AN HERPETOLOGICAL INTERLUDE IN EX-SOVIET CENTRAL ASIA (PART I)

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SUMMARY

A visit during May 1994 was made to the former Soviet Central Asian Republics of Uzbekistan, Kyrgyzstan, Kazakhstan and Turkmenistan. Contact was made with herpetologists in Institutes of Zoology of National Academies of Sciences in respectively Tashkent, Bishkek, Almaty and Ashgabat. Road journeys to Samarkand and Bukhara enabled inspection of the agriculturally developed Syr-Daria (Jaxartes) River plain and southern Uzbek steppe. Site visits included the Aksu River plain and northern Kyrgyz steppe, the Kyrgyz Range, the Central Kazakh steppe, where tortoises *Agrionemys horsfieldi* were measured, the Kara-Kum Desert and Canal, and the Central Kopet-Dagh range bordering Iran. Projects were proposed, and publications relating to herpetology were received. Appropriate funding sources were approached for support to complete publication of *Selevinia* vol. 1, and to cover the cost of paper for printing a book on reptiles of Kazakhstan.

PROLOGUE

Completely rebuilt after the earthquake in 1966, Tashkent represented a success story of Soviet achievement. Departing my formerly named Hotel Leningrad (now Mekhmonkhonasi Turon), the taxi joined a disorderly line of dusty Zhiguli, Moskvich, Volga and Lada motorcars proceeding along the wide double-laned Prospekt Navoiy. I was bound for the main bus station with ahead an eleven and a half hour overnight journey (545 km) through Kazakhstan and over the Karatau Range to Bishkek, the perestroika-renamed capital of the Republic of Kyrgyzstan. Picking a way over the cobble-set network of tram lines, my taxi turned left down Prospekt Lenina, another great boulevard of this spread-out capital surrounded by extensive suburbs of workers' flats. Coming to a red light, the driver barely slowed down, muttered some epithet in Uzbek, and drove straight through. He then cut a swathe through a thin gathering of Tashkent citizens and came to a jerky halt by a row of well used long-distance Hungarian Ikarus coaches awaiting departure at the rear of the Bus Station. My own travelworn Globetrotter joined the pile of Soviet-made suitcases and Cyrillic-labelled sacks and rope-tied cardboard boxes ready for loading. Apart from a few ethnic Russians, I was the only foreigner amongst the rows of smiling mongoloid faces of weather-beaten Uzbeks and Kazakhs already on the bus. With some negotiation in disjointed Russian and adjustment of booked seat numbers, I found the last place and room for my legs in the aisle amongst soft bags and passengers' already opened bottles of Stolichnya vodka placed by their seats on the floor.

BACKGROUND

Arranged by Dr Leo Borkin (Herpetological Section, Zoological Institute, Russian Academy of Sciences, St Petersburg), I received an official invitation from the Institute of Biology of the Kyrgyz Academy of Sciences to visit Bishkek and discuss possibilities for collaborative ecological research. Also able to attend the NATO Advanced Research Workshop on problems of the Aral Sea Basin held in Tashkent (Uzbekistan) 2-5 May 1994

at the Main Administration of Hydrometeorology (Glavgidromet), I could visit the Institute of Zoology of the Uzbek Academy of Sciences while there. Invitations were also subsequently received from the Institutes of Zoology in Almaty and Ashgabat. As the fortunate recipient of a Royal Society travel grant for the programme of Exchanges with the Former Soviet Union, my objectives were to make contact with specialists in the Institutes of Zoology and discuss possibilities for future collaborative environmental research. My itinerary from 29 April to 30 May 1994 covered in chronological order Uzbekistan, Kyrgyzstan, Kazakhstan and Turkmenistan. Any specimens of amphibians and reptiles collected have been deposited in the Natural History Museum, London, with accession numbers given below. Full lists of specialists in all fields at Institutes visited are appended to a report for the Royal Society (Lambert, 1994).

