

Herpetofauna Survey Results in the Mountain Khognokhaan uul Nature Reserve Regions

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Abstract : The Amphibians and Reptiles in the mountain Khognokhaan uul nature reserve areas were 6 species of Amphibians and Reptiles. And there were not recorded Red Data Book species in Mongolia. It is known that among 22 species of Mongolia, 11 species of amphibians and reptiles of overall Mongolia and 5 species composition of the mountain Khognokhaan uul nature reserve areas were also distributed in Korea. Therefore it will be interesting to carry out comparative investigation of them.

Introduction

The conservation of biodiversity in Mongolia requires the expansion of the Protected Area System, improving the protection and management of Protected Areas improving management of plant and wildlife species and enforcing environmental laws.

Amphibians and reptiles take an important place in the ecosystem and biodiversity study of the reserve. It is greatly due to a middle stage of amphibians and reptiles in the food chain of all ecosystem, in other words without these animals there will be possibility of certain obstacles in the metabolism and energy movement of the nature. Therefore the problems of amphibians and reptile protection is the same

as conservation of any ecosystem.

Also amphibians and reptiles are too sensitive and are relict by classification, e.g. they are very vulnerable on antropogen impact on the environment like pollution as well as man activity in general. A part being a food of prey birds, mammals and fishes they feed on insects and rodents keeping their number in appropriate level. Abundance of poisonous snakes can harm both livestock and human. Amphibians and reptiles are studied as well as other animals of Mongolia mainly by Mongolian and Russian researchers : Bannikov (1958), Monkhubayer (1976, 1987), Monkhubayer and Terbish (1997a, 1997b), Monkhubayer and Borkin (1990), Borkin, Monkhubayer, Orlov, Semvonov and Terbish (1990), Semyonov and Monkhubayer (1996), Ananjeva, Monkhubayer, Orlov, Orlova, Semyonov and Terbish (1997).

Also some information's on amphibians and reptiles of Mongolia and adjacent territory are published in a such known monographs as "Guide to the Reptiles and Amphibians of the USSR" (Bannikov, Darevsky and others, 1977), "Herpetology of China" (Zhao and Adler, 1996) and "Herpetology of Japan and adjacent territory" (Stejneger, 1996). This academic survey of national environment in Mongolia was accomplish 10th anniversary of Korea-Mongo-

lia Diplomatic Relationship and 23th anniversary of foundation of KNCCN. In This survey periods, 26 July to 2 Aug. 2000, We recorded 4 species of Reptiles and 2 species of Amphibians and We hope that this survey results will encourage further works.

Survey methods

The survey was conducted at the Mountain Khognokhaan uul Nature Reserve regions. And amphibians specimens were collected casting net (mesh size : 5 mm × 5 mm, 7 mm × 7 mm) and hand-net (mesh size : 3 mm × 3 mm, 4 mm × 4 mm) at shallow riffle, pool area and narrow and grassed-streams of the survey area. Meanwhile reptiles specimens were used snake pliers and insect sweep net.

Results and Discussion

Two orders, four families, six species of four genera of Amphibians and two branch orders, seven families, 14 genera and 22 species of reptiles are registered in Mongolia. let's look through it by species. In this papers scientific and common name follow in the wake of the Mongolia criteria.

1. *Salamandrella keyserlingii* Dub, 1870 Siberian salamander (North Korea)*
2. *Bufo raddei* Strauch, 1876 Radde's Toad (North Korea)*
3. *Bufo danatensis* Pisanetz, 1978 Green or Middle Asian Toad
4. *Hyla japonica* Gnther, 1859 Tree frog (South and North Korea)*
5. *Rana amurensis* Boulenger, 1886 Amur red frog (South and North Korea)*
6. *Rana chensinensis* David, 1875 Asian grass frog
7. *Alsophylax pipiens* Pallas, 1813 Kaspischer Geradfingergecko (Deutsch)
8. *Cyrtopodion elongatus* Blanf, 1875 Gobi naked-toed gecko
9. *Teratoscincus przewalskii* Strauch, 1877 Plate-tailed gecko
10. *Laudakia stoliczkana altaica* (Monkhbayar, 1971) Mongolian agama
11. *Phrynocephalus helioscopus* Pallas, 1771 Sunwatcher
12. *Phrynocephalus versicolor* Strauch, 1876 Toad-headed agama
13. *Eremias argus* Peters, 1869 Mongolian racerunner (South Korea)*
14. *Eremias arguta* Pallas, 1773 Steppes-runner

