlambach Marls or Dachstein Reef Limestone contain brachiopod fauna only rarely. Nevertheless, the Dachstein Limestone of the Hochschwab massif yielded recently except halorellid lumachelles abundant brachiopod fauna with five characteristic Kössen brachiopods (SIBLÍK & BRYDA, 2005).

Environmental disturbances at the end of the Triassic led to brachiopod turnover on the superfamily level and the spondylospiroid, dielasmatoid, athyridoid and thecospiroid groups that had played great role in the Triassic disappeared. New, already Hettangian brachiopod communities had already different compositions. The discussions on the Triassic/Jurassic boundary (IGCP project 458 – in 2001-2005) and quite recently on the Norian/Rhaetian boundary brought also new views on the distribution of the brachiopods in the Upper Triassic.

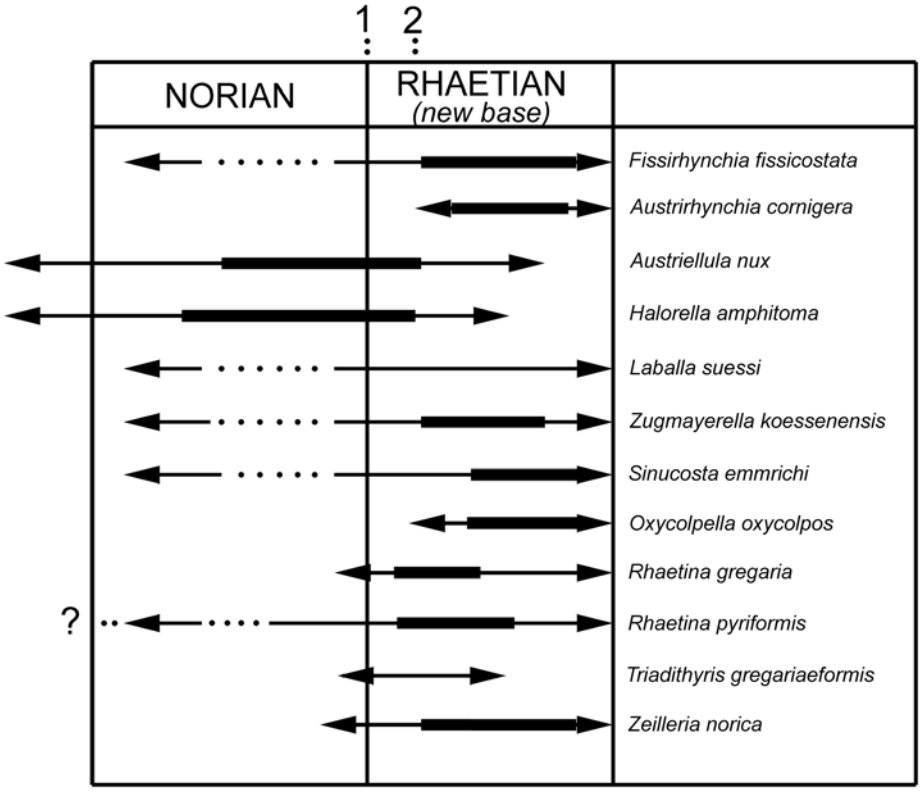

Fig. 1: Approximate stratigraphical ranges of some important Upper Triassic brachiopods (adapted according to SIBLÍK - in print).

New proposals for the Norian/Rhaetian boundary (KRYSTYN et al., 2007a, 2007b) locate the N/R boundary between *Sagenites quinquepunctatus* Zone below and *Sagenites reticulatus* Zone above (it corresponds to the FOD of *Misikella posthernsteini*). Between these zones the important changes in the composition of the ammonite, pelecypod and also brachiopod faunas can be observed, including appearance of the bulk of the Kössen species. Referring to a new scale, rhynchonellids *Halorella* and *Halorelloidea* regarded up to now as leading Norian genera raise into the Rhaetian. In regard to the new base of the Rhaetian, only *Austrirhynchia cornigera* and *Oxycolpella oxycolpos* seem to be Rhaetian indicators.

Higher up at the end of the Triassic, the most abundant brachiopods in the Rhaetian belonging to the dielasmatoid, spondylospiroid and athyridoid groups disappeared. At that time rhynchonellids were relatively rare.while zeillerioids common, as well as later in the Jurassic, then together with spiriferinoids, rhynchonellids and terebratuloids.

There are some older literary data that *Rhaetina gregaria* and *Fissirhynchia fissicostata* were not restricted to the Triassic only and ranged into the Earliest Liassic in Austria and Italy. However, it should be necessary to take modern critical measures to prove given data. E. g. GEYER reported in his monograph (1889) *Terebratula gregaria* and *Rhynchonella* cf. *fissicostata* from the classical locality Hierlatz near Hallstatt. PEARSON later (1977) revised also internally that material of „*gregaria*" and proved its belonging to *Rhaetina gregaria*. Since GEYER´s times neither of mentioned 2 species has been ascertained in the new, very rich samplings in the Liassic at the locality. With regard to the tight contact of the fissure-rich Dachstein Limestone with the Hierlatz Limestone at the Hierlatz locality and its vicinity, there could arise some doubts about proclaimed Liassic provenance of those 2 species (cf. SIBLÍK, 2001).

Precise stratification should be made of the future finds of brachiopods, supported by the accompanying ammonite and conodont fauna. In this way only, it would be possible to clear better the stratigraphic ranges of individual brachiopod species.

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