This account describes aspects particularly relating to herpetology in Central Asia made during this cursory visit to the area. They are presented here as a matter of information, and as a basis for future cooperation, in relation to harmonization of experience and integration of expertise.

UZBEKISTAN

A visit to the Institute of Zoology (address: 1, A. Niyazov Street, 700095 Tashkent; tel.: (+7 3712) 46.07.18, 46.09.00; fax: (+7 3712) 41.33.05), Uzbek Academy of Sciences, was made on 5 May 1994. The Director was Prof. Dzhaloliddin A. Azimov, an helminthologist, and Institute interpreter: Mr Dzhavkhar T. Khodzhaev, Head, Information Department. I had originally written to Dr Yake Davlyatov, an herpetologist, whose name I knew through addresses of participants at the European Herpetological Meeting in Prague, Czech Republic, 1985 (Rocek, 1976), which I had also attended (Lambert, 1985), and through whom I had arranged to visit the Institute of Zoology where he was based. He passed me a number of reprints, and after a meeting with the Director, introduced me to other Institute herpetologists: Mr Anvar F. Khodzhaev, a breeder in the Serpentary; Dr Yuri A. Chikin, an ophidologist, and Dr Emiliya V. Vashetko, specialist in the use of amphibians as bioindicators among other amphibian and reptile ecological interests. While talking with Dr Vashetko, a glass jar containing a number of green toads *Bufo viridis* jumping up and down, collected from near the Chirchik Dam (some 75 km N.E. of Tashkent), was brought into her office.

Serpentary: The snake breeder, Anvar Khodzhaev, was breeding Asian cobras *Naja oxiana*, but *Vipera lebetina turanica* was the taxon mostly bred for the Institute of Venom Studies. He also wants to start a trade outlet for excess captive bred stock and develop a link with commercial interests in the West. Both the species bred are listed in Bogdanov's (1992) book on rare animals of Kazakhstan. There was also a large very lively specimen of *Varanus griseus* in the Serpentary.

COLLABORATIVE RESEARCH PROJECT PROPOSAL

A project was proposed by the Institute of Zoology, Uzbek Academy of Sciences, Tashkent: Impact of pesticides on terrestrial vertebrates (amphibians, reptiles, and mammalian insectivores and rodents) in Uzbekistan. Originator: Prof. Dzhaloliddin A. Azimov, Director, Emiliya Vashetko and Yuri Chikin were to be counterpart herpetologists. At the background of the project was agricultural development and associated increase in the use of pesticides and other chemicals, which had inevitably resulted in their entering the environment and deleteriously affecting the wildlife in Uzbekistan. The need to increase crop yield on one hand was thus in conflict with protection of the environment on the other. DDT, until 1983, and HCCH (hexachlorane cyclohexane) have been the most commonly used pesticides in Uzbekistan. DDT was still present in the soil in 1990. By

investigating the effects of agrochemicals on certain vertebrate groups, it was intended to provide a scientific basis for controlling levels of pesticide application. Indicator species will be selected to monitor habitat contamination. Potential candidates among the herpetofauna were common species such as *Bufo viridis, Rana ridibunda, Ablepharus deserti, Eremias velox, Natrix tessellata, Coluber ravergieri* and *Elaphe dione*.

HERPETOLOGY IN UZBEKISTAN

One of the earliest works on the herpetofauna of Uzbekistan was Bogdanov (1960). Information from Yagarov (1964) and Persiyanova (1972) are included with the field guide of Bannikov, Darevskiy, Ishchenko, Rustamov & Shcherbak (1974), which covered the whole of the former Soviet Union.

Publications received: Received at the Institute were copies of several works: Bogdanov (1992); Davlyatov (1985a, 1985b, 1990); Nigmatov, Davlyatov & Makhmudov (1991); Nigmatov, Davlyatov, Yakubov & Chan-Kien (1990), and Turakulov & Davlyatov (1975).