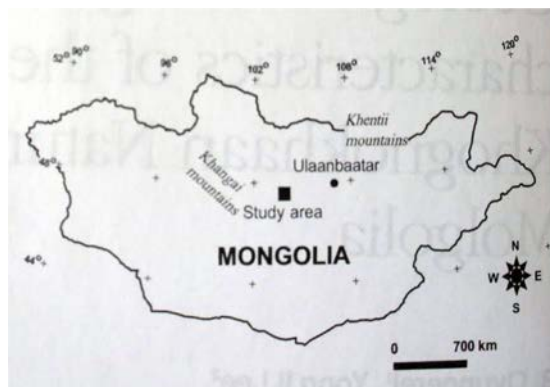


Fig. 1. Location of Survey area

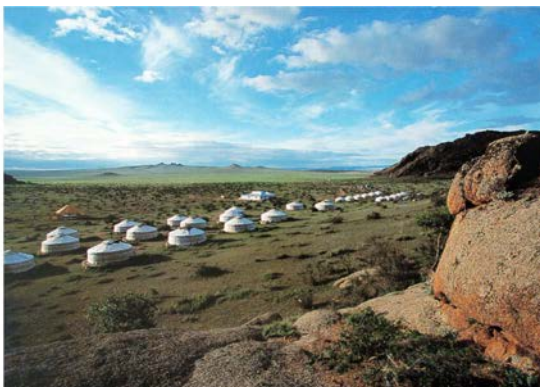


Fig. 2. Site of survey base Camp

15. *Eremias multiocellata* Gntner, 1872
Multiocellated racerunner
16. *Eremias przewalskii* Strauch, 1876 Gobi
racerunner
17. *Eremias vermiculata* Blanf., 1875 Varie-
gated racerunner
18. *Lacerta agilis* Linneus, 1758 Sand lizard
19. *Lacerta vivipara* Jacquin, 1787 Vivipa-
rous lizard
20. *Eryx tataricus* Licht, 1823 Tatory sand
boa
21. *Coluber spinalis* Peters, 1866 Slender
racer (South and North Korea)*
22. *Elaphe dione* Pallas, 1773 Cat snake
(South and North Korea)*
23. *Elaphe shrenckii* Strauch, 1873 Rat snake
(South and North Korea)*
24. *Natrix natrix* Linneus, 1758 Grass snake
(South and North Korea)*
25. *Psammophis lineolatus* Brandt, 1838
Steppe ribbon snake
26. *Agkistrodon halys* Pallas, 1776 Halys
viper (South and North Korea)*
27. *Vipera berus* Linneus, 1758 European
northern viper (North Korea)*
28. *Vipera ursini* Bonap., 1835 Orsini's
viper

* : Distributed in South or North Korea

By zoogeographical division of Mongolian wildlife (Bannikov, 1954) mountain Khognokhaan uul belongs to Khangai Mountain Forest steppe and Mongol-Daguur steppe regions of Mongolian forest-steppe subprovince. Let's consider the next five species of mountain Khognokhaan uul and adjacent territory (Distributed in South or North Korea).

1. Mongolian toad : *Bufo raddei* Strauch, 1876

Ecological facts : It has middle sized body

of 74 mm length. It has rough cover and well developed pair of glands behind the ears that seem to be swollen up. There is a light stripe on the back. The forth toe of the forefeet is short though will not reach the first joint of the third toe. The convexes of inside part of joints of the hind feet toes are appeared separately. Males are dim coloured but females, on contrary, are very pronounced with yellow, green and variegated color.

Mongolian toad are widespread from Dornod east steppe till Khangai forest mountain ranges, mostly where the water joints are. Here are all rivers, lakes and ponds belong to the basins of Arctic and Pacific oceans and oases and sand mountains of Gobi.

By altitude feature Mongolian toad spread from Dornod Mongolian Blue Lake that stands 532 m above sea level until the highest elevation of 3,800 m of Ikh Bogd mountain. Also they spread over Khognokhaan mountain 1,800 m, Tuvshuulekh 1,750 m and Gobi Gurvan Saikhan 1,400~1,700 m. In Hustain Nuruu they are at 1,200~1,400 m. Moreover, in the cities and towns this species is not rare, e. g. plenty of it in the outskirts of Dornod aimag center Choibalsan city along Herlen rivers's banks. And in 1960's plenty of Mongolian toad were along the rivers Selbe, Uliastai and Dund gol of Ulaanbaatar city though however there is none at the moment. As we have noted on the workshop "Protection Wetland of Mongolia and East South Asia" that took place 16~19 September, 1997 the main reason of vanishing of this species is river pollution hence destroy of living environment of amphibians.

Reproduction of toad gose by spawning in early May. By the research done in Shaamar, there are 4,639~7,578 roes in egg womb of the toad in June. After two three weeks Mongolian toad's roes become ladle. And in early August

the ladle will be developed into tiny toad and gets out of the water.

