

BIOSTRATIGRAPHY OF THE BUKHARA HORIZON BY NANNOPLANKTON SURKHANDARYA

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ABSTRACT

This article describes the biostratigraphy of the Surkhandarya bukhara horizon basin suite based on study of nanoplankton, identified in the Aktash Aulat sections. The main purpose of the work was to obtain sections from the Paleogene strata of the Surkhandarya Basin and to search for nanoplankton remains from the obtained sections. As a result of the nanoplankton remains found, new data were obtained that significantly determine the age of bukhara horizon formation.

Keywords: *Paleogene, Cross-Section, Nanoplankton, Surkhandarya Basin, Tier, Layer, Eotsen*

INTRODUCTION

Southwestern ridges of the Gissar ridge, faunistic limestones of the Bukhara strata include *Sorbula* (*Cuneo-corbula*) *biangulata* and others (Upper Paleocene) and limestones, (Upper Paleocene) and limestones, *Ostrea* (*Turkostrea*) *turkestanensis* Rom and Alay strata sandstones and others. (Middle Eocene) clay layer occurs. This layer in the depression zone of Tajikistan (after OS Vyalov) was first separated at the level of the Givar (on behalf of Givar village) in 1977 by Davidzon *et al.*, in the south-western part of Tajikistan. In the Lower Eocene. We propose to separate these deposits into the bukhara horizon layer. For paleontological substantiation and determination of age, in 1988-91 in different parts of the south-western ridges of the Gissar ridge from the Chuychak ridge in the west. More than 25 fragments have been made in the area from Babatag in the east to Aktash in the south and Shargun in the north, and stone materials have been collected from 10 paleontological observation points. The scale of Western Europe was adopted in determining the age of the suite and dividing it into stages. As a result of the processing of paleontological materials, new data were obtained that significantly determine the age of bukhara horizon formation. A comprehensive paleontological study of 6 groups of organic remains (2 of which are new) made it possible to determine the age of the bukhara horizon formation, which is determined between the Tanetian-Ipresian-Lutetian phases. Both planktonic and benthic foraminopheres took the greatest development in the formation of Givar. However, studies on nanoplankton have not been performed sufficiently. Nannoplankton are unicellular organisms, a round or oval cell of which has a size of 4 to 40 microns. At a certain stage of the life cycle, they carry two flagella, vacuoles and two chromatophores (chloroplast) are yellow-brown in color, which determines the systematic belonging of organisms to golden algae.

MATERIALS AND METHODS

The materials for this article are collected on the basis of samples taken from the Aktash and Aulat sections of the Surkhandarya basin in order to develop practical recommendations in the field of paleontology in the field of geology. Studies of calcareous nanoplankton include four stages: collection of samples in the field, isolation of nanoplankton from rocks, microscopic studies of nanoplankton, and biostratigraphic interpretation of nanoplankton data. The study of Paleogene sections in boreholes and in natural outcrops was accompanied by layer-by-layer sampling from all types of rocks in parallel with samples for microfaunistic analysis. This provided for a more accurate correlation of calcareous

nannoplankton assemblages with foraminiferal associations for mutual control in the dating of deposits. Sampling intervals were 0.3–1.5 m, and only in homogeneous rocks of high thickness 1–2 m.

To isolate calcareous nannoplankton from rocks, the author used the technique proposed by N.G. Muzylev (1980). Rock samples without pretreatment were crushed to a powdery fraction, then the powder was transferred to the cover glass with a spatula from a match, a drop of alcohol was added to it, after which the contents were smeared on the glass. After drying, the coverslip was inverted onto a glass slide with liquid balm and glued with light pressure. Remains of calcareous nannoplankton are confined mainly to carbonate rocks.

Microscopic examination of nannoplankton was carried out in apparatuses prepared on glycerine under a high-resolution light microscope. The microscope "Carl Zeiss Jena: "Amplival" with a magnification $\times 2000$ and an immersion objective was used. When determining calcareous nannoplankton, the currently existing formal classification of fossil nannoplankton was used. Definition and the description of nannoplankton taxa was made using numerous scientific literature.