RED DATA BOOK HERPETOFAUNA

No amphibians are included with Bogdanov's (1992) book on rare animals of Uzbekistan. Of reptiles, rare species among the saurians are *Alsophylax laevis, A. loricatus, Phrynocephalus rossikowi, P. strauchi, Varanus griseus, Ophisaurus apodus, Eumeces schneideri* and *Eremias scripta pherganensis*, and snakes *Eryx tataricus, Lycodon striatus, Coluber rhodorhachis, Lytorhynchus ridgewayi, Elaphe quatuorlineata, Boiga trigonatum, Vipera ursinii, Echis carinatus* and *Agkistrodon halys*. Several of the names will ring a bell with those familiar with the European herpetofauna.

HERPETOFAUNA RECORDED

I had little opportunity to visit natural habitats and record the herpetofauna in Uzbekistan, but near the Old Market in Tashkent behind the Kulkeldesh Madrasa, there was an area of rough ground surrounded by workers' flats with large pools. Some of these contained amphibians; several pairs of *Bufo viridis* were observed in amplexus during the afternoon on 30 April and I heard calling at 14.08 h LMT (20°C). A pair was photographed the following day, and a male collected (BMNH 1994.143) from a separate nearby pool. Tadpoles were observed in other pools, and also in one formed by a slow moving stream and part-filled with paper litter at the edge of the Prospekt Navoiy. In a flooded area around a tree of a large vegetated traffic island, several further males were heard calling. The species seemed well adapted to surviving in temporary water bodies of built-up areas, for it was also seen later in other towns of Central Asia.

A southward journey along the Old Silk Route from Tashkent to Samarkand, and then beyond to Bukhara, was made by bus on 6 May at the start of the National Holiday Weekend commemorating the end of the Great Patriotic War ("defeat of the Nazi fascists") when public institutions were closed. The road passed through agriculturally developed land, interspersed with scattered buildings, north and south of the Syr-Daria (Jaxartes) River. There was little natural habitat, and most of the cultivated area was taken up with almond and peach orchards, and vineyards, with occasional fields of corn. This Golden Road to Samarkand finally crossed the Nuraian range before descending to the city. From Samarkand, the route followed the Zerafshan valley for 200 km, and then crossed open steppe country with grass tussocks and low shrubs in which the road veered south-west to Bukhara with its famous bazaars, tawny-brick madrasas, mosques and mausolea, and 47 m high Kalyan minaret. Built by the Karakhans, and saved by Genghis Khan, he and subsequent khans would have struggling prisoners hauled up the spiral staircase, and, tied-up in sacks, hurled from the top of the minaret for execution. The last death by jaculation

recorded in the official Soviet guidebook being in 1884, but deaths were also known as recently as 1920/21 during the troubled years in this part of former Russian Turkestan following the Soviet Revolution. An entertaining description of his unofficial visit to Bukhara in 1938 is given by Sir Fitzroy Maclean in his book *Eastern approaches* (1949). Not unexpectedly, his account included nothing herpetological!

One evening after rain in Samarkand (7 May), frogs could be heard croaking in the park behind the 19th century Hotel Zerafshan - with splendid Uzbek sculpted door and entrance hall. Before visiting the famous Registan, with turquoise-blue-domed Golden Mosque and Madrasas, a quick inspection of a large pool in the Maxim Gorky park adjacent to the hotel did indeed yield some calling *Rana ridibunda* at the edge amongst leaves that had fallen into the water. The monuments of Tamburlaine the Great are vividly described, and a potted history of Samarkand given by the Thomas Cook award-winning travel writer, Geoffrey Moorhouse, in his book *Apples in the Snow* (1990). Echoing the same sentiment, he had responded to the words of the improbable James Elroy Flecker, a former British vice-consul (originating from Lewisham and ending-up in Cheltenham, and never posted nearer than Beirut), who wrote that "Every journey through Central Asia is a quest for Samarkand"!