Being a ladle it will feed on slime, mash and moncellular. Adult toad's mostly live on insects. As scientists noticed in Shaamar the only dominant forage of the toad is ants. Among it's forage are spider, beetle and water bedbugs. To Chinese Shansi province confirmation. During reproduction period the toad never get food just being on the "reproduction guard" (Borkin others, 1988). During the spring, their reproductive period they are very active. But in the dawn they get passive considerably. After putting spwan in early May adult toad starts day-time active routine. From June till August toad is active from dusk till midnight. And in August the day-time active toad on the slope or Mogoit mountain of Hustain Nuruu on 15 August 1997 at 11 AM.

In mid September Mongolian toad will start to hibernate. As we observed in several places adult individuals hibernate before young ones. They hibernate for 7.5 months and get out in May. However hibernation period in Gobi is shorter, we had noticed active toad in mid September in Tokhmyn gol of Omnobi aimag.

Mongolian toad is practical for nature and husbandry by means of living on harmful insects of the field, forest, pasture and planted vegetation. Also, it is becoming common to use the paratoid poison of the toad for medical purpose. Toad can be very interesting from the point of scientific view. By the way, Mongolian scientist Kh. Terbish and Russian scientist L. Borkin have discovered Polyploid phenomenon from green toad spread over Bulgan river of Mongolian Altai. Before it above mentioned it will be curious to study an isolated population of Mongolian toad. Chromosome number of above mentioned green toad is

$4n = 44$ and rank number is 88. But chromosome number of Mongolian toad is $2n = 22$ and rank number is 44.

2. Amur red frog : *Rana amurensis* Boulenger, 1886

Ecological facts : This frog spread over Orkhon river-in the center and Selenge river-north part, south bank of Tuul river-in the south and along Herlen, Onon and Ulz rivers in the east and in the basins of Khalkh and Nomrog rivers. Khognokhaan uul is included into the area too. In some places they are abundant, as just in one part area near by Buury gol of Selenge aimag it has high density. In the past by this reason in Mongolia institute and universities were collecting 15~20 thousand frogs for studying purpose. However during the last period most institute except agricultural university cancelled it. There were plenty of this species in 1960's in UB and explanation for it's vanishing is the same as we mentioned for Mongolian toad. Amur red frog spawns in the middle of May and an average roe number is 2,500. Amur red frog usually spawns in the constant ponds on the river coast. After 10 days a roe turns into a ladle and in early July it will be developed to young frog and come to the dry surface.

Being a ladle and young frog it will feed on slime, mash and monocellular. An adult frog's food consists mostly of beetle, butterfly, spider-shaped, fly and mollusca. Also there are plenty of insects in the food contents of this frog which proves significance of this species ecosystem. The active life of this frog in the basin of Buuryn gol of Selenge on 12, September shows that they start to hibernate from October. They hibernate altogether in water and as it was observed in 1965 in UB near Bituugyn tokhi, the water hole which does not freeze over dur-

ing the wintertime, individuals become active on 14, March.

3. Mongolian Racerunner : *Eremias argus* Peters, 1866

Ecological facts : In the entire word area Mongolian racerunner's body length is 30~71 mm and the ratio body length/tail length is 0.72~1.1 mm, thigh opening number 7~13, throat scales 16~24 and main body scales 47~56. There are white detached stripes along the back and on the both sides of the body. And there are dark spots between the stripes therefore it has contrast dark-white coloured body. This species spread over branch mountain of Ikh Hyangan mountains of Mongoliam from Dornod (east) to west Hangai mountain ranges and from the steppe to the north until Orkhon, Selenge territory. In the desert by mountainous ranges like Gobi Gurvan Saikhan, Atas, Khan uul, Slope of arts Bogd and Delger Hangai mountain.

In UB it can be met in the steppe area with Karagana like Altanbulag, Bituugyn tokhoi and Shuvuun davaa slope. In Hustai it spread over steppearea with Karagana of Sant mountain. Perhaps Mongolian racerunner lay eggs in



Fig. 3. Habitat of *Eremias argus*

early July and mostly have 2~7 eggs. In Gobi young ones leave their egg in the mid August. Females differ from male ones by the appearance. Male lizard's belly is pink-red coloured. Mongolian racerunner mostly feed on insect and it's food dominantly of beetle take (59.4%), rawhide winged (17.8%), pair winged (9.3%) and straight winged (13.5%). In the central part of the country Mongolian racerunner start to hibernate in the mid September and come out at the end of March. It is an effective animal which feed on harmful insects.

