

## TAXONOMY AND STRATIGRAPHY OF THE UPPER TRIASSIC HETEROMORPHIC AMMONOIDS: PRELIMINARY RESULTS FROM AUSTRIA

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Rhaetian strata in Austria are known to contain common heteromorphic ammonoids in the Eiberg basin of the Koessen beds and the Zlambach Formation of the Hallstatt zone. The Zlambach Fm. comprises a more than 100m thick continuous marine succession from the lower to middle and upper Rhaetian, consisting of alternating deeper water limestones and upward increasing marls. The well exposed sections at the Kleiner Zlambach-, Leislingbach- and Rossmoos creek near Bad Goisern (Salzkammergut, Upper Austria) are classical outcrops of the Rhaetian stage in the Northern Calcareous Alps with continuous outcrops throughout most of this time interval. The Zlambach Fm. may also be the richest source of heteromorphic Triassic ammonoids in the world. The present study of the ammonoid fauna has delivered new material of *Paracochloceras suessi*, *Choristoceras haueri*, *Vandaïtes stuerzenbaumi*, *Vandaïtes saximontanus* and *Choristoceras marshi* and supplied partly surprising stratigraphic results. One unpleasant surprise is the partial overlap of the ranges of *Paracochloceras* versus *Vandaïtes* and “*Choristoceras*” *haueri* (Fig. 1). Another is the stratigraphic low occurrence of *Ch. marshi*, wholly overlapping with *Ch. ammonitiforme*. The longer Zlambach range of *Paracochloceras* compared to that in the Hallstatt limestone is a presently unsolved question. Another important topic is the origin of *Paracochloceras* which appears rather abruptly and in great abundance at the base of the Rhaetian during a time interval where widespread formation of submarine fissures created a specific biotope for the genus. Its appearance could therefore be environmentally controlled.

Of biochronological importance for the ammonoid zonation of the Rhaetian are three results:

- 1) “*Choristoceras*” *haueri* has a geographically restricted occurrence and is endemic to the Zlambach Formation. It makes no sense to use it as index for an ammonoid standard zone. This zone should nominally be replaced by *Vandaïtes stuerzenbaumi*, a genus with worldwide distribution within the tropical belt.
- 2) The *Vandaïtes stuerzenbaumi* Zone can be subdivided in two subzones based on *V. saximontanus* and *V. stuerzenbaumi* above. The *saximontanus* level is recorded in the Hallstatt limestone of Steinbergkogel and in sequence with the *stuerzenbaumi* Subzone in the Kleiner Zlambach.

3) The earlier propagated subzonal division of the *Choristoceras marshi* Z. is neither in the Koessen nor the Zlambach Fm. justified because *Ch. marshi* appears timely coincident with *Ch. Ammonitiforme*, but is very rare at the beginning. *Choristoceras ammonitiforme* disappears in well before the top of Triassic and may be used as local acme zone in the lower *marshi* Zone. None of the recently described *Choristoceras* species from Tibet or North America have been found in Austria.

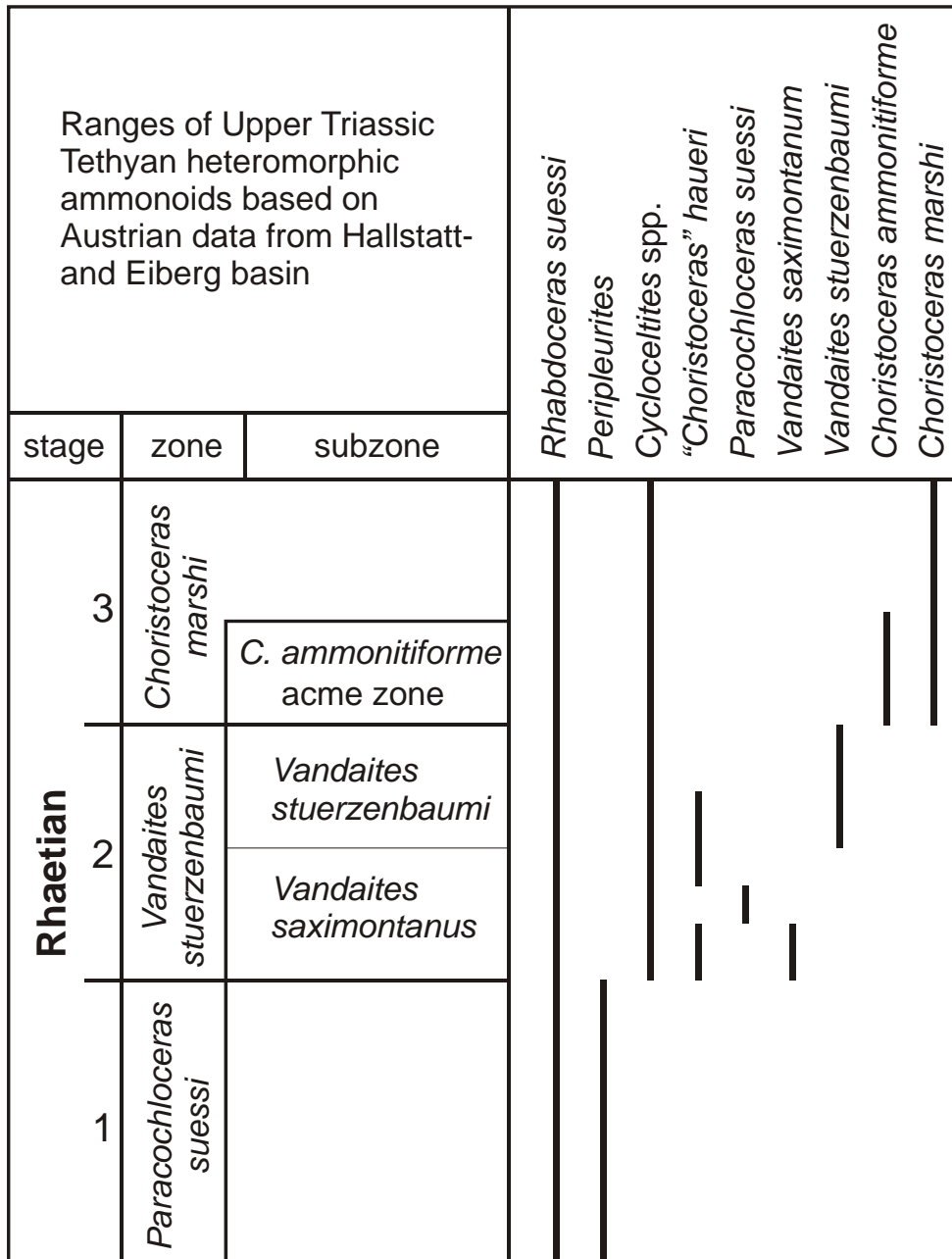


Fig. 1: Ranges of Upper Triassic Tethyan heteromorphic ammonoids from Hallstatt and Eiberg basin.