KYRGYZSTAN

By the break of dawn (10 May), the bus from Tashkent had crossed without any border controls from Kazakhstan into Kyrgyzstan, and proceeded east across a flat plain (600 m) through a series of villages with a chain of snow-capped mountains (peaks up to 4743 m) of the Kyrgyz range bordering the south. The fields with new season's growth were brilliant green - heavy rain overnight - Spring was later than in Tashkent.

The Institute of Biology, Kyrgyz Academy of Sciences (KAS), Bishkek, was visited 10-15 May 1994 (address: 265 Lenin Avenue, 720071 Bishkek; tel.: (+8 3312) 25.12.73; e-mail: ROOT ACADEM.BISHKEK.SU). The new Director was Dr Emil Shukorov (elected 10 May) (former director: Prof. M. Tokobaev (helminthologist)); the Directorship changed while I was visiting the Institute. The Institute Secretary, Dr Valentina Toropova (an ornithologist), wife of the Institute herpetologist, Dr Valery Eremtchenko, was my hostess. Unfortunately, I was unable to meet Drs Eremtchenko and Borkin (who was also in Kyrgyzstan at the time), for they were on an expedition in the east of the country. While in Kyrgyzstan, I also met Dr Baktybek D. Abrisaev, Chief of the International Department, Kyrgyz Republic Presidential Staff, Government House, Bishkek.

For their expedition to the east of Kyrgyzstan, Leo Borkin and Valery Eremtchenko had teamed up for an Earthwatch project to survey the little-known assemblage of amphibians and reptiles in the Tien Shan (Celestial Mountains) of Kyrgyzstan, with the aim of answering a number of basic questions concerning distribution of species and factors influencing it. They and two Earth Corps teams in 1994 were to sex, age and measure all species found in hectare-square grids in desert, steppe (Chu Valley) and montane desert-steppe (Izzyk Kul Lake) life zones. The teams would also look out for herpetofauna more broadly (including night searches), analyse soil and vegetation, and collect some specimens for DNA and chromosome analysis. Since Yakovleva (1964), eight more reptile species had been added to the list for Kyrgyzstan; one more amphibian had also been recorded. The purpose of their expedition had been outlined in the *Earthwatch* magazine, vol. 13 (1), January/February 1994 (page 64).

Serpentary: The Institute's Serpentary was situated in another part of the town, and a visit on 11 May was made to meet the Superintendent, Mr Micael Vorobief. Valentina Toropova had worked in the Serpentary some years previously. Ten to twelve years before, the

Serpentary had maintained some 20,000 snakes for the extraction of venom; since perestroika, the collection was much reduced: 1000 in 1993. Specimens of *Vipera berus* with hardly any dorsal markings and near-uniform grey colour were kept in glass-fronted cages. *Vipera lebentina turanica* and *Naja oxiana* also used to be kept in the Serpentary. The former head was Mr Yuri Suderev.

COLLABORATIVE RESEARCH PROJECT PROPOSAL

A project was proposed by the Institute of Biology, Kyrgyz Academy of Sciences, Bishkek: Effect of contaminants on faunal ecosystems in southern Kyrgyzstan, with Dr Emil Sochurov, Director, as the official originator. The purpose of the project was to establish the effects of agrochemicals from cotton pest control and heavy metals due to mining activities on populations of terrestrial and aquatic wildlife, especially ectothermic amphibians and reptiles, in the lower mountain slopes of the Fergana Range, the eastern Basin in particular. The project would also assist the Republics of Uzbekistan and Tajikistan, whose territories are included with the Fergana Basin through which the Syr-Daria River flows. A laboratory field base would be provided by an Academy of Sciences station used regularly by staff of the Institute of Forestry, and situated at Djalal-Abad. Pesticide residue analyses of samples would be carried out either in Britain at the Natural Resources Institute, or at the Institute of Chemistry of the Academy of Sciences in Kyrgyzstan.