4. Cat snake : *Elaphe dione* Pallas, 1773

Ecological facts : In general the body length of Cat snake is 960 mm. However 1,020 mm length snake was found in Hustai. The eyes of Cat snake has big shield scales and at back of the eyes mostly two and sometimes three shield scales. It is light yellow or gray-yellow, brown coloured. Along this main body there are straight gray stripes and two of them go on till the tail dark brown spots on the both parts of the body. On the top of the head there are specific patterns like appearance. Therefore sometimes it called pattern snake. It's belly is light yellow with pinky beam on.

This is the only widespread snake in Mongolia. It spread everywhere as in forest steppe and desert. Cat snake is common in Khogno-Khaan uul as well. This snake lays 5~16 eggs in it's area in June-August. A snake, having 12 × 25 mm sized 8 eggs was found on 21 June 1968 in Shargaljuut rashaan. It commonly occurs in mineral water sources. Snakes which are in Otgontenger and Uukheeg mineral source are belong to this species.

Cat snake mostly feed on insects, bird, lizards and bird's egg, the example of it's fed on birds in Hustai was above mentioned. From the

body of 820 mm lengthed snake caught in Hustai we discovered two swallowed Passeriformes Order birds. They were predicted to be Tree sparrow (*Passer montanus*). Cat snake is significant by means of coordinating the number of harmful rodents in ecosystem.

5. Haly's or Central Asian viper : *Agkistrodon halys* Pallas, 1976

Ecological facts : It is a poisonous snake widespread in Mongolia. Its body length reaches 750 mm the only distinctive point of this snake from others of Mongolia is the presence of hole between nose and eyes, which is a sense organ assessing temperature of the environment as a thermolocator. In other words in the darkness feeling warmth fluctuation of the surrounding in cathes it's warm blooded forage prey like rodents. The body color of Central Asian Viper of the forest part is dark while of Gobi is lighter.

It is equally spread over Hangai Gobi, steppe and High mountainous areas of Mongolia. The presence Central Asian Viper's photopicture in information center of Hustai insures its presence in the reserve.

Conclusion

1. The Amphibians and Reptiles in the mountain Khognokhaan uul nature reserve are almost not studied by researchers. But 6 species of Amphibians and Reptiles are found out by as in the mountain Khognokhaan uul and its adjacent territory.

2. It is known that 11 species of amphibians and reptiles of Mongolia and 5 species composition of the mountain Khognokhaan uul nature reserve are also distributed in Korea. Therefore it will be interesting to carry out comparative investigation of them.

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Bufo raddei
(Radde's Toad)



Eremias multiocellata
(Multicellated racerunner)

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국문요약

몽골 허그언하안 자연보호구역의 양서류 · 파충류상 및 생태

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몽골 전체 양서류는 4과, 4속, 6종이 있으며, 파충류는 7과, 14속, 22종 총 11과 20속 28종이 서식하고 있다. 전체 목록은 다음과 같다.

I. 양서류 (Amphibians)

1. *Salamandrella keyserlingii**
2. *Bufo raddei**
3. *Bufo danatensis*
4. *Hyla japonica**
5. *Rana amurensis**
6. *Rana chensinensis*

II. 파충류 (Reptiles)

7. *Alsophylax pipiens*
8. *Cyrtopodion elongatus*
9. *Teratoscincus przewalskii*
10. *Laudakia stoliczkana dtaica*
11. *Phrynocephalus helioscopus*
12. *Phrynocephalus versicolor*
13. *Eremias argus**
14. *Eremias arguta*

15. *Eremias multiocellata*
16. *Eremias przeuaskii*
17. *Eremias vermiculata*
18. *Lacerta agilio*
19. *Lacerta vivipara*
20. *Eryx tataricus*
21. *Coluber spinalis**
22. *Elaphe dione**
23. *Elaphe schrenckii**
24. *Natrix natrix**
25. *Psammophis lineolatus*
26. *Agkistrodon halys**
27. *Vipera berus**
28. *Vipera ursini*

한편 본 조사 지역에서는 양서류, 2종, 파충류 4종, 총 6종이 확인되었다.

1. *Bufo raddei**
2. *Rana amurensis**
3. *Phrynocephalus versicolor*
4. *Eremias argus**
5. *Agkistrodon halys**
6. *Elaphe dione* *

(* : 한반도 서식종)

III. 결 론

허그너하안지역에서 확인된 6종 중에서 한국(남·북한)과의 공통종은 5종이었으며, 몽골 전체 28종 중에서는 11종이 북한을 포함한 한국공통종이었다. 그리고 허그너하안 지

역에서 확인된 6종 중에서 몽골에서 지정한 red data book에 기록된 종은 없었다. 전체 면적에 비하여 양서·파충류가 적은 원인은 서식환경 조건이 단순하고, 양서·파충류가 산란하고 활동하는 기간이 온대와 열대 지방에 비하여 극히 짧기 때문이라 추측된다.