

## FIRST OLIGOCENE CORAL FAUNA FROM THE EASTERN ALPS

Diethard Sanders<sup>1</sup> and Rosemarie Baron-Szabo<sup>2</sup><sup>1</sup> Institute of Geology and Palaeontology, University of Innsbruck, A-6020 Innsbruck, Austria<sup>2</sup> Smithsonian Institution, Dept. of Invertebrate Zoology, Washington DC, USA

In the Werlberg Member of the Häring Formation (Rupelian, Northern Calcareous Alps, Austria), in carbonate rocks of low-energy rocky to gravelly shores and low-energy lagoonal areas, a coral fauna composed of eleven colonial species has been identified.

During the Rupelian, the area of the future Eastern Alps had largely emerged as an elongate island between the Mediterranean Sea in the south and the Paratethys in the north. The Häring Formation is part of the inner-Alpine Tertiary, and accumulated during Oligocene basin formation along the Inn Valley strike-slip fault (cf. Ortner & Stingl, 2001). Today, in the Eastern Alps, Oligocene shallow neritic rocks are very scarcely preserved.

The Werlberg Member consists mainly of pure shallow-water limestones, and formed during transgression over a truncated substrate of folded and faulted Triassic carbonate rocks. In the basal part of the member, a gradual vertical transition from local rhéogolithic breccias into thin intervals of beachface breccias, a persistent matrix of lime mudstone in textures of bio-lithoclastic floatstone and wackestone, abundant carbonate rock gravels to cobbles of extremely angular shape because of densely-spaced macroborings, and *in-situ* preserved thickets of branched coralline algae and/or of branched corals all record low-energy conditions along the marine transgressive fringe. The carbonate lithoclasts are derived from the local rock substrate, and are densely riddled by borings of lithophagids and clionids. The lithoclasts are overgrown by sessile foraminifera, serpulids, vermetids and balanids. In addition, punctate brachiopods are common, and may have thrived attached to hard substrata. Higher up-section, the Werlberg Member may locally contain bioclastic wacke-packstones rich in benthic foraminifera, coralline algae and fragments of branched cyclostomate bryozoans. At a single location, the member includes a package of bioclastic wackestones to floatstones rich in corals; these limestones probably accumulated from a

low-energy shallow subtidal lagoon. The Werlberg member is capped by an intra-Oligocene unconformity that formed upon subaerial exposure.

In the intervals that accumulated along the rocky to gravelly carbonate shore, the corals most commonly are coarsely fragmented. In the interval deposited from an overall quiet shallow subtidal setting (lagoon or sheltered innermost shelf), however, integer coral colonies up to a few decimeters in size are common. No reef structure was observed. The corals thrived isolated and in level-bottoms. The coral fauna of the Werlberg Member includes ten genera, and is dominated by genera of large age range (mainly Paleocene to Miocene). The fauna shows highest affinity to both Central European and Caribbean-Central American faunas. On the species level, the Werlberg fauna corresponds best with Oligocene faunas from the circum-Mediterranean domain, in particular with that of the „Lessini shelf“ of the Southern Alps. Two species of the fauna (*Syzygophyllia brevis*, *Stylocoenia carryensis*) are identified for the first time in pre-Miocene rocks. The Werlberg fauna consists of, both, branched coral taxa (phaceloid, ramose, ?dendroid) and of massive forms mainly of cerioid, meandroid, and plocoid integration. No solitary corals were found. Compared to recent coral faunas of similar low-energy depositional settings, the Werlberg fauna is of similar to higher diversity. Also, the wide spectrum of coral growth forms, polyp integrations and polyp size underscores that, overall, the Oligocene corals were not subject to elevated ecostress other than potential stress factors that pertain to every shallow subtidal nearshore setting.

Ortner, H. & Stingl, V., 2001, Facies and basin development of the Oligocene in the Lower Inn Valley, Tyrol/Bavaria. – In: Piller, W. E., Rasser, M. W., Eds., Paleogene of the Eastern Alps. Österr. Akad. Wiss., Schriftenr. Erdwiss. Komm., 14, 153–196, Vienna.