ZOOLOGICAL MUSEUM

A visit on May 14 was made to the Institute's Zoological Museum in Duboviy Park, Bishkek. The Institute herpetologist, Valery Eremtchenko, was head of the Museum. Although in some need of renovation, the Museum was a pleasant building situated amongst bushes and trees in the middle of the Park. The collection consisted primarily of representative vertebrate species of Kyrgyzstan, both preserved and living. In the absence of a zoological garden in Bishkek, the museum had a general educational function for Kyrgyz schoolchildren. A catalogue of the museum specimens of amphibians and reptiles is included with Eremtchenko, Panphilov & Tsarnienko (1992).

A number of amphibians and reptiles were on display in the Museum. Many of the species came from elsewhere in the former Soviet Union, or from outside probably from captive bred stock. The nomenclature for the following species is based mostly on the field guide of Bannikov et al. (1977).

Preserved specimens: Preserved material consisted of dry mounted and pickled specimens. Native Kyrgyz dry mounted species included the amphibian *R. ridibunda*, and reptiles *Varanus griseus, Agrionemys horsfieldi* and *Eryx tataricus*. From elsewhere in the former Soviet Union, *Mauremys caspica*, and from outside were the amphibians *Bufo danatensis* and *Rana asiatica*, and reptile *Alligator mississippiensis*.

Of the pickled specimens on display, native amphibians included *Bufo viridis, Rana amurensis, R. semiplicata* and *R. ridibunda*; most of the other species came from elsewhere in the former Soviet Union: *Hynobius keyserlingii, Triturus vulgaris* (male and female), *T. cristatus, Salamandra salamandra, Pelobates fuscus, Hyla arborea, Rana arvalis*, or from outside: *Bufo danatensis*. Native lizards comprised *Agama sanguinolenta, A. himalayana, A. lehmani, Ophisaurus apodus, Ablepharus deserti, Asymblepharus alaicus, Eremias multiocellata, E. velox, E. nikolskii, E. arguta, Lacerta agilis, Gymnodactylus russowi* and *G. fedtschenkoi*; most other species came from elsewhere in the former Soviet Union: *Alsophylax tokobajevia, Teratoscincus scincus, Crossobamon eversmanni, Agama caucasica, Anguis fragilis, Gymnodactylus caspius, Eremias scripta* and *Lacerta taurica*, or from outside *Eremias buechneri*. There was also non-Kyrgyz *Trionyx sinensis*. Snake

representatives of native species were *Eryx tataricus, Natrix tessellata, Coluber rhodorhachis, C. ravergieri, Elaphe dione* (also a bicephalic immature specimen), *Psammophis lineolatum, Vipera ursinii* and *Agkistrodon halys.*

Live specimens: There was also a miscellaneous collection of live specimens on display in glass-fronted cages. A native amphibian *Bufo viridis* (common in static water bodies of the Bishkek area) was represented, and from elsewhere in the former Soviet Union *Hynobius keyserlingi*; from outside: *Rana adspersa* and *Xenopus laevis* (one albino). Kyrgyz reptiles included *Agrionemys horsfieldi, Varanus griseus, Ophisaurus apodus, Elaphe dione, Eryx tataricus* and *Vipera lebetina turanica*, and from elsewhere in the former Soviet Union *Emys orbicularis, Stellio caucasica* and *Sphalerosophis diadema*; from outside: *Eublepharis macularius, Python molurus* and *Eunectes notaeus.*

HERPETOLOGY IN KYRGYZSTAN

The basic text on reptiles is provided by Yakovleva (1964). For amphibians, the general field guide for the former Soviet Union by Bannikov et al (1977) covers species in Kyrgyzstan.

Publications received: The following works were received at the Institute: Gosudarstvennay Komitet Kirgizskoy SSR po lesnomu Khozyaystbu (1985); Eremtchenko et al. (1992); Eremtchenko & Shcherbak (1986), and Yakovleva (1964).

