BIVALVE BIOFACIES OF THE „HOFERGRABENMERGEL" (HOCHMOOS FM., EARLY SANTONIAN BOUNDARY, LOWER GOSAU SUBGROUP)

DIE BIVALVEN-BIOFAZIES DER HOFERGRABENMERGEL (HOCHMOOS-FM., UNTER-SANTON-GRENZBEREICH, UNTERE GOSAU-GRUPPE)

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INTRODUCTION

In the last decade numerous papers have dealt with the palaeoenvironmental interpretation of the celebrated Gosau sediments. This statement applies, however, mainly to carbonate rocks with abundant rudist and coral faunas (e. g. Höfling 1985, Sanders, Pons 1999) while this aspect of siliciclastic deposits has received less attention (see e. g. Sanders et al. 1997). Sediments belonging to the Lower Gosau Subgroup are well exposed at the type area, i. e. in the vicinity of the village of Gosau. Fine-grained siliciclastic deposits are major constituents of the successions and often contain diverse fossil assemblages. Bivalves have proved to be especially abundant. As it has been shown by several papers, bivalves are probably the most suitable group of aquatic invertebrates to palaeoenvironmental studies. The rich bivalve fauna of the Lower Gosau Subgroup is well documented (Dhondt 1987, Zittel 1865-66), providing a good opportunity to analyse the biofacies of some fine-grained rocks exposed at the type area.

LOCALITIES AND MATERIAL

Two groups of outcrops, situated in the Finstergraben (grey marls at bridge of Finstergraben forest road) and Hofergraben yielded significant bivalve faunas consisting of more than 300 specimens as a total. Samples have been taken also from outcrops along Schattau forest road (Stop 7 of Kollmann, Summesberger 1982). Exposures of the Hofergraben and Schattau have yielded relatively well-preserved fossils. At the Finstergraben bivalve shells are usually more or less chalkified. About 90% of the specimens could be identified at least at genus level. The fossil assemblages, regarded as autochtonous remnants of the former benthic communities are dominated by bivalves as a rule. Although the number of specimens studied is lower than it is usually required in quantitative palaeoecological studies, the recognised bivalve assemblages differ significantly both in taxonomic composition and guild structure, thus they are thought to reflect different palaeoenvironmental conditions.

RESULTS

Three different assemblages could be distinguished. The marls exposed in the Hofergraben were found to contain more than 30 bivalve taxa of which *Limopsis calva* (J. Sowerby) dominates. Although extant species of the genus *Limopsis* are typical elements of deep-sea faunas (e. g. Knudsen 1970), Mesozoic representatives of the genus are supposed to had much wider environmental distribution (see e. g. Heinberg 1979). Intercalated within the marl succession calcarenite beds up to some ten cm in thickness occur in the Hofergraben. Well-preserved fossils are rare in these beds, only thick shells of *Scabrotrigonia scabra* (Lamarck) and corals can be identified. Mesozoic trigonians are equivocally thought to be adopted to high-energy environments, thus the *Scabrotrigonia*-bearing shell-beds probably indicate short-term shallowing events in the Gosau Cretaceous Basin.

Marl beds exposed at the Finstergraben yielded a less diverse bivalve fauna consisting of about 10 taxa of which *Poromya frequens* (Zittel) highly predominates. Extant poromyids are characteristic of deeper-water bivalve assemblages. On the basis of the actualistic data as well as of the lack of definitive shallow-water forms the Finstergraben-fauna can be considered as a deeper sublittoral assemblage.

The interpretation of bivalve assemblages outlined above can be fitted into the general trend of deepening of the Gosau Basin during Coniacian-Santonian times.

The most frequent taxa and forms of other interest are figured in Plate I.

