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Late Jurassic recifal algal associations Western Styria

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Geologial setting

During Late Jurassic sedimentation the Austroalpine realm reveals a strong differentiation between basinal and shallow-water deposits, the latter belonging to the carbonate platforms on top of submarine sills with intertidal to subtidal facies types (comp. chapter A2, fig.5). Terrigenous influx is lacking. Especially the Plassen Limestones were deposited in the central area of a platform upon a tectonic uplift as part of the Triassic Hallstatt Nappes ("Tief - Juvavikum") which at present lie in the north of the tectonically higher unit of the Dachstein Nappe ("Hoch - Juvavikum"). According to TOLLMANN (1976) the Late Jurassic platforms were separated by tectonic transport.

The Plassen Limestones are composed of patchy coral- and stromatoporoid-chaetetid- dominated bioconstructions connected with near - reef detrital carbonates, lagoonal and even intertidally influenced deposits which can be studied in detail around the Krahstein NE of Bad Mitterndorf / W- Styria (STEIGER & WURM 1980; STEIGER 1981; fig.1).

The Krahstein sequence consists at the base of Early Triassic sandstones and shales (Werfenian) followed by Middle Triassic dolomites and grey "Reifling Limestones", and overlain by Late Triassic red - coloured Hallstatt Limestones. After a stratigraphic gap (Norian - Dogger) Plassen Limestones are developed in several recifal and adjacent facies types (see facies map, fig. 1).

Stop 7

Locality
Roadcuts along forest road to Krahstein (fig. 2)

Topography
Take forest road NE of Bad Mitterndorf to Krahstein; section of Plassen Limestones starts after morphological depression (N Bergeralm)

Stratum
Plassen Limestones.

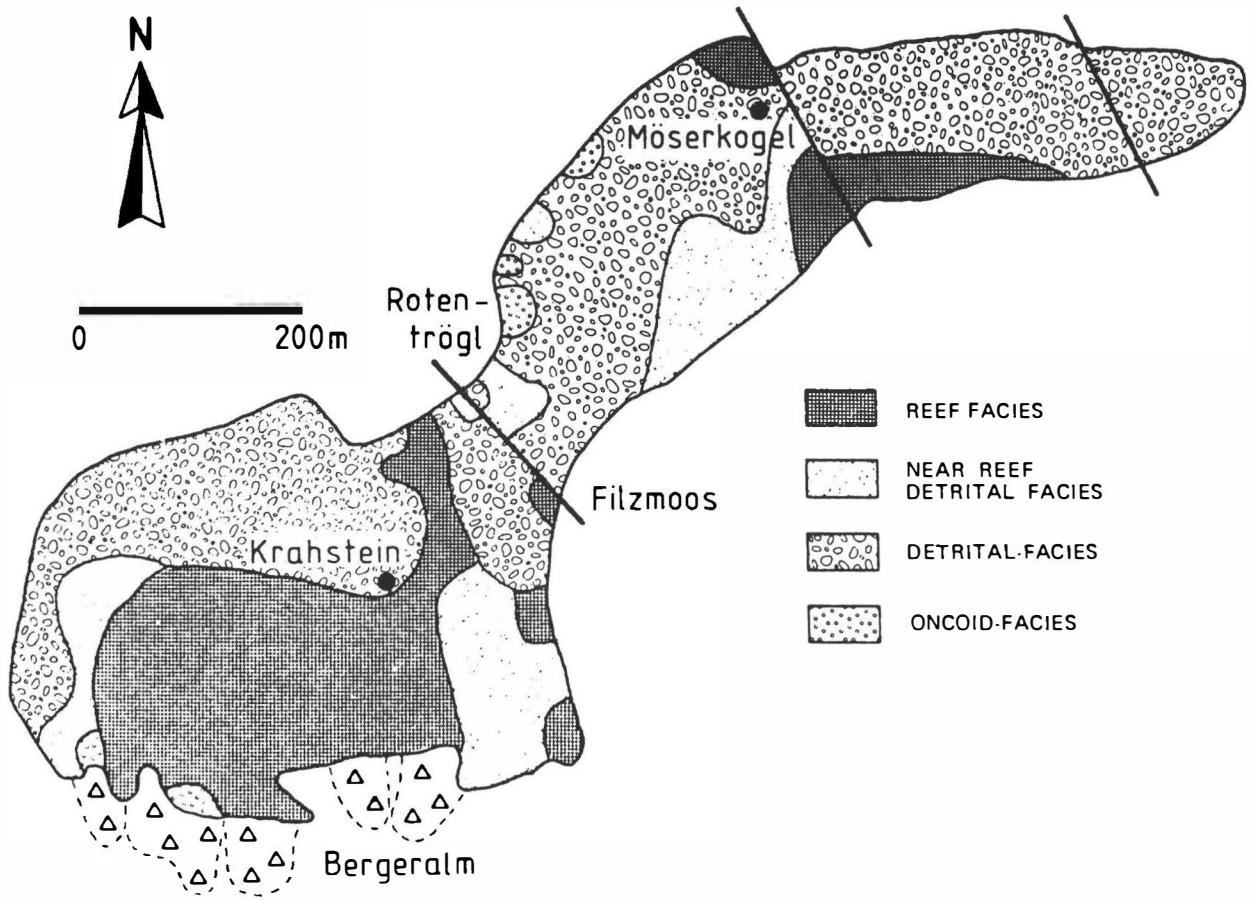
Age
According to STEIGER (1981) significant cenofossils has been recorded indicating Oxfordian (*Protopeneroplis striata* WEYNSCHENK), Kimmeridgian (*Labyrinthina mirabilis* WEYNSCHENK, *Salpingoporella pygmaea* (GÜMBEL)), as well as Tithonian age (*Campbelliella striata* (CAROZZI), *Clypeina jurassica* FAVRE & RICHARD, *Salpingoporella annulata* CAROZZI).