RED DATA BOOK HERPETOFAUNA

There are no amphibians included with Gosudarstvennay Komitet Kirgizskoy SSR po lesnomu Khozyaystbu (1985). Of reptiles, red data books species are *Varanus griseus, Coluber karelini* and *C. rhodorhachis.*

Plate 1. Snow-capped peaks (> 3800 m) of the Kyrgyz range with Kara-Balma River, 27 km on Osh road south from Sosnovka, Kyrgyzstan (12 May 1994). The small skink, renamed *Asymblepharus alaicus* by Eremtchenko & Shcherbak (1986), was found under a large rock (23°C, 16.25 h) at this locality (ca. 2000 m).

Plate 2. A female *Agrionemys horsfieldi* (carapace length 157 mm) resting in morning sunshine (24°C, 11.30 h) by vegetation clump in a gully of sheep-grazed steppe country in northern Kyrgyzstan, 55 km N.W. of Bishkek (12 May 1994). *Eremias arguta* and *Ablepharus deserti* were also recorded here.

HERPETOFAUNA RECORDED

While walking through the town to visit the Institute Serpentary on 11 May, a path took one through the campus of the Kyrgyz State University. Several large concrete pools containing 10-20 cm of water supported many tadpoles of *Bufo viridis*. Two males and a female toad were observed dead in the water, tadpoles in a late stage of development with hindlegs were feeding on the corpses of these and dead tadpoles. About to metamorphose within a day or so, the emergent toadlets would have had difficulty in climbing up the vertical metre-high sides of the pools. I was also hoping, but failed, to see such skink species as *Ablepharus deserti* amongst grass basking at the edge of the road leading away from the town, but too many semi-feral cats had probably put paid to that!

Site visits in the general area of Bishkek were made on 12 May. The large Volga motorcar with hired driver proceeded west from Bishkek, and, after a petrol fill-up from a tanker hailed to halt at the side of the road (private enterprise in Bishkek!), a turn was made to the north at Alexandrovka. A further 26 km and the vehicle halted by the Aksu River (40 km N.W. of Bishkek). Apart from a small mustelid taking refuge in a hole on the side of a canal bank, I collected at between 10.00 and 10.30 h (22-22.5°C) an immature snake *Natrix tessellata* (BMNH 1994.151), disturbed while basking on a bank above a marshy area and caught as it slid through thick grass down a slope. Several frogs *Rana ridibunda* were basking in the full sunshine on grass at the edge of a concrete lined canal overgrown with reed vegetation, one pair in amplexus.

Continuing along the earth track to low hilly, open steppe habitat grazed by sheep between Telek and Stepnoye (55 km N.W. of Bishkek), many burrows and a few marmots *Citellus* sp. were observed. With full sunshine between 11.00 and 12.30 h (24-26°C), a tortoise

Agrionemys horsfieldi was sighted part-shaded by a vegetation clump in a hillside gully, whose sides were green from a sward of annual Spring plants and occasional dead wind-blown bushes overgrown with grass. The animal was collected by Valentina Toropova for live display in the Museum. She also caught in the vicinity a small lacertid *Eremias arguta* (BMNH 1994.148) and skink *Ablepharus deserti* (BMNH 1994.149), which was orange ventrally. *Rana ridibunda* was heard croaking by the side of an Aksu rivulet.

Returning to the main road, we continued south in the afternoon (15.30-16.30 h) by the River Kara-Balma on the Ush road through the foothills of the Kyrgyz range (23° C).With a backdrop of snow-capped peaks, a small skink *Asymblepharus alaicus* was found under a rock (BMNH 1994.150) 25 km south of Sosnovka (1830m). The generic name of this species had quite recently been revised by Valery Eremtchenko (Eremtchenko & Shcherbak, 1976).

