

Study and Conservation of the Desert Monitor (*Varanus griseus* (Daudin, 1803)) in Kazakhstan

Introduction

We thank the Rufford Small Grants for the opportunity to conduct research gray monitor lizard in Kazakhstan.

Grey monitor lizard is the only representative of his family in the fauna of Kazakhstan and the Central Asian republics. The species is listed in the Red Book of the IUCN and the CIS, and also in Appendix I of the CITES Convention on International Trade in endangered species of flora and fauna. In the Red Book of Kazakhstan it is included as the species declining in number (II category).

The main causes of reduction of the quantity, reduction and fragmentation of habitat of grey monitor lizard are anthropogenic transformation and destruction of its habitat, deaths on the road by a car, the chase and extermination by human because of traditionally negative attitude to it from the most of the local population.

According to the estimation of the great authorities the monitor lizard is the most threatened species of the reptiles of Kazakhstan. Key habitats of the species in Kazakhstan are not provided with territorial protection. The level of the study of the actual state and the spread of the species is insufficient for the organization of effective measures to its protection. The purpose of the project is the creation of conditions for the preservation of desert monitor in Kazakhstan.

In this regard, the project had the following objectives:

- Estimation of the current distribution and abundance of populations of grey monitor lizard in Kazakhstan, the identification of key habitat of the species and the evaluation of the impact of major limiting factors.
- Creation conditions for the gradual change of the negative attitude of local inhabitants towards the monitor lizard by means of increasing public awareness.
- Preparation of the recommendations for the protection of grey monitors lizard and their transfer to the formal environmental structures of Kazakhstan.

Expeditions

In the course of the project were organized three field trips to the desert Kyzyl-Kum - in total, they took 36 days, it was from 19 to 27 May 2012, from 30 August to 14 September a Kyzyl-Kum survey, and from 21 September to 1 October 2012. The expeditions were participated by members of the Zoology Institute of the Republic of Kazakhstan, the Environmental Center Dodo, the inspector of "Ohotzooptom", the staff of the NGO "Wildlife", the volunteers from among nature lovers.

Common route of the trips made more than 1000 km. The studies have been conducted by automobile and pedestrian accounting. In the course of the work have been visually

recorded the meetings of grey monitor lizard and its traces. It has been made the account of the relative population density of the species. The habitat of grey monitor lizard has been described (Fig. 1).

Questioning

To collect data on venues of grey monitor lizard were conducted the surveys of the population, officers of "Ohotzooptom" and of the Institute of Zoology, of the anti-plague stations. The questionnaires have been distributed to NGOs, protected areas, in the system of anti-plague station as well as to the public. Application forms are also available on the website Herpetofauna of Kazakhstan.

АНКЕТА
«Вниманию! Варан!»



Видели ли Вы это животное? _____
Когда Вы его видели? _____
Количество встреченных особей: _____
Где Вы его видели? (Укажите, пожалуйста, точные координаты и в какую сторону от ближайшего населенного пункта) _____

Какого примерно размера оно было? _____
Какие чувства у Вас вызывает это животное? Страх / интерес / восхищение / отвращение _____
Если у Вас есть его фотографии, не могли бы Вы приложить их к анкете? _____
Знаете ли Вы о случаях гибели этого животного? Какие? _____

Знаете ли Вы поверья, легенды и пословицы о варане? Какие? _____

Ваше имя: _____
Ваше место работы/учебы: _____
Адрес или телефон, по которому с Вами можно связаться: _____

Простой распечатанный текст по адресу:
г. Алматы, 650066, пр. аль-Фараби, 93, Институт зоологии, лаборатория орнитологии и герпетологии, или по электронной почте: zhdanin@ibzoo@mail.ru
Все присланные фотографии будут участвовать в конкурсе «Вниманию! Варан!»

Fig. 1. Questionnaire

Also, in the course of field work were conducted the surveys of shepherds, foresters and local residents.

Results of research

Data collected during the field work, and questionnaire data were processed, and on their basis it was made the map of distribution of grey monitor lizard in the GIS application, ArcMap. Of the 118 places 64 findings were new (Fig. 2) . The finds of lizard in the border of Kazakhstan Kyzyl-Kum (Shardara and Otrar districts of South Kazakhstan region) have completed the representation of the distribution of species in the region. Also monitor was marked by us, and before by the employees of anti-plague stations 20-30 km east of the town Shardara, in the unusual for him biotopes of the desert with grass vegetation.

