



LIST OF SPECIES OF TERRESTRIAL MOLLUSKS (GASTROPODA: PULMONATA) OF THE KIRTOSHTOV MOUNTAINS, UZBEKISTAN

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ABSTRACT

The article describes the results of research on the species composition, biodiversity and ecology of terrestrial mollusks of the Kirtashtov Mountains. As a result of the research, the following conclusions were drawn. In the Kirtashtov Mountains, 12 species of terrestrial mollusks belonging to 7 families and 9 genera were found. Of these, the *Monacha cartusiana* was first recorded in the study area. Twelve species of terrestrial mollusks have been identified in the Kirtashtov Mountains. The biodiversity of mollusks is high on the southeastern slope, with rust on the northeastern slope due to abiotic factors and vegetation cover. Mollusks were divided into ecological groups according to their biotope (4), stations (6), and feed (3).

KEYWORDS: Kirtoshtov, mollusk, shell, biotope, station, feed, Shannon index, ecological group.

INTRODUCTION

Preserving biodiversity and ensuring the sustainability of ecosystems is a global challenge today. In nature, one of the important elements of wildlife biodiversity is terrestrial mollusks. Accordingly, it is of great scientific and practical importance to determine the species composition of terrestrial mollusks distributed in natural ecosystems and to study their ecological aspects. For this reason, we aimed to study the species composition, biodiversity indicators and populations of terrestrial mollusks of the Kirtoshtov Mountains, which are part of the Olay range.

To date, little research has been done on the ecosystems of the mountain malacofauna and the mollusks in the Olay ridge (Umarov and Pazilov, 2020). However, a number of studies in Central Asia and adjacent areas have data on the mountain malacofauna of the Olay ridge. In particular, in his extensive faunistic monographs and other scientific works on terrestrial mollusks, A.A. Shileyko (1978, 1984) provided detailed information on the systematic composition, ecology, distribution and systematic location of mollusks in the Fergana Valley and surrounding mountains, and introduced several new species and generations for science (Likharev, 1955).

RESEARCH AREA, MATERIALS AND METHODS

The Kirtashtov Mountains are the remnant mountains that surround the Fergana Valley to the southeast and south, and are part of the Olay Range. The Kirtashtov Mountains stretch from south-east to north-west for 12 km, and their highest peak is 1539 m above sea level. Administratively, half

of the mountain is in Uzbekistan and the rest is in Kyrgyzstan. These mountains are distinguished by their fauna and flora in the region.

Research in the Kirtashtov Mountains was conducted in April-May 2020-2021. More than 600 terrestrial mollusks were collected as material in 50 samples from different parts of the mountains. 75% of them are live mollusks and the remaining 25% are dry shells. Commonly accepted methods were used in the collection of materials and their identification to the species level, in their ecological study (Bratchik, 1979; Pazilov and Azimov, 2003; Shileyko, 1978, 1984).

RESULTS AND DISCUSSION

As a result of the research, it was found that 7 species of terrestrial mollusks and 12 species of 9 genera live in the Kirtoshtov Mountains. The following is a taxonomic list of species by systematics and the current state of the nomenclature (GBIF; MolluscaBase).

Family – Cochlicopidae Pilsbry, 1900

Genera – *Cochlicopa* A. Férussac, 1821

***Cochlicopa lubricella* (Porro, 1838). (Fig. 1).**

The shell is ovoid in shape, shiny, 6.5 in circumference, the last circumference bulging. The color of the shell is light brown. The mouth of the shell is elongated, the edges slightly protruding. It lives on the southern slopes of the mountain, in humus-rich biotopes rich in humus. It is a drought tolerant species.



Figure (1): *Cochlicopa lubricella*, H 5.1 mm.

***Pupilla muscorum* (Linnaeus, 1758). (Fig. 2).**

The shell is oval-cylindrical in shape, elongated to varying degrees, and the upper part is rounded conical. The number of circles is 6-7.5. The color of the shell is dark brown. The mouth of the shell is rounded, the edges slightly turned backwards. Lives in biotopes with moderate humidity, plant stems and between rocks.



