Ber. Inst. Geol. Paläont. K.-F.-Univ. Graz	ISSN 1608-8166	Volume 7	Graz 2003

PALAEOECOLOGY OF LATE DINANTIAN CORAL BIOSTROMES FROM COUNTY SLIGO, NORTHWESTERN IRELAND

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The Asbian succession of northwestern Ireland is characterised by northward retrogradation of deltaic systems and the diachronous advance of pure carbonate facies due to a gradual sea-level rise. Rugose corals are abundant in the Bricklieve Mountain Formation, and in its northern equivalents, the Glencar and Darty formations. However, only *Siphonodendron* constructs distinctive biostrome-dominated horizons, which can be traced across more than 40 kilometres through Cty. Sligo in a transect more or less perpendicular to the palaeocoast. Named according to the predominating species, these are from below: „*pauciradiale* reef", „*martini* reef" and lower, middle and upper „*junceum* reefs".

The oldest coral horizon, the „*pauciradiale* reef", is up to 50 m thick. According to its geometry and dimensions, it is a biostromal reef complex (Aretz 2002). In the southern exposures, heterogeneously distributed coral boundstones, coral debris rudstones/grainstones, and bioclastic grainstones are interbedded. Only few horizons are laterally persistent for more than a few meters; rigid coral frameworks are rare. The abundant coral debris resulted from *in situ* destructions of the colonies. Neither a cyclic development nor a succession of ecological stages could be evidenced. Sections in the transitional realm towards the siliciclastic facies in the north have strongly reduced thickness of about 16 m. Alternating shales and coral limestones form small-scale cycles, which may be autocyclic, derived from switching delta lobes, or allocyclic, derived from glacio-eustatic sea-level variations. Colonial rugosa are always transported. *Solenodendron furcatum*, a rare species in the South, predominates.

The 7 m thick „*martini* reef" is mostly homogeneous across the N-S transect. It is characterised by repeated coarsening-upward, few colonial corals in place, and an exaggerated amount of coral debris. It is a polyspecific para- to autoparabiostrome, formed by repeated tempestitic reworking, and resedimentation of more or less autochthonous coral debris.

The overlying lower, middle and upper „*junceum* reefs" are monospecific, low-height, often single-generation autobiostromes. Abundant elongated and partly branched chert nodules directly below the lower „*junceum* reef" are interpreted to be burrows of the *Thalassinoides* type, thus indicating slow sedimentation rate and hardground formation.

The different geometries, internal construction modes and thicknesses of the coral horizons indicate strong ecological control of their formation. This is stressed by the predominance of different *Siphonodendron* species, which stratigraphically co-occur during the later Asbian.

The geometry of the „*pauciradiale* biostromal reef complex" indicates position on a southward dipping ramp. Optimum water-depth for *S. pauciradiale* colonies with small, quite fragile corallites, apparently was around storm-wave base. The growth of the wedge of the biostromal reef complex resulted in formation of a shelf platform enabling growth of the tabular, „*martini* para- to autobiostrome", which is characteristically undifferentiated in thickness and facies all across the studied transect. Carbonate facies demonstrates settlement of *S. martini* with its more stout corallites above fair-weather base, i.e. in shallower water than *S. pauciradiale*. The „*junceum* autobiostromes" developed after drowning of the platform in deeper water, as seen by the predominantly upright position of the colonies with very delicate corallites. Low sediment input and hardground formation may be connected with maximum flooding phases of the Late Asbian transgression.

Reference

Aretz, M. 2002. Kölner Forum Geol. Paläont., 10, 1-155.