RESULTS AND DISCUSSION

The area under study is limited to the south - west coordinates of the mountain formations of the Surkhondarya region of the Republic of Uzbekistan, they are located at a distance of below $38^{\circ}05' - 38^{\circ}17'30''$ North width $67^{\circ}00' - 67^{\circ}26'15''$ East.

The paleogen deposits of the surkhondarya are considered the most promising for the search for various fossil deposits. Therefore, for many years research, thematic and search work has been carried out in this area. Due to the geological mapping works of medium and large scale, a large number of materials have been collected on the geological structure, stratigraphy, material composition of deposits and minerals of the Rayon.

According to the sum of foraminifera, nannoplankton and mollusks, the lower part of the Bukhara horizon layers belongs to the upper Paleocene, in which the following zones are distinguished: 1 *Acarinina tadjikistanensis djanensis*; 2 *Acarina subsphaerica*; 3 *Acarinina acarinata*.

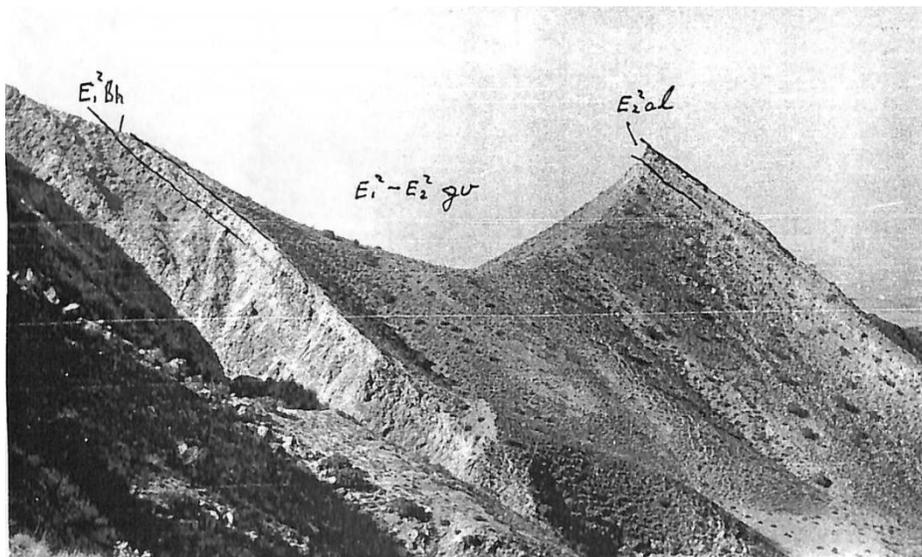


Figure 1: south-western spurs of the Hissar ridge, Babatag ridge, exits of the Bukhara horizon
1-zone Acarinina tadjikistanensis djanensis-pycnodanta antique layers.

A. layers of the zone of *tadjikistanensis djanensis* in different regions differ sharply from each other in lithological terms. In the volume of the zone, previously adopted layers of Karataggorizonti or Cornel, represented by clay limestone or corals, in Dolomite areas with a complex of dark organic residues. Our

research has shown that the zone beds are composed of green-gray corals on some plots, rarely sandstones—a collection of bukhara horizon that contain a specific Komplex of organic residues.

Hence, zone sediments are represented by limestone, clay limestone, in some places for a while Sandy deciduous (whitewash, Pokhurt, Kansai, Baldikhona), breached (Akkapchigai), corals (Derbent, Aulat), solid limestone are represented by brittle Dolomites. (Malyand, Guliob), deciduous, shiny limestone (Khazratbobo, Besharcha). They contain large crystals of iron in takib and non-decomposed pyrite up to 1.5 cm (Derbent). The zone is represented by greenish-gray, weak carbonated clay, round and round-oval iron nodes on the areas of the Five-Star, Square and Dekhkanabad structure, as well as in some parts of Bobotog'tizm (Zorkossa). The thickness of the zone is from 1.6 m on the Aktash razrezi to 12 m on the Malyand razrezi (1-photos). Zone sediments contain a rich content of organic residues, their analysis shows the late Paleocene period.

In the section of Aktash, coccolithophorides from the layers of the zone of *Acarinina tadjikistanensis* *djanensis* were determined: *Sossilithus crossus*, *Ellipsolithus macellus*, *Cycocolithus gammation*, *Heliolithus kleinPELLI*, *Fasciculithus tymponiformis*, NP6 *Heliolithus kleinPELLI*-specific to the upper Paleocene zone.