Figure (2): *Pupilla muscorum*, H 4.2 mm.

***Pseudonapaeus albiplicatus* (E.Martens, 1874). (Fig. 3).**

The structure of the shell is oval-cylindrical, extremely variable, the shell of mollusks scattered from this region is ovoid, the walls are thick. Shell rolls 6-7, not bulging. The color of the shell is dark brown. The mouth is curved, relatively oval. Drought-resistant species. In the mountainous region it lives on the stems of shrubs and semi-shrubs.



Figure (3): *Pseudonapaeus albiplicatus*, H 11.8 mm.

***Pseudonapaeus errans* (Westerlund, 1891). (Fig. 4).**

The shape of the shell is oval-cylindrical, the number of circles is 6.5-7.5, there are deep seams between the circles. The last circle is strongly twisted towards the mouth. The shell is horn-colored. The mouth is curved, relatively oval, the edges are not curved except for the navel. The navel is open. Mountain and foothill areas live under large rocks and in crevices.



Figure (4): *Pseudonapaeus errans*, H 12.0 mm.

***Pseudonapaeus retrodens* (Westerlund, 1896). (Fig. 5).**

The shell has an ovoid-cylindrical shape, the upper part is impenetrable, the walls are thick and shiny. The number of circles is 7.5-8, the convexity is small, the last circle is slightly inclined towards the mouth. The shell is bright brown. The mouth is oval, with 2-3 teeth. The edges of the mouth are impenetrable, with a slightly curved, thick lip. It lives in the bushes in the middle of the mountains, among the piles of rocks scattered under large rocks.



Figure (5): *Pseudonapaeus retrodens*, H 9.8 mm.

***Fruticicola alaica* (Kuznetsov, 1998). (Fig. 6).**

The shell is of medium size, flattened on both sides, "hammered" in appearance, with a very low dome. The number of circles is 4.5-5, with separate and noticeable stitches. The last circle is 1.5 times larger than the previous one. The mouth is slightly tilted down. The shell is bright horny in color and has gray spots around the navel. It lives in open areas, under large trees, among plants and on the ground.

**Figure (6): *Fruticola alaica*, D 15.0 mm.****Figure (8): *Monacha cartusiana*, D 14.3 mm.*****Xeropicta candaharica* (L.Pfeiffer, 1846). (Fig. 7).**

The shell structure is compressed, flattened on both sides, and its wrapping height is equal to the mouth height. The circumference of the shell is 5-5.5 and is slightly bulging. The shell is slightly circular at the end of the last circle and bends flat to the mouth. The color of the shell consists of whitish or striped ribbons. These lines took the form of spots on the underside. The mouth of the shell is round, slightly curved, in which the labial tumor has developed to varying degrees. The edges of the mouth are thin and sharp. It forms a dense population due to its resistance to arid biotopes, being an eurybiont species. Mainly lives on the stems of plants.

**Figure (7): *Xeropicta candaharica*, D 15.0 mm.*****Monacha cartusiana* (O.F.Müller, 1774). (Fig. 8).**

The upper part of the shell is flattened in the form of a low dome, the walls of the shell are thin and brittle, slightly shiny and transparent. The circumference of the shell is 5.5, bulging, and the latter is wider than the former, bending evenly into the mouth of the shell. The color of the shell is light brown, the edges of the mouth are orange and brown. Inhabits open field meadows, plant stems. It is an adventurous tour for Central Asia.

***Angiomphalia regeliana* (Martens, 1882). (Fig. 9).**

The shell is spherical in shape and slightly compressed. The number of circles is 5.5-6. The last circle is 1.5 times larger than the previous one. The walls are thick, liver-colored, the peripheral white band is well developed, the collumellar part of the mouth is curved, and the incisors completely cover the umbilicus. The mouth is oval and slightly curved. The edges of the mouth are slightly curved, in the form of a small lip (Kramarenko, 1995). It lives in biotopes with moderate humidity, in plant stems in latitudes, and between rock piles. In the lower parts of the mountain it forms a dense population relative to the top.

