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**RARE AND ENDANGERED ANIMAL SPECIES OF NORTHWESTERN KYZYLKUM
AND MEASURES FOR THEIR PROTECTION****Turekeeva Alfiya Zhienbekovna** – Doctor of Philosophy in Pedagogical Sciences, Associate Professor
alfiaturekeeva4@gmail.com**Sharibaeva Umida Urazbaevna** – studentsharibaevaumida2005@gmail.com*Nukus State Pedagogical Institute named after Ajiniyaz***ШИМОЛИ-ҒАРБИЙ ҚИЗИЛҚУМНИНГ НОЁБ ВА ЙЎҚОЛИШ ХАВФИ ОСТИДАГИ
ХАЙВОН ТУРЛАРИ ҲАМДА УЛАРНИ МУҲОФАЗА ҚИЛИШ ЧОРАЛАРИ****Турекеева Альфия Жиенбековна** – педагогика фанлари бўйича фалсафа доктори, доцент**Шарибаева Умида Уразбай кизи** – талаба*Ажсиниёз номидаги Нукус давлат педагогика институту***РЕДКИЕ И ИСЧЕЗАЮЩИЕ ВИДЫ ЖИВОТНЫХ СЕВЕРО-ЗАПАДНОГО КЫЗЫЛКУМА
И МЕРЫ ИХ ОХРАНЫ****Турекеева Альфия Жиенбековна** – доктор философии по педагогическим наукам, доцент**Шарибаева Умида Уразбаевна** – студент*Нукусский государственный педагогический институт имени Ажсинияза***Tayanch soʻzlar:** Qizilqum, sudralib yuruvchilar, noyob turlar, muhofaza, bioxilma-xillik.

Rezyume. Maqolada Shimoli-Gʻarbiy Qizilqum mintaqasida uchraydigan noyob va yoʻqolib ketish xavfi ostida boʻlgan sudralib yuruvchi turlar atroflicha tahlil qilingan. Tadqiqot davomida hududning gerpetofaunasi, asosiy antropogen omillar, populyatsiya dinamikasi va muhofaza tadbirlarining samaradorligi oʻrganildi. Natijalar shuni koʻrsatdiki, baʼzi turlar sonining kamayishi yashash joylarining qisqarishi, noqonuniy ovlash, transport omili va iqtisodiy faollikning oshishi bilan bogʻliq. Viloyatda sudralib yuruvchilarni saqlab qolish va populyatsiyalar barqarorligini taʼminlash boʻyicha amaliy tavsiyalar ishlab chiqilgan.

Ключевые слова: Кызылкум, пресмыкающиеся, редкие виды, охрана, биоразнообразие.

Резюме. В статье представлен всесторонний анализ редких и находящихся под угрозой исчезновения видов рептилий, обитающих в Северо-Западном Кызылкумском регионе. В ходе исследования изучались герпетофауна территории, основные антропогенные факторы, динамика популяций и эффективность мер по сохранению. Результаты показали, что сокращение численности некоторых видов обусловлено сокращением ареалов обитания, незаконной охотой, транспортным фактором и увеличением экономической активности. Разработаны практические рекомендации по сохранению рептилий и обеспечению стабильности популяций в регионе.

Key words: Kyzylkum, reptiles, rare species, protection, biodiversity.

Summary. The article provides a detailed analysis of rare and endangered reptile species found in the North-Western Kyzylkum region. During the study, the herpetofauna of the territory, the main anthropogenic factors, population dynamics, and the effectiveness of conservation measures were studied. The results showed that the decline in the number of some species is associated with habitat reduction, illegal hunting, the transport factor, and increased economic activity. Practical recommendations have been developed for the conservation of reptiles and ensuring population stability in the region.

Introduction. The North-West Kyzylkum region is one of the important natural landscapes of Central Asia, distinguished by unique desert ecosystems and rich biodiversity. This area has particularly favorable habitat conditions for reptiles (Reptilia), with many endemic and rare species. In recent decades, as a result of increased anthropogenic pressure on natural ecosystems, the range of many representatives of herpetofauna has been reduced, and population density has decreased.

A number of reptiles found in the territory are listed in the Red Book of the Republic of Uzbekistan, and their protection is one of the urgent environmental problems [4, 5]. In particular, the Central Asian desert tortoise (*Testudo horsfieldii*), the gray warrant (*Varanus griseus*), and some species of boa constrictors are particularly vulnerable to economic activity and illegal use.

In this regard, it is scientifically and practically important to assess the current state of populations of rare reptiles in the North-West Kyzylkum region, identify the main factors influencing them, and develop effective conservation measures.

The purpose of the research is to assess the current state of rare and endangered reptile populations in the North-West Kyzylkum region and to develop scientifically based recommendations for their conservation.