2. Zone *Acarinina subsphaerica*

Zone sediments are blue-green, slightly carbonated green-gray (coniferous, to the oven, Guliob), a little clay (Saukbulak, Beshkiz), dark gray clay (Anarbulak, Sharshar), Merkel clay (Khujakulsun).

Located at the base of it in the aktash cross section, *pagipa tadjikistanensis* is represented by thin-layered, leaf-shaped, light gray corals, similar to the zone of *djanensis*.

A characteristic feature of the zone is the presence in almost all sections we have studied of ragged nodes of brown, dark brown, round or round-oval shape with a diameter of up to 0.25m. Beaded knots are often replaced with transparent plaster. In some departments other than *Asarinina* in the *Asarinata* zone (Aktos, Kushmuyar, etc.), in *subbotinae* zone (Khodjaqulsun, Khozratbobo), here, the development of fine grains of phosphorites is observed, the phosphorus content in them varies from 0.1 to 2.4%.

The thickness of the Zone deposits is from 2,0 m on the Aktash area to 20,0 m on the territory of the *bandikhona*.

In the zone sediments, nanoplankton of the following composition was found and identified on the Aulat and Aktash plots:

[*Broarudosphaera bigelowi*, *Cyclocoelolithina gammation*, *Prinsius bisulcus*, *Discoaster sp.*, *Fasciculithus tympaniformis*, *Heliolithes kleinPELLI*, *Toweius sp.*, *Chiosmolithes consuctus*, *Heliolithes riedelli*, *Zygzablithus simplex*].

The collection of coccolithoforides found in the NP-7 *Discoaster gemmeus* belongs to the middle part of the *tanet* race of Western Europe.

3. *Acarinina acarinata* zone

The *acarinina acarinata* zone is identified at the top of the upper Paleocene. Litologically, it is represented by greenish-gray, black-colored slates (whitewash, field, Poppet, Aulat), burlap, greenish-gray dark gray clay (lots of *Bobotogthesis*). A distinctive feature of the zone is their dark color. They will be dark green, dark gray or black slate, clay. Mountain Ash is often ironed, lemon-yellow porous and has an intermediate layer.

Here are the types of Nanoplankton: *Cyclococcolithus gammation*, *Heliolithus kleinPELLI*, *Fasciculithus tymponiformis*, *Ellipsolithus distichus*, *Discoaster perpolitus*, *Discoaster gemmeus*, *Coccolithus eupelagicus*, *Neochiostozygus*, *Neochiostozygus*, *Neoclithus*, *Naoclithus concinnus*, *Neocplannolithus simplex* NP-8 zone *threeraydi*. It is bordered by the upper part of the upper Paleocene of Western Europe.

The lower Eocene deposits contain the middle, thicker part of the form of the *Givar*. They have 2 microfaunal zones:

1. *Globorotalia subbotinae*.
2. *Globorotalia aragonensis*

The fauna of the oyster often forms mature layers with a thickness of 0.1-0.15 m. Macrofauna is, in principle, endemic, but inherent in this part of the formation. In the zone, coccolithes are found and identified: *Coccolithes eupelagicus*, *Brarudosphaera bigelovi*, *Cyclococcolithus formosus*, *Discoaster barbodiensis*, *D. Multirediatus*, *D. Diastypus*, *D. Burgus*, *D. binostymesis*. *Neococcolithus dubius* *Marthasterites tribrachiatus*, *M. Bramlettei*, *Micranthalithus inaequalis*, *M. Flo*, *Gygrablithus bijugatus* shows them belonging to the NP-10-11 *Marthasterites contortus* *Discoaster binodocus* zone (in the lower and middle parts of the IPR hemisphere).

Thus, the age of the mosquito larva is interpreted in the range of the upper Paleocene and the middle Eocene, and is based on combinations of foraminifera (Paleocene, lower and middle Eocene), nanoplankton (Paleocene, lower Eocene), dinoflagellates (Paleocene), mollusks. (Paleocene, middle Eocene), ostracodes (Paleocene-lower Eocene). The size of the Svita does not necessarily correspond to The Swamp stratotype of the Fergana lowland.

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