Facies types
(see also fig. 3 for a genetic model explaining possible interrelationships between different facies types)

* bioconstructional limestones: coral and stromatoporoid-chaetetid framestones and bafflestones with dense fabric.

Fauna
Placopsilinidae, Nubeculariidae; *Actinostromaria shimizui* YABE & SUGIYUMA, *Actinostromaria* sp., *Ellipsactinia caprense* CANAVARI (= stromatoporoids sensu WOOD 1991) ?partly sphinctozoans sensu SENOWBARI-DARYAN 1991, "hydrozoans" in STEIGER & WURM 1980); *Ptychochaetetes globosus* KOECHLIN, *Pseudoseptifer spengleri* (HERITSCH); serpulids; sessile molluscs;

Fig. 1: Facies map of Plassen Limestones in the Krahstein area showing facial differentation (from STEIGER & WURM 1980).



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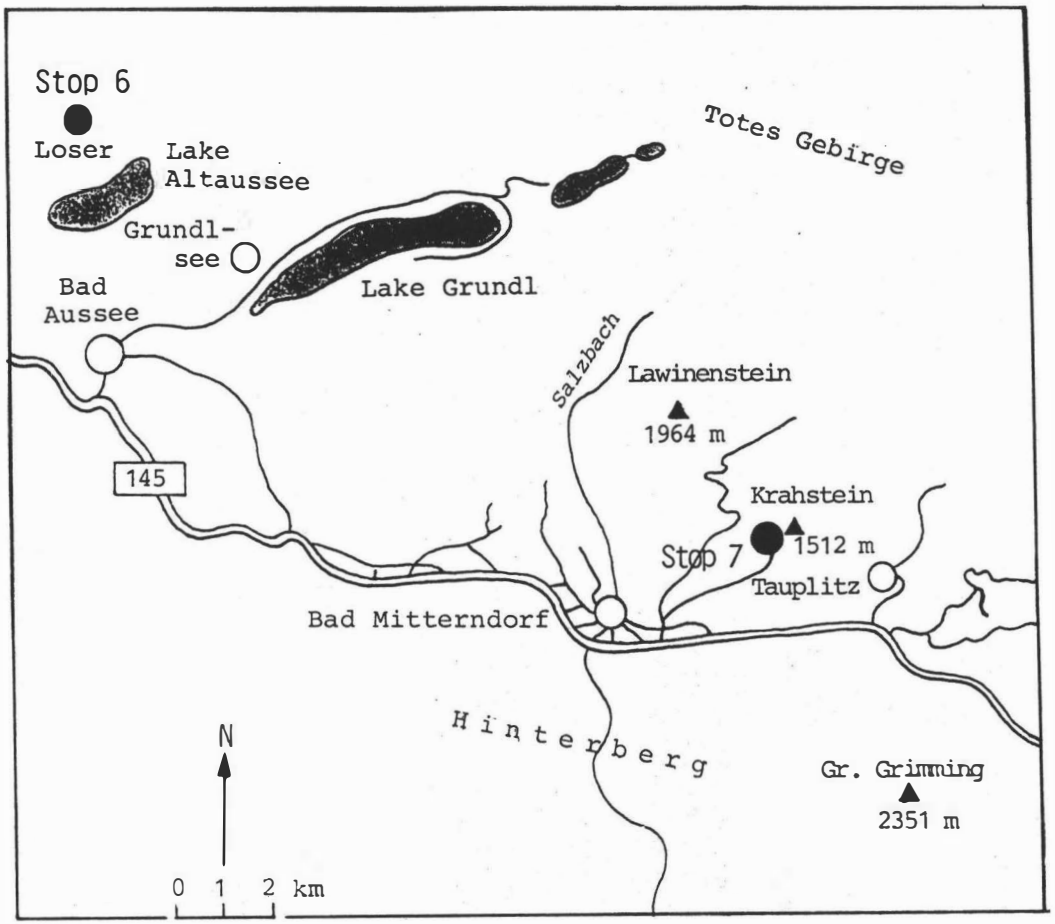

Fig. 2: Location map of stop 6 (Loser, comp. chapter B3) and stop 7 (Krahstein).