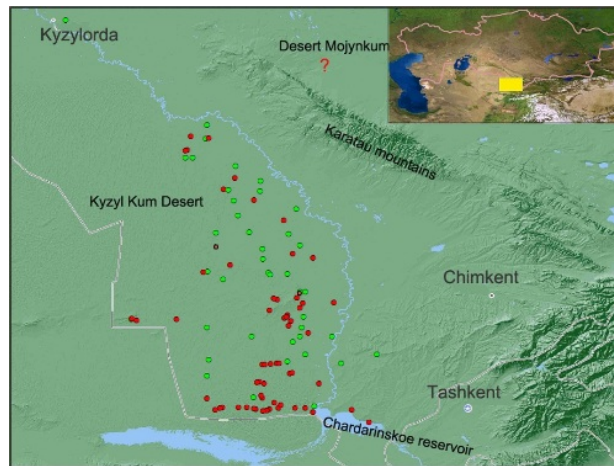


Fig. 2. Distribution of gray monitor in Kazakhstan. Green points - the published data - red - new information

Our data, in general, have confirmed the picture of the spread of species contained in the monograph Z.K. Brushko (1995). The exceptions were oral reports of meetings of monitor lizards and finds his eggs in the western sands Moynkum (inspector of “Ochotzooptom”, 2011; B.M.Gubin, 2006), in the east of Aral Sea (I.I. Temreshev, 1989). Latest find is much torn west of the known territory of the spread of species (Brushko, 1995). But there were other reports of meetings of monitor lizard, made at the beginning (Zarudny, 1915) and the second half (Brushko, 1995) of the last century. It is possible that the monitor lizard was brought here by man. The habitat of grey monitor lizard in the Kyzyl-Kum is rather remote, large and complicated for field research area, because here there are few settlements and freshwater sources. Therefore, in the first year of the realization of project we were not able to visit all the areas of interest. We’re going to continue this work in the next years. Obviously, to clarify the boundaries of the natural habitat of monitor lizard is necessary the directed research of the northern sections of Kyzyl-Kum, the Western Moynkum and right bank of the Syr-Darya. The habitat of grey monitor lizard in the Kyzylkum desert is a quite far, large area, hard for research expeditions because there are few settlements and sources of fresh water. That’s why in the first year of the project implementation we have not been able to visit all interesting for us areas. We’re going to continue this work in the next years.

During the surveys of relative density of monitor lizard by automotive accounting has been revealed that incidence for 2012 averaged 0.05 ind. / km, or in terms of area - 0.08 ind. / ha (width of the accounting strip is 6 m). The incidence of grey monitor lizard, according to our data, was higher in the south of Kazakhstan Kyzyl-Kum - 0.05-0.09 ind. / Km (0.08-0.15 ind / ha), but also here it is lower than earlier listed in the literature for other regions of the South-East Kazakhstan (0.1-0.33 ind. / ha (Brushko, 1995)). Thus, according to the results of our short-term surveys, the number of grey monitor lizard has declined in comparison with the 80s of the last century. To accurately determine the abundance of this species and to determine the causes of its decline it is necessary to conduct additional, including long-term investigations on the model ranges. As these ranges we offer the most southern area of Shardara district and the western part of Arys district of South Kazakhstan region.

All of the identified individuals were measured. Body length of immature was 33,0-42,0 mm, tail - 45,0-62 mm. Mature individuals had a body length 43,0-55,0 mm, tail - 56-71 mm. From dead individuals of monitor lizards were taken samples for further molecular-genetic analysis (Fig. 3).



Fig. 3. Measurement of young lizard

As in the 80s of the last century also nowadays, the main limiting factor for the monitor lizard is human impact. And although in the most of Kyzyl-Kum the impact of livestock grazing on biocenosis decreased significantly and most pastures are abandoned, at the eastern edge of Kyzyl-Kum there are many residential sites, sands are heavily overgrazed by cattle. Undoubtedly, the negative role is played also by the active development of the left bank of the Syr-Darya for irrigation, leading to a reduction in habitat of the species, and by uncontrolled expansion of the network of dirt roads in the Kyzyl-Kum. Still frequent are cases of direct extermination of monitor lizards by local residents, including the result of a deliberate collision of vehicles on the roads. So 23 May 2012 on a plot of dirt road from Shardara to the village Bimyrza, length of about 50 km, we found the corpses of three adult monitor lizards killed by a car in the last days (Fig. 4). Monitor lizards perish also by falling into dry and flooded wells. In the course of field studies we have saved from wells two monitor lizards, which were quite exhausted.



Fig. 4. Crushed monitor on the dirt road

Public awareness

There are several legends passed down from generation to generation, of how dangerous meetings with a monitor lizard are to person, causing disease and failure. People believe that if you kill lizard, it will bring good fortune to the house. It is necessary to conduct the explanatory work with the residents of the area. In the course of expeditions we have visited all the houses and the shepherds' stands we met in the tract of Kyzyl-Kum sands in order to promote knowledge about the grey monitor lizards, to change the negative attitude of the local population to it, we have conducted interviews with shepherds (Fig. 5).



Fig. 5. Discussion with the local people

For securing and extension of information about the positive role of monitor lizard in the nature and benefits of human have been published posters and pocket calendars (Fig. 6).

Posters and calendars were distributed to non-governmental organizations of environmental orientation, protected areas, in anti-plague stations, as well as to the public, schools and universities. We have made special trips to lecture about the grey monitor lizards, as well as other rare and vulnerable representatives of herpetofauna in

the region in the Kazakh-Turkish University named Yasssau (Turkestan) (Fig. 7) and the Kazakh National University named Al-Farabi to biology students. We have organized a contest for the best picture, conducted on the basis of the station of young naturalists. More than 250 people from different schools (Almaty, Esik cities) have participated in the competition (Fig. 8). Also for pupils were held some presentations on the grey monitor lizards, its usefulness in the biocenosis. It was shown the video about the rescue of a grey monitor lizard from a dry well. We would like to reach more universities and schools. We hope to continue this work in the future.

