

SULTAN T. KHUSANOV

LATE JURASSIC SCLERACTINIA OF THE WESTERN UZBEKISTAN

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The remains of scleractinians are widespread in the Upper Jurassic carbonate formation of south-western and western Uzbekistan. In association with other organisms they took part in the formation of different types of reefal structures which are generally confined to the Urtabulak suite. Twenty species and forms of 7 families and 14 genera in these sediments were recognized. The age of this coral assemblage is on the whole defined as Upper Oxfordian.

Key words: corals, Scleractinia, stratigraphy, Upper Oxfordian reefs, Uzbekistan.

Sultan T. Khusanov, Ministry of Geology of Uzbek SSR, Institute of Oil and Gas Exploration, Shota Rustaveli 114, 700056 Tashkent, USSR. Received: September 1979.

The remains of Scleractinia are widely spread in the Upper Jurassic carbonate formation of south-western and western Uzbekistan. By its composition, structure and texture, this formation is a distinct geological body, which can be recognized in the sedimentary complex of the entire Jurassic sequence. This formation is known as the Kughitang series (Akramkhodzhaev *et al.* 1971). The sediments of the series are thick-bedded and platy and sometimes, massive strata. They seem to be monotonous but, in fact, they constitute a fairly heterogenous lithological complex with reef structures being very important. Thanks to their physical properties and resistance to weathering, these sediments are easily recognizable in the relief. Forming steep slopes and scarps in the shape of vertical walls, their outcrops stretch for many kilometers, being often complicated by tectonic deformations and dislocations with a break in continuity.

North-westwardly, the carbonate sediments subside under the sedimentary cover of the Cretaceous-Paleogene to be traced again on considerable depth over a wide territory of the Bukhara-Khiva region where they are striped by wells. These rocks are underlain everywhere with terrigenous-carbonate strata of the Baisun suite (Callovian) and are overlain with salinogypseous formation (Kimmeridgian-Tithonian) of the

Gaurdak suite. Against the background of genetically varied rocks the carbonate formation of the Kughitang series stands out sharply in the outcrops and can also be unmistakably discriminated in the well sections according to geophysical logging.

The general thickness of the series in the south-western spurs of the Ghissar range shows a great variation. Ranging within 80—200 m in the

