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ZOOGEOGRAPHICAL COMPOSITION AND HISTORICAL FORMATION OF GASTROPOD MOLLUSKS

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Abstract
This group of mollusks is distinguished from other groups of mollusks by its cold resistance (Vallonia, Pulchella) and moisture-loving (Pupilla muscorum). They are mainly found in various biotopes with high humidity: in forests, near water bodies, among plants around springs and swamps, in moist biotopes consisting of plant residues (Cochlicopa nitens, Cochlicopa lubrica, Cochlicopa lubricella, Vallonia costata). Some species (Deroceras laeva, Deroceras agreste) are widespread only in foothill biotopes, and a number of species are widespread in mountainous areas.

Keywords: Mirzachol, family, genus, natural, region, gardens, farm river, altitude, region, population, density.

Introduction

As we know, zoogeography studies the distribution of species and other systematic units around the globe and the distribution of faunal groups, as well as the processes of extinction of animals or expansion and contraction of ranges. This section provides a brief overview of the zoogeographical composition of mollusks distributed in Central Asia: divided into Asian, Central Asian, Old Asian, Mediterranean, Turkmen-Khurasan zoogeographical groups.

1. Polearctic and Holarctic species: Cochlicopa nitens, Cochlicopa lubrica, Cochlicopa lubricella, Vallonia costata, Vallonia pulchella, Pupilla muscorum, Deroceras laeva, Deroceras agreste, Zonitoides nitidus, Succinea putris, Oxyloma eleganc, Oxyloma sarsi. This group of mollusks is distinguished from other groups of mollusks by its cold resistance (Vallonia, Pulchella) and moisture-loving (Pupilla muscorum). They are mainly found in various biotopes with high humidity: in forests, near water bodies, among plants around springs and swamps, in moist biotopes consisting of plant residues (Cochlicopa nitens, Cochlicopa lubrica, Cochlicopa lubricella, Vallonia costata). Some species (Deroceras laeva, Deroceras agreste) are widespread only in foothill biotopes, and a number of species are widespread in mountainous areas.

2. European species - Sphyradium doliolum, P.triplicata, P.bigranata, P. sterri, Truncatellina callicratis, T. costulata, Pyramidula rupestris, Phenacolmax annularis, D. reteculatum, D.sturanyi, D.caucasikum.

It should be noted that the last 3 species (d. reteculatum, d.sturanyi, d.caucasicum) are considered introduced. Their current range, according to literature, includes Central Asia, Asia Minor and Old Asia (Turkey, Iran, Afghanistan), the Caucasus, Crimea, the mountainous regions of Central and Southern Europe.

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Ecologically - Sphyradium doliolum, P.triplicata, P.bigranata, P. sterri, Truncatellina callicratis - are xerophilous species and are distributed at altitudes from 1500 m to 2500 m above sea level. They live among semi-shrubs, under rocks. Some D. reteculatum, D.sturanyi are considered introduced, found in the Fergana and Chirchik-Akhangaron valleys, in the Aloy range, and live in open moderately humid biotopes.

3. East Asian species: The species Deroseras altaicum is introduced and lives in mountainous areas, under rocks and among fallen mountain ridges. It is distributed in the Korzhantov, Ugom and Pskem, Dzhungar, Altai ranges, in the Sayan, Baikal region, the Baikal region, the Amur region, Primorye, Kamchatka, Sakhalin, the Kuril Islands and Mongolia.

As a result of the adaptation of representatives of this subfamily to new conditions, conchological features characteristic of Central Asia have emerged.

In the Upper Miocene, the introduction of mollusks from other regions may have occurred in two directions: Northern and Southern. Among the species widespread in the northern direction, Succinea putris and European species Pupilla triplicata, P. sterri, Pyramidula rupestris entered the territory of Central Asia. In the southern direction, Mediterranean species Laura cylindracea, Acanthinula aculeate, chondrinagranum, and certain European species Pyramidula rupestris and Phenacolimax annulares entered through Elbrus and Kopetdag.

4. Mountainous Asian species: V. ladacensis, P. turcmenica, Pseudonapaeus secalina, Ps.subobuscura, Ps. asiatica, Ps. retrodens, Turanena conicula, Chondrulopsina, Ponsadenia duplocincta, Leucozonella rubens, Leucozonella rufispira, Novosuccina evoluta, Novosuccina martensiana.

The current range of these species includes Tibet, Western China, Afghanistan, and the mountainous regions of Central Asia. They live in Uzbekistan and adjacent regions, mainly in the mountainous region, among bushes, rocks, and boulders. V. ladacensis, P. turcmenica, Ponsadenia duplocincta, Novosuccina evoluta are distributed in certain areas. The range of some does not extend beyond one mountain range. For example: Pseudonapaeus secalina is distributed only in the Turkestan Range, while Leucozonella rubens is distributed in the Ugom Range.

5. Central Asian species: They form the basis of mollusks distributed in Uzbekistan and adjacent regions, and include 112 species, namely Cochlicopa mukhitdinovi, Cochlicopa izzatullaevi, Cochlicopa pseudonitens, Cochlicopa starobogatovi, Leucozonella ferghanica, Candaharia rutellum, Candaharia langarica, etc.

The ranges of Central Asian species in Uzbekistan and adjacent regions are diverse, including endemic species such as Pseudonapaeus chodschendicus with a narrow range, as well as many species with a wide range such as Pseudonapaeus albiplicata, Leucozonella mesoleuca.

6. Old Asian species: G.signata, Pseudonapaeus sogdiana, Pseudonapaeus eremita, Xropicta candaharia, Lytopelte maculata.

The range of Pseudonapaeus eremita, Chropicta candaharia includes the mountainous regions of Afghanistan, Northern Iran, Central Asia and the regions up to northwestern

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China. They live in the foothills, under stones among semi-shrubs. The range of Pseudonapaeus sogdiana includes Central Asia and Afghanistan, the eastern part of the Kopetdag.