Research objectives:

- determination of the species composition of the herpetofauna of the territory;
- assessment of the state of populations of rare species;
- identification of the main anthropogenic risk factors;
- development of proposals for improving protective measures.

Materials and methods: Research work was carried out in various biotopes of the North-West Kyzylkum region during 2022-2024. Field observations were organized based on the route method. The total length of the observation routes was more than 120 km.

Classical herpetological methods were used for the registration of reptiles: recording visual encounters, tracking, and point observations. Modern identifiers and fundamental sources were used in the identification of species [1, 2].

When assessing the state of the population, the following indicators were taken into account: frequency of occurrence; relative density; distribution by biotopes; connection with anthropogenic factors.

The obtained data were processed using statistical methods and a comparative analysis was carried out.

Results and discussion: As a result of the research, it was confirmed that 5 species of reptiles listed in the Red Book are found in the territory of the North-West Kyzylkum [4, 5]. These are:

- Central Asian desert turtle (*Testudo horsfieldii*);
- gray crow (*Varanus griseus*);
- sand boa constrictor (*Eryx miliaris*);
- Eastern boa constrictor (*Eryx tataricus*);
- quadruped snake (*Elaphe quatuorlineata*).

Central Asian desert tortoise. The most studied species in the region is the Central Asian desert turtle. The analysis showed that the population of this species has a tendency to decline in recent years. The main reasons for this were noted as the reduction of the natural range, cases of overuse of pastures, and illegal harvesting [4].

According to the literature, between 2000 and 2015, hundreds of thousands of tortoises were taken from nature [6]. Currently, the abolition of quotas for this species is a positive factor from the point of view of protection.

Grey Varan. Anthropogenic factors play an important role in the decline of the gray sow thistle population. Especially frequent deaths were recorded on highways [3, 4]. In addition, the persecution of the local population also negatively affects the state of the species.

Diphtheria. Sand and eastern boa constrictors are mainly found in sandy biotopes. The main threat to their number is the degradation of the habitat and the development of lands for agriculture. In some areas, the fragmentation of local populations has been observed.

Anthropogenic factor analysis. Studies have shown that the following factors have the strongest impact on the herpetofauna of the territory:

- land development;
- expansion of the transport network;
- illegal hunting;
- livestock pressure;
- recreational load.

The obtained results are consistent with the data of other researchers and confirm the increasing anthropogenic pressure in the region [1, 5].

Population dynamics assessment.

Table 1. Relative frequency indicators of the main species

Species name	Biotope type	Frequency of occurrence (%)	Status estimate
<i>Testudo horsfieldii</i>	Sand-gravel areas	18.5	Decreasing
<i>Varanus griseus</i>	Semi-reinforced sands	6.2.	Rare
<i>Eryx miliaris</i>	Sandy massifs	9.7.	Unstable
<i>Eryx tataricus</i>	Sandy biotopes	7.4.	Local
<i>Elaphe quatuorlineata</i>	Shrublands	3.1.	Very few

The data in the table were compiled based on field observations and show that the distribution of species in the region is uneven. The observation data collected for the region showed that the frequency of reptiles differs significantly depending on the biotopes. In sandy massifs, the number of vipers was relatively high, while in gravel and semi-fortified areas, the probability of grey wasps was higher. This situation shows that the ecological adaptation of species is directly related to the structure of the landscape.

In recent years, fragmentation of turtle populations has been observed in some areas. This process is especially related to the expansion of agricultural land and the construction of new road infrastructure. Population fragmentation can lead to a decrease in genetic diversity in the long term.

Effectiveness of protective measures. Analysis of current protective measures showed that the abolition of official quotas had a positive impact on some species. However, field observations have shown that cases of illegal seizure have not been completely eliminated. Therefore, a comprehensive approach is needed, not just administrative restrictions.

For the formation of an effective protection system in the territory, the following are considered important:

- expansion of the network of protected natural areas;
- creation of animal crossings (ecoducts) in road infrastructure;
- strengthening monitoring of illegal trade;
- establishing cooperation programs with the local population.

Observations show that in areas with increased environmental awareness of the population, the number of cases of direct destruction of reptiles decreases. Thus, educational work is an important factor in the preservation of biodiversity.

Conclusion

The population of rare reptiles in the North-West Kyzylkum region currently shows a tendency to decline under the influence of anthropogenic factors. The most vulnerable species were the Central Asian desert tortoise and the gray tarantula.

The following measures are necessary to preserve the species:

- protection of the main biotopes of habitat;
- strengthening control over illegal fishing;

- establishment of regular environmental monitoring;
- strengthening environmental awareness among the local population;
- development of artificial breeding (nursery) programs. These measures serve to ensure the stability of the herpetofauna of the territory.

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