

Introduction

Objekttyp: **Chapter**

Zeitschrift: **Eclogae Geologicae Helvetiae**

Band (Jahr): **78 (1985)**

Heft 2

PDF erstellt am: **16.08.2024**

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

CONTENTS

A. Introduction	384
B. Initial reports of the Deep Sea Drilling Project, Leg 76, Site 534A in the Blake-Bahama Basin	385
a) Late Jurassic Cat Gap Formation	385
b) Early Cretaceous Blake-Bahama Formation	385
C. The Breggia section of southern Switzerland	386
a) Late Jurassic to Barremian post-rift sediments of the southern Tethyan margin	386
b) Water depth during Late Jurassic and Early Cretaceous	387
c) Late Jurassic Rosso ad Aptici Formation of the Breggia gorge	387
d) Early Cretaceous Maiolica Formation of the Breggia gorge	387
e) Aptian(?) to late Cenomanian deep-water pelagic sediments	388
f) Late Cenomanian to Campanian Flysch sediments	388
g) Diagenesis and Alpine deformation	388
D. Paleontological analysis	389
a) General remarks	389
b) Systematic descriptions of aptychi from the Maiolica Formation	390
E. Correlation of the Maiolica Formation of the Breggia section with the Blake-Bahama Formation ..	415
F. Conclusions	418

A. Introduction

The Jurassic and Lower Cretaceous deep water sediments of the Tethyan realm are underlain by sediments of a complex southern Tethyan margin, while coeval Jurassic sediments in the Blake-Bahama area rest on oceanic basement. Uniform conditions of deep water sedimentation testify to the connection between Tethys and the early Atlantic created during the Jurassic. They are reflected in the similarity of the macrofaunal contents of the Maiolica and the Blake-Bahama Formation which instigated the present study.

In a contribution for Volume 76 of the Deep Sea Drilling Project several ammonites and aptychi, assembled from Holes 391C and 534A in the Blake-Bahama Basin, east of the Blake Plateau, were described (RENZ 1978, p. 899–909, and RENZ 1983, p. 639–643). The age of the fossils ranges from Late Jurassic to Early Cretaceous. Based on the results, a correlation with other DSDP holes in the Atlantic and with a surface section in the Lombardian Alps was attempted.

An appropriate surface section in the Lombardian Alps is exposed in the river Breggia, located in southern Switzerland, next to the Italian border (Fig. 3). In this section, deep water pelagic carbonates of Late Jurassic to Early Cretaceous age are referred to as the Rosso ad Aptici Formation (Tithonian) below, and the Maiolica Formation (earliest Berriasian to Barremian) above.

Since the last century both formations have been studied extensively, in particular, their microfaunas and sedimentology. Among the more recent papers are those of BERNOULLI (1964), WEISSERT (1979), and WINTERER & BOSELLINI (1981). The present paper focusses on biostratigraphy of the Maiolica Formation of the Breggia section, where, thanks to numerous new finds of aptychi by the authors, the subdivision of the Early Cretaceous has now been improved, and this in turn allowed a more detailed correlation with the coeval strata of DSDP Site 534A and 391C.

The river Breggia section was selected by WEISSERT (1979, p. 28, Fig. 3, 2) as type section of the Maiolica Formation (Lombardian sector). WEISSERT was the first worker

who collected aptychi systematically and indicated their position within the Breggia section. This collection was used for the contribution in Volume 76, DSDP (p. 639–644). Additional material was collected by the present authors in the Breggia section. The authors have endeavoured to include in the present publication illustrations of all representative fossils collected by them and by WEISSERT. An improved stratigraphic succession of Early Cretaceous aptychi has been established. This will serve as an indispensable base for a realistic taxonomy of this hitherto little known group of fossils.

B. Initial Reports of the Deep Sea Drilling Project, Leg 76, Site 534A in the Blake-Bahama Basin

Hole 534A of Leg 76 was drilled in the Blake-Bahama Basin, about 500 km east of Florida (latitude 28°20.6' N; longitude 75°37.00' W), from where remains of cephalopods were also obtained. The purpose of Hole 534A was to reach the oceanic basement and to determine the oldest sediments deposited over it, assumed to be of Middle Jurassic age.

a) Late Jurassic Cat Gap Formation

In DSDP Hole 534A the limit separating Jurassic from Cretaceous sediments coincides about with a change in facies from red-greyish claystones into light grey calcareous siltstones and claystones. The sequence is little altered diagenetically.

The limit separating red from greyish sediments seems to be connected with a regionally synchronous event, reflected in several holes in the Atlantic, as well as in Tethyan surface sections in southern Europe (BERNOULLI 1972).

In the western Atlantic the brick-red to purplish sediments are referred to as the Cat Gap Formation (Core 51 to Core 91 in Hole 534A). The type section is situated east of the Bahama Banks. The formation attains a thickness of 153 m in Hole 534A. Conchs of ammonites are destroyed by solution, aptychi on the other hand show no indication of being dissolved. Water depth was greater than the Aragonite Compensation Depth.

In the upper part of the Cat Gap Formation, in Core 96, *Lamellaptychus beyrichi* (OPPEL) was recovered. It represents a characteristic form, indicating a Late Jurassic (Tithonian) age. Identical specimens occur abundantly in the Breggia section and in the Apennines (KÄLIN et al. 1979, p. 748, Fig. 11) in lithologically very similar sediments.

b) Early Cretaceous Blake-Bahama Formation

The red Tithonian sediments of the Cat Gap Formation in Hole 534A are followed by the Blake-Bahama Formation, covering the interval between Core 51 to Core 91 (360 m). The sediments consist predominantly of soft, laminated, light grey to whitish pelagic marls, calcareous siltstones and claystones, which are little altered diagenetically.

Lamellaptychi are scattered all over the formation. 15 different forms were isolated. Ammonites are represented by four species, of which two are of considerable value for regional correlation. From the top of the formation, in Core 51, a small-sized *Pulchellia*, indicating a late middle Barremian age, was obtained. In previous publications the respective interval was interpreted as Hauterivian. Furthermore, a fragment of *Neo-*