**Figure (9): *Angiomphalia regeliana*, D 20.0 mm.*****Deroceras sturanyi* (Simroth, 1894). (Fig. 10).**

The body is flat, the back is in the form of a sharp ridge. The mantle is large enough to make up 1/2 of the body, and its back end rests on the back of the body as it moves. Body color is usually the same - gray-brown, without spots and streaks. The heels and sides are brightly colored. Widespread in open areas, in areas with high humidity, mainly in anthropogenic biotopes. It feeds on the green parts and fruits of plants.



Figure (10): *Deroceras sturanyi*, L 26.0 mm.

***Deroceras reticulatum* (Muller, 1774). (Fig. 11).**

The shoulder portion of the body is strongly bulging. The mantle occupied 2/5 of the body. Adult individuals come in gray, bright brown, and olive colors. Usually there are clear scratches, brown or dark brown spots on the body. The heels are always gray. The slimy substance is colorless. Inhabits open biotopes of mountainous areas, among plants near water bodies. Distinguished from other species of the genus *Deroceras* by its high ecological tolerance, it lives in natural and anthropogenic biotopes.



Figure (11): *Deroceras reticulatum*, L 37.5 mm.

***Macrochlamys sogdiana* (Martens, 1871). (Fig. 12).**

The shell is low-conical. Its height is equal to the height of the mouth 1/2. The walls of the shell are thin, transparent, shiny, and slightly gray. The number of circles is 5-5.5. The mouth is round-oval, the upper part strongly turned towards the apex. The umbilicus is almost completely closed. It lives in the highlands, among plants with high humidity, and under rocks.



Figure (12): *Macrochlamys sogdiana*, D 20.3 mm.

Terrestrial mollusks were divided into 6 ecological groups, taking into account their adaptation to the station. They are petrobionts - saprogeobionts in rock piles and rock crevices (*Ps.errans*) - simultaneously in leaf litter and soil (*C.lubricella*), epigeobiont - on the ground (*F.alaica*), epiphytobiont - during active life, mainly on plant stems (*Ps.albiplicatus*, *Ps.retrodens*, *X.candaharica*, *M.cartusiana*, *D.sturanyi*), epiphytopetrobiont - under the rocks between the bushes (*P.muscorum*, *A.regeliana*), epifitoripabiont - in plants along the water basins (*D.reticulatum*, *M.sogdiana*) were recorded as living mollusks.

According to the diet of terrestrial mollusks distributed in the study area, 2 types of mycophages - with fungi, 3 types of saprophages - with plant humus and 7 types of phytophagous - were divided into ecological groups that feed on green parts of the plant.

The dominant species on the slopes also differs, according to which *Angiomphalia regeliana* on the southeastern slope, *Xeropicta candaharica* on the northeastern slope, and they are very common. The reason for this can be explained by the ecological conditions on the slopes and differences in biotopes. That is, the southeastern slopes are rich in vegetation, which provides a temperate climate on this side, while the humidity in the microclimate is sufficient for mollusks, while the northeastern slopes have low vegetation cover and relatively dry climatic conditions. For this reason, it was found that the distribution of mollusks along the slopes varied in cross-sectional area.

CONCLUSION

As a result of the research, the following conclusions were drawn. In the Kirtashtov Mountains, 12 species of terrestrial mollusks belonging to 7 families and 9 genera were found. Of these, the *Monacha cartusiana* was first recorded in the study area.

Terrestrial mollusks distributed in the Kirtashtov Mountains are psychrophilic, mesophilic, xeromesophilic, xerophilous according to their biotope flexibility; petrobiont, epigeobiont, saprogeobiont, epiphytopetrobiont, epiphytobiont, epifitoripabiont according to station flexibility; mycophages, saprophages and phytophagous were divided into ecological groups according to their diet. The predominance of species belonging to the ecological groups of mollusks mesophilic, epiphytobiont and phytophagous.

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