

## CORALS AND AMMONOIDS – CONNECTING AN INCOMPATIBLE CONNECTION (CRETACEOUS, ITALY)

Alexander LUKENEDER

Early Cretaceous (Valanginian – Aptian) deposits of the Puez locality in N.-Italy (Dolomites, Southern Tyrol) yield remarkable amounts of specimens of different ammonoid taxa (28 genera, n = 424) showing unique epifaunal encrustations by the solitary coral *Cycloseris*. The pattern of infestation clearly documents a preference of the adherent taxa for the outer shell surface of the ammonoids, whereas the inner surface remains barren. Such a remarkable dwelling palaeocommunity is described for the first time. The ammonoid shell of the dead animal sank to the sea bottom and became encrusted by the coral larvae, which documented by the location of the epibionts only on one side of the deposited ammonoid shells. The relation between the latter fossil groups is reported for the first time from the Early Cretaceous.

The cephalopod fauna consists of numerous Mediterranean elements from the Tethyan Realm. The cephalopod fauna from the marly limestones to marls here indicates Early Valanginian to Early Aptian age.

Lower Cretaceous deposits form a major element of the Southern Alps and especially of the Dolomites (Hoernes, 1876; Haug, 1887, 1889; Uhlig, 1887; Rodighiero, 1919; Baccelle and Lucchi-Garavello 1967a, b; Stöhr, 1993, 1994; Costamoling and Costamoling 1994). The geology of the Dolomites and adjacent areas has been described and summarized in detail by Pozzi (1993), Geyer (1993), Heissel

(1982), Bosellini (1998), and Bosellini *et al.* (2003). In the Dolomites, Lower Cretaceous cephalopod-bearing deposits are mainly recorded in two different facies, the Biancone Formation (calcareous limestones, Maiolica Formation) and the Puez Formation (marl-marly limestones). The investigated outcrop, comprising the Biancone- and the Puez Formation, is situated on the Puez-Odle-Gardenaccia Plateau in the Dolomites (Trentino – Alto Adige; South Tyrol). The exact position is about 30 km northeast of Bozen.

The extraordinarily rich invertebrate fauna consists of ammonoids, ammonoid jaws (aptychi), coleoids, bivalves, brachiopods, serpulids, sea urchins, ophiurids, corals, benthic/planktonic foraminifera and radiolarians. The benthic macrofossils observed in the ammonoid beds comprise bivalves, brachiopods and, surprisingly, corals. Huge numbers of encrusting species like serpulids and corals were examined.

The most exciting feature of the fauna is the fact that solitary corals of *Cycloseris* lived on ammonoid shells during the Early Cretaceous of the Dolomites. This is not known from other sediments and localities through time and space. The relation between the latter fossil groups is reported for the first time from the Mesozoic Era.

In most cases only the round basal plate of the corals is visible attached to the steinkerns of the ammonoids. Only rare specimens (2) show

three-dimensional preservation of the coral body with its septa. All kinds of ammonoids are attached with relics of solitary corals: lytoceratids, phylloceratids, ammonitids and ancyloceratids, ribbed species as well as smooth species. Host "ammonoids" are: *Leptotetragonites honnoratianus* (d'Orbigny), *Phyllopachyceras infundibulum* (d'Orbigny), *Phyllopachyceras bontshevi* Manolov, *Phylloceras thetys* (d'Orbigny), *Lytoceras subfimbriatum* (d'Orbigny), var. A. in Lukeneder 2006, *Silesites vulpes* (Coquand), *Melchiorites cassioides* (Uhlig), *Barremites psilotatus* (Uhlig), *Crioceratites krenkeli* (Sarkar), *Ancyloceras matheronianum* (d'Orbigny).

Therefore a secondary hard ground is needed for settling. The hard substrate must have been available for the epibionts over a quite long time so they had enough time to settle and grow. The morphology is similar to that of Early Cretaceous *Cycloseris* from Spain and Late Cretaceous solitary corals like *Connolites* or *Micrabacia* from all over Europe. Basal plates are from 2 mm up to 4 cm in diameter.

Internal structures, septa and composition, are comparable with the latter species. Despite these similar features it is not known from corals like *Connolites* or *Micrabacia* that they could have lived on ammonoid shells. Serial thin sections were made and show remarkable differences from other known solitary corals. The solitary coral *Cycloseris* needed some time to grow up to a maximal size of 4 cm in diameter. The number of about 20 corals attached on ammonoid shells shows that this is common at the Puez locality. A single ammonoid shell could be attached by up to 6 corals.

The main focus of future studies of the Puez area will be on the palaeoecology and synecology of the cephalopod fauna of the Puez section. Therefore the author will investigate the relation of the hosts (ammonoids) and their encrusting epibionts at the Puez locality. From great interest will be the evolution of the relationship between these normally unconnected fossil groups through time (e.g. Early Cretaceous).

**Alexander LUKENEDER**

Natural History Museum

Geological-Palaeontological Department

Burgring 7

A-1010 Vienna

Austria

e-mail: alexander.lukeneder@nhm-wien.ac.at

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Autor(en)/Author(s): Lukeneder Alexander

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