Algae
" Tubiphytes" sp., *Lithocodium* sp. / *Bacinella* sp.;

*** near reef detrital limestones: peloidal packstones, grainstones, partly rudstones;**
Fauna
foraminifera (*Coscinophragma, Protopeneroplis, Pseudocyclammina*); stromatoporoids, chaetetids; corals; nerineids; echinids;
Algae
cyanobacteria crusts,
Lithocodium sp./*Bacinella* sp.;
Dasyclads:
Salpingoporella pygmaea (GÜMBEL),
Salpingoporella annulata CAROZZI,
Salpingoporellajohnsoni DRAGASTAN,
Campbelliella striata (CAROZZI) BERNIER;
Petrascula bursiformis ETALLON;
? codiaceans:
Nipponophycus ramosus YABE & TOYAMA;

*** lagoonal detritus limestones: grainstones and rudstones with reworked framebuilders**
fauna: foraminifera; bryozoans; bivalves; gastropods; abundant echinoderms;
algae: cyanobacteria "envelopes";

*** micritic limestones with oncoids**: oncolithic bindstones in pelmicritic matrix, oncolithic packstones; oncoid-nuclei mainly formed by gastropods, dasycladacean fragments (*Petrascula*) and foraminifera (*Labyrinthina mirabilis* WEYN SCHENK); dense succession of micritic coatings; fenestral fabrics (*Stromatactis*) can occur.

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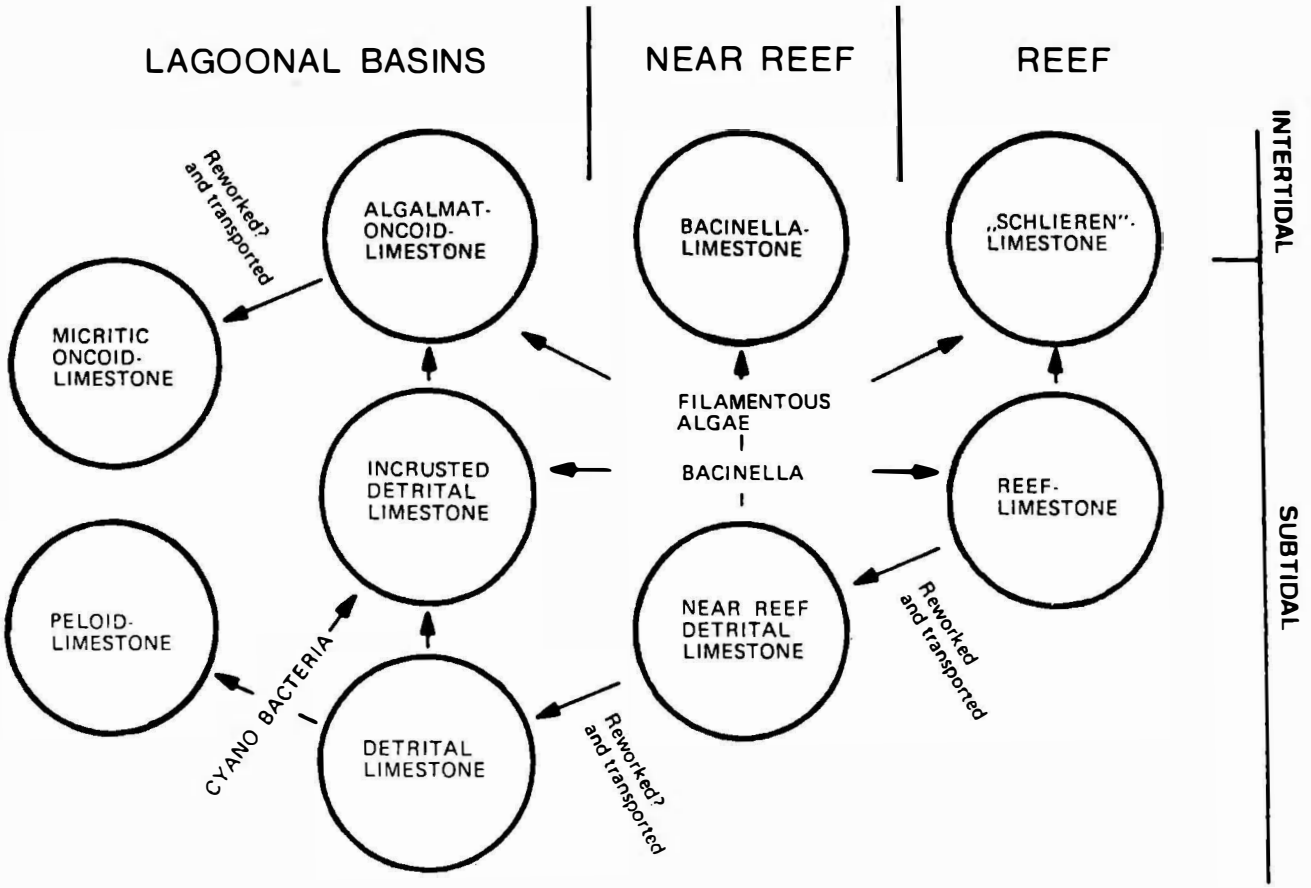

Fig 3: Genetic model explaining possible interrelationships between different facies types of Plassen Limestones (after STEIGER & WURM 1980).