7. Mediterranean species: Lauria culindracea, Acanthinula aculeata, Chondrina granum, Monacha carthusiana.

Monacha carthusiana is another introduced species, found in places with high humidity, often on river banks. Its natural range includes the Balkan Peninsula, Greece, Asia Minor, Iran, the southern coast of Crimea and Novosibirsk. Lauria culindracea, Acanthinula aculeata, Chondrina granum species have also been found in Uzbekistan, living on the southern slopes, in dry biotopes at altitudes of 1500-1600 m above sea level.

8. Helicopsis likharevi belongs to the Turkmen-Khurasan species, and the species was first found in the Kokhitang mountain range in Uzbekistan. The range of this species is very limited. The species is considered endemic to the South-Western Kopetdag and lives in extremely arid biotopes.

The history of the formation of the fauna of Central Asia and the present day in general is one of the issues that attracts the attention of researchers.

The paleography of Uzbekistan and adjacent territories is presented based on the data of V.M. Sinitsyn.

The orographic situation of Central Asia in the Paleogene period is largely reminiscent of the present era. The western part consisted mostly of plains, and the eastern part of the mountains. At the beginning of the Paleogene, there were low mountains in the place of the present Tien Shan. In the Upper Eocene, most of Central Asia, from the shores of the Caspian Sea in the east to Karatau in the west, to the Talas, Alatov and Fergana ranges in the northeast and east, was in marine conditions.

During the Paleogene, tropical flora prevailed on land, periodically alternating with subtropical. Since the Devonian period, representatives of the genus Macrochlamys migrated to the territory of Central Asia and have survived to our time. At present, its range includes the mountainous regions of Central Asia.

In the Oligocene, as a result of the growth of mountains associated with neotectonic movements, the land expanded significantly, and the existing sea retreated. During this period, the Talas and Alatau mountains appeared in the northeast, and the Ugam, Piskom, Chatkal and Kurama ranges continued from them to the southwest. During this period, the Fergana Range began to rise. The Aloy, Turkestan, Zarafshan, Hissar and Nurata ranges, which were islands in the Upper Eocene, became a single Hissar-Aloy mountain range. In the Oligocene, there was a continental connection between Central Asia and mountainous Iran. It is possible that Old Asian species of mollusks migrated to Central Asia along this continental route.

The first to migrate from Central Asia were probably representatives of the genus Gibbulinopsis. It is unlikely that representatives of the genus Gibbulinopsis lived in the Oligocene among xerophytic plants: ephedra and wormwood, since Gibbulinopsis signata still lives among xerophytic plants in the foothills. The uplift of the earth's crust,

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which began in the Eastern and Southern parts of Central Asia in the Oligocene, gradually spread to the Western and Northern regions. At the turn of the Paleogene and Neogene, the seas shrank significantly. The Alpine orogeny formed the mountain ranges of Central Asia. As a result, new routes were opened for the migration of fauna and flora from neighboring countries. The climatic conditions that had been the same throughout Central Asia until this time changed, and local climates emerged. The orography changed, including the appearance of mountains of different heights.

In the Pliocene, strong tectonic processes began, as a result of which the mountainous Central Asia, Tien Shan, Hissar-Darvoz and Pamirs rose rapidly and took on the appearance of a high-mountainous country similar to the present day. Such a sharp rise also occurred in the Kopetdag.

During the Pliocene, permanent snow lines appeared for the first time, as a result of which a cold climate was formed and subalpine vegetation was formed.

Coniferous forests retreated to 2500-3000 m above sea level. Despite the cooling of the air in the Pliocene, the progressive development of dark-leaved and broad-leaved forests continued.

When the origin of the Central Asian malacofauna is analyzed on the basis of the formation of natural landscapes, it can be seen that the main flow came from the east and from mountainous Asia. According to the literature, representatives of the Bradybainidae family entered Central Asia from the northeast: through the Sayan, Altai, Tarbagatai, and Dzungarian ranges.

Paleobotanical data indicate that in the Miocene, the flora of the northern part of Central Asia (Central Tien Shan) was composed of mesophyll forests. At this time, xerophytic plants of the Oligocene entered the southern regions of Central Asia from the south. According to Korovin, there were two flows of flora in Central Asia: one from the south, the other from the north.

At the end of the Lower Miocene, the Central Asian mountains were connected to other mountain chains, which created favorable conditions for the migration of mollusks from neighboring countries, and among the first representatives of the subtribe Trychiihae may have migrated eastward from the Egedei region directly to the mountainous regions of Asia. As a result of the adaptation of representatives of this subfamily to new conditions, conchological features characteristic of Central Asia emerged.

In the Upper Miocene, the entry of mollusks from other regions may have occurred in two directions: northern and southern. The northern direction was used by the widespread species Succinea putris and the European species

Pupilla triplicata, Pupilla sterrii, Pyramidula rupestris.

In the southern direction, Mediterranean species Laura cylindracea, Acanthinula aculeate, Chandrina granum and certain European species Pyramidula rupestris, Phemacolimax annularis entered through Elbrus and Kopetdag.

As can be seen from the presented data, the malacofaunistic complexes of Uzbekistan and adjacent territories are diverse in genetic composition and geographical origin.

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The malacofauna of Uzbekistan and adjacent territories was formed in the Paleocene and Eocene, but mainly in the last stage of the Quaternary period - the Leistocene, due to a number of migrants: tropical xerophiles of the Old Asian and xero-mesophiles of East Asian, autochthonous species from the Mediterranean.

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