For wider dissemination of information the articles were published in Kazakh media.

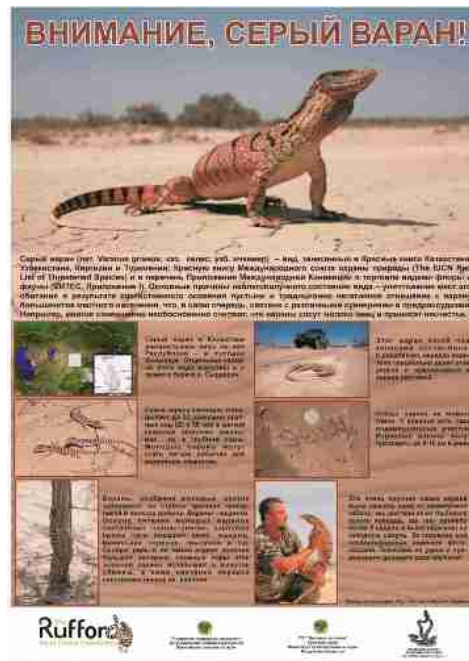


Fig. 6. Poster



Fig. 7. Lecture about the grey monitor lizards in the Kazakh-Turkish University named Yasssau (Turkestan)



Fig. 8. Contest for the pictures of the monitor

To address the priorities for the conservation of grey monitor lizard, activities include:

In May 2012 we had a conversation with the head of the Environmental Department of the South-Kazakhstan region and have obtained consent for further joint work to promote knowledge about the grey monitor lizards and the development of measures for the protection of this species. However, despite our further treatment in this instance, we have not achieved any practical results. The solution to this difficulty would be held next year by personal visit to the management. At the moment the protection and dissemination of information in the region are solved with the help of other agencies – ON Ohotzooprom, Shymkent Zoo.

During participation in the conference “Terrestrial vertebrates of arid ecosystems”, October 24-27, 2012 in Tashkent (Uzbekistan) with Uzbek colleagues zoologists have been discussed the deteriorating state of populations of grey monitor lizard and possible measures to address them. Joint action plan has been discussed.

The project results were presented at the conference "Animals of Kazakhstan and adjacent areas", held on 22-23 November 2012 (Fig. 9). In discussing the report have been discussed the establishment of protected areas in the region with the largest number of grey monitor lizard, the possibilities of breeding of grey monitor lizard in captivity, the use for scientific purposes of the dead animals, the interaction with environmental services in the region.



Fig. 9. Presentation at the conference "Animals of Kazakhstan and adjacent areas"

December 5, 2012 has been conducted a round table on “Study and Conservation of grey monitor lizard in Kazakhstan”. Representatives of NGOs, deputy director of the Shymkent Zoo, head exotarium of the Almaty Zoo, deputy of research department of the Association for the conservation of biodiversity of Kazakhstan, NGO "Wildlife", students and teachers of the Kazakh National University named Al-Farabi.

Conclusion

As a result of the work further measures for the study and conservation of the grey monitor lizard have been identified:

- 1) research of areas not covered by expedition routes to clarify the distribution of the species in the country.
- 2) to restore and stabilize the number of grey monitor lizard we consider it necessary to promote the protection of species and to disseminate the information of its important role in ecosystems - to change the traditionally negative attitude of the majority of the population. In particular, it is necessary to emphasize the fact that the majority of beliefs about the grey monitor lizard is a myth and doesn't occur in reality, that grey monitor lizard is one of the most important components of the Kyzyl-Kum desert biocenosis, as well as the fact that in the modern developing Kazakhstan it is one of the attractive objects to create nature trails for tourists and researchers, whose development will help raise the economic level of the local population.
- 3) considerable part of the monitor lizard habitat in Kazakhstan is located in South-Kazakhstan conservation area, however, the regime of the area doesn't provide the protection of the species and density of its population is low here. As one of the measures to save monitor lizard we consider necessary to create a comprehensive protected area in the south of Kazakhstan, west of the city Shardara, in key habitat of species with a relatively high density of its population.
- 4) to activate the collaboration with the Shymkent Zoo concerning the possibility of the captive breeding of grey monitor lizard with its further release into the wild, as well as for scientific research to study the biology and morphology of the grey monitor lizard.

There are still many unresolved issues and problems on the study and protection of the gray monitor lizard in Kazakhstan. We hope in the future to attract more professionals and other people to the problem of this kind of lizard.

At present, it is being worked on the application to the Committee of Science, Ministry of Education and Science of the Republic of Kazakhstan for further research of grey monitor lizard in Kazakhstan, as well as the study of its isolated populations. And we also hope to continue to cooperate with Rufford Small Grants.