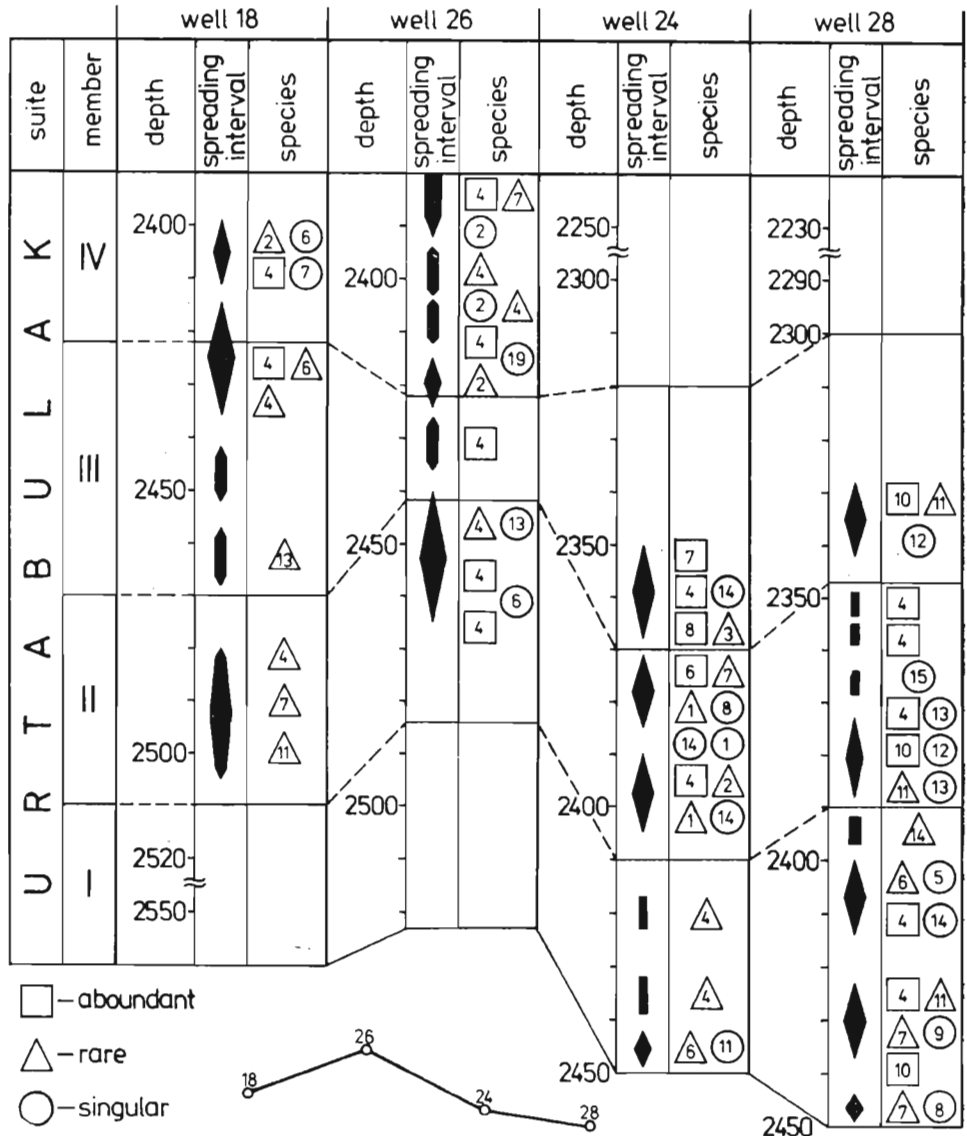


Fig. 1. Distribution of scleractinian species in the Urtabulak region: 1 *Microsolena agariciformis*, 2 *M. cavernosa*, 3 *M. fromenteli*, 4 *Microsolena* sp., 5 *Comoseris minima*, 6 *Comoseris* sp., 7 *Thecosmilia cartieri*, 8 *Thecosmilia* sp., 9 *Calamophylliopsis disputabilis*, 10 *C. kyrvakarensis*, 11 *C. etalloni*, 12 *Calamophylliopsis* sp., 13 *Pseudocoenia* sp., 14 *Stylosmilia* sp., 15 *Favia* sp.

north-east, it gradually increases southwestwardly without any sharp gradients and in the southernmost regions the series is 500—600 m thick (Kughitang, Gaurdak). A similar tendency with several peculiarities may be observed in the Bukhara-Khiva region. In the most complete sections of the Bukhara stage, the thickness of the formation varies within the range of 250—280 m, in the central regions of the Chardgou stage it amounts to and sometimes exceeds 400—450 m. The regular pattern of thickness increase, however, is slightly disturbed in the sequences of some local uplifts.

The age of the carbonate formation is defined by ammonite fauna. In the exposed areas, the Middle and Upper Callovian and Oxfordian can be recognized. The carbonate formation of western regions is identified as a whole as a Callovian-Oxfordian unit. At present, a newly developed local stratigraphic scheme suggests the subdivision of carbonate formation of the Kughitang series into the Kandym, Mubares, Urtaulak and Kushab suites (Mirkamalov *et al.* 1979).

An outstanding peculiarity of the Late Jurassic carbonate formation is the fact that the remains of Scleractinia played an important role in its formation. Together with the remains of other organisms they took part in the formation of genetically different types of organogenous structures up to reefs of complex structure. The coral fauna of carbonate formation has been studied by Reiman (1970), Saidusmanov (1974) and Khusanov (1977). A large collection of Scleractinia was studied by the author on the sections of Western Uzbekistan, where they are widespread in the sediments of the Urtaulak suite.