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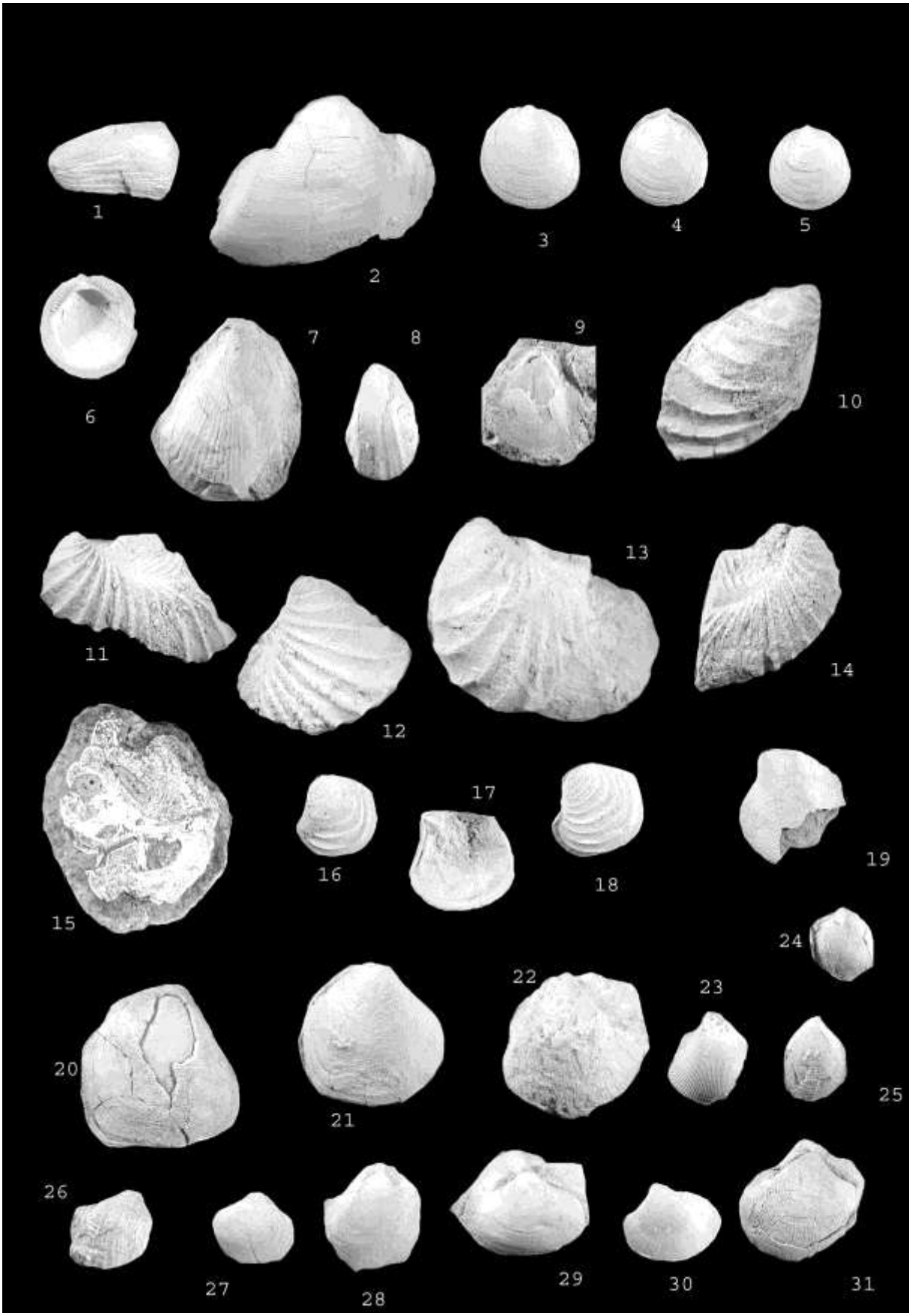
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PLATE I

APPENDIX I: PLATE I

Fig. 1: *Modiolus* cf. *siliquus* (Matheron). Finstergraben;
Fig. 2: *Arca* sp. Finstergraben;
Figs. 3-6: *Limopsis calvus* (J. Sowerby). Hofergraben;
Fig. 7: *Limaria*? *marticensis* (Matheron). K&S 16/17 (Brunftloch, Santonian);
Fig. 8: *Neithea* cf. *coquandi* (Peron). Hofergraben;
Fig. 9: *Entolium*? sp. Finstergraben;
Figs. 10-14: *Scabrotrigonia* scabra (Lamarck). Hofergraben;
Fig. 15: *Vaccinites* sp. Schattau;
Figs. 16-18: *Astarte similis* (Münster in Goldfuss). Hofergraben;
Fig. 19: *Cyprimeria*? *discus* (Matheron). Hofergraben;
Figs. 20-21: *Pitar*? *polymorpha* (Zittel). Hofergraben;
Figs. 22-25: *Cardiid bivalvia*, gen. et sp. indet. Hofergraben and Schattau forest road;
Fig. 26: *Pholadomya* (*Ph.*) cf. *nodulifera* Münster in Goldfuss. Finstergraben;
Figs. 27-31: *Poromya frequens* (Zittel). Finstergraben.

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