

# The evolutionary pathway of Halobiiforms (Bivalvia) in the Southeastern Pamirs

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Herein, preliminary results of a field trip to the Southeastern Pamirs (Tajikistan) are presented. Three sections of Triassic successions were examined in detail. They were remarkably rich in bivalves of the Family Halobiidae. The fossil record of mollusks begins with a distinct layer with *Peribositra pannonica*. This species indicates upper Anisian age. The specimens are very well preserved therefore new details of morphological features (e.g. hinge, ligament area) have been discovered. This helps to enlarge our knowledge of this rather unknown bivalve group. The succession of Halobiiforms starts with *Daonella pichleri* and *D. tyrolensis* (Upper Ladinian). Preliminary examination supports the hypothesis of the wide geographical distribution of some daonellid species. This could lead us a step forward to a global biostratigraphical system.

One focus of this study is the Ladinian – Carnian transition within

the genus *Daonella* vanished and the descendant genus *Halobia* appeared. Previous studies from Europe and Northern America suggested that the fascicostate *Daonella lommeli* would be the uppermost Ladinian daonellid species and therefore the most probable ancestor of halobiids. No fascicostate specimen was found at all in the uppermost Ladinian of the Southeastern Pamirs. But two endemic species preliminarily named *Daonella pamirica* and *Comatohalobia intermedia* have been discovered. One tentative proposal might be that the Pamirs is the cradle of the genus *Halobia*. This new genus might have been spread from this very place and displaced the fascicostate daonellids of the western Tethys and Northern America. These findings put forwards our understanding of the evolutionary pathway and spatio-temporal distribution of these bivalves.

The Carnian and Norian sediments revealed an extraordinary rich

and diverse halobiid fauna. The good preservation of the specimens makes it possible to examine morphological details thus new eidonomical and anatomical features can be expected. Especially new insights of the unique Halobiid feature, the anterior ear, are anticipated.

The stratigraphic distribution of the genera *Zittelhalobia* and *Comatohalobia* is unexpectedly wide. So far, *Zittelhalobia* has been placed in the lower Carnian and was seen as a side branch in early halobiid evolution which vanished in the Middle Carnian. In the examined sections, we have found specimens of this genus up to the Middle Norian.

The extraordinary diverse and rich middle Triassic bivalve fauna as well as the completeness of the succession of the Southeastern Pamirs will help us to find a coherent biostratigraphic zonation of the Middle and Upper Triassic in a global framework.