The coral fauna is particularly rich in the Urtaulak area, but the remains of corals are distributed unevenly. Their lateral and vertical distribution varies and in every member they form isolated associations (fig. 1). All in all, these sections yielded 20 species and forms, belonging to 7 families and 14 genera. Genera *Microsolena* and *Calamophylliopsis* display the most varied specific composition (table 1).

The study of coral stratigraphic distribution indicates that the Urtaulak suite abounds in corals, significant for age determination. Among them are: *Calamophylliopsis kyrvakarensis*, *Favia michelini*, *Microsolena* cf. *foliacea*, *Dimorpharaea* cf. *expansa*, *Comoseris minima*, *Pseudocoenia* cf. *maxima*, *Fungiastraea* cf. *multicincta*. The above species are known from the Upper Oxfordian of Azerbaijan, Georgia, the Crimea, Poland, France and Switzerland (table 1).

It should be noted that until recently no biostratigraphic importance was attached to the corals of western Uzbekistan and therefore stratigraphers dealing with Upper Jurassic deposits were satisfied with rough age determination. Nevertheless, the analysis of data published shows that the main reef formation in the Tethys began during the Oxfordian, but was more intense in the Late Oxfordian and the Kimmeridgian. At

Table 1

Scleractinian species of Urtabulak suite and their stratigraphic and geographic distribution

West Uzbekistan	Little Caucasus (Azerbai- djan)		the Crimea	Poland	F.R.G.	Switzer- land			
	Upper	Lower							
Upper Oxfordian (Chardgou stage)	Upper	Lower	U. Oxfordian- Kimmeridgian	Oxfordian	Kimmeridgian	Oxfordian	Kimmeridgian	Oxfordian	Oxfordian
<i>Stylosmilia</i> sp.	○							
<i>Cladophyllia</i> sp.	○							
<i>Stylina ambitus</i> Reiman									
<i>Thecosmilia cartieri</i> Koby								○
<i>Isastraea</i> sp.	○							
<i>Calamophylliopsis disputabilis</i> (Becker)	..					○	○		
<i>C. etallonii</i> (Koby)		○						
<i>C. kyrvakarensis</i> (Babaev)	○							
<i>Favia michelini</i> (M. Edwards et Haime)	..	○	○						
<i>Fungiastrea</i> cf. <i>multicincta</i> (Koby)									
<i>Thamnoseria</i> sp.	○							
<i>Dimorpharaea expansa</i> Solomko	○							
<i>D.</i> cf. <i>lineata</i> Eichwald	○	○						
<i>Microsolena agariciformis</i> Etallon	..			○	○	○	○	○	○
<i>M. cavernosa</i> Koby		○						○
<i>M. foliacea</i> (Quenstedt)					○			
<i>M. fromenteli</i> Koby							○	
<i>Comoseris minima</i> Beauvais			○	○				
<i>Actinaraea granulata</i> (Munster)			○	○	○			

present, it is an established fact that many species make it possible to determine the age of stages and even substages and thus they may be used for correlation of sections not only in the neighbouring but also in distant regions. The studies of Bendukidze (Georgia), Babaev (Azerbaijan), Krasnov (the Crimea, the North Caucasus, Sachalin: 1964, 1973) and others confirm this opinion. For instance, the corals occur frequently in Upper Jurassic massive limestones of the southern slope of the Great Caucasus

(Georgia), while other types of fauna are impoverished there. In some sections the age of limestones was recognized as Late Jurassic or, wrongly, as Early Cretaceous, only on the basis of their position in the profile or lithological features. The study of the coral fauna in these limestones made it possible to identify the sediments as correlates of the Upper Oxfordian up to and including the Tithonian (Bendukidze 1949, 1962, 1964).

As a result of investigations of Upper Jurassic scleractinians from the Little Caucasus, Babaev (1973) established that they had great similarity with coral assemblages of England, France, the Balkans, the Crimea and other regions being widespread in a narrow stratigraphic interval. This makes that group of organisms more valuable for stratigraphic purposes.

In conclusion it may be said that the coral-bearing rocks studied (the Urtabulak suite) should be dated as analogues of the Upper Oxfordian.

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