KAZAKHSTAN

The bus from Bishkek crossed the hills north of the town into Kazakhstan (15 May), again without border controls, and continued east to Almaty with a backdrop of a range of hills (Ala-Too range) to the south. The flat steppe country was occasionally interrupted by groups of horses grazing on the short new season's grass. The Institute of Zoology, Kazakh Academy of Sciences (KazAS), Almaty, was visited from 16 to 20 May (address: Akademgorodok, Almaty 480032; tel: (+8 3272) 48.19.32/48.18.68/62.11.54; fax: (+8 3272) 48.19.58). The Director was Prof. Turqanbai N. Doszhanov, a hippoboscidist (former director: Prof. Anatoliy M. Dubitskij, dipterist). A special hard-bound booklet on the Institute of Zoology had been published for the 50th anniversary in 1992. Dr Zalina K. Brushko had now retired, and Dr Rudolf A. Kubykin, my host, was now the Institute herpetologist with a specialist interest in the steppe tortoise *Agrionemys horsfieldi*. Dr Brushko and I had previously exchanged reprints. I stayed with Rudolf Kubykin and his wife in their state-owned flat off the top end of Furmanova Street. The Head of the Laboratory for the Protection of Animals, with which Rudolf Kubykin was associated in the Institute, was Prof. Anatoliy F. Kovshar (an ornithologist), President of the Kazakhstan Zoologists' Society and Editor-in-Chief, *Selevinia* - the zoological journal of Kazakhstan. The Head of the Laboratory of Anthropogenic Monitoring, which included herpetofauna in its remit, and with whom I also discussed future research proposals, was Dr V. Nilov (a limnologist). Mr Kanat Turebaev, a biomonitoring specialist, acted as translator/interpreter.

COLLABORATIVE RESEARCH PROJECT PROPOSALS

Proposals for collaborative research were made by the Institute of Zoology, Kazakh Academy of Sciences, Almaty:-

1. Pollution by organochlorine pesticides and heavy metals of aquatic and land biota of the Syr-Daria River Basin on the territory of Kazakhstan. Originator: Prof. Turqanbai N. Doszhanov, Director, and Dr V. Nilov, as Head, Laboratory of Anthropogenic Monitoring of Animals.

2. Rare species of animals inhabitating the Tien Shan Mountains, Kazakhstan: an amphibian (*Ranodon sibiricus*), a bird and mammal (*Marmota menzbieri*). Further information on the status and distribution for conservation of these three rare vertebrate species was required. Originator: Prof. Anatoliy F. Kovshar, Head, Laboratory for the Protection of Animals.

3. During a discussion with Prof. A.M. Dubitskiy, the former KazAS Institute Director

and subsequently the Minister of Nature and then of Ecology with the Kazakh Government, who had also worked for WHO (Geneva), he said that he foresaw Lake Balkhash suffering from the same problem that the Aral Sea was experiencing at present. The lake is half saline and half salt. The lake suffers from pollution from China, and from water extraction and agrochemical run-off due to rice irrigation from the south. Resolving the situation could be the basis for another project in the future.

PUBLICATION PROJECTS

During the course of discussions with specialists in the Institute of Zoology, funds for publication projects were also requested, and forwarded to appropriate funding sources:-

1. Funds for the publication of volume 1, nos 1-4 (1993/94), of *Selevinia* - the zoological journal of Kazakhstan. The Editor-in-Chief, Anatoliy Kovshar, had used personal funds to finance publication of issue 1 of the journal in 1993. The journal publishes papers in English, Russian and Kazakh, with abstracts also provided in the other two languages. Unfortunately, although manuscripts have been prepared and accepted, there were no further funds available to continue with the next issue. Anatoliy Kovshar, the originator of the project, then requested funds for publication of all four issues of Volume 1, a total of US$ 4000 (approx. £2667). He was confident that the journal would be self-supporting after volume 1. The immediate sum of US$ 1500 (ca. £1000) would allow issue 2 to go to press. Volume 1(1) included an article on reptiles (Brushko, 1993).

2. Funds for basic quality paper to complete publication of a book *Udivitelny mir reptilii* (The astonishing world of reptiles). Proofs have been prepared and corrected (248 pages), but since the independence of Kazakhstan, the publisher has run out of funds to purchase paper required for a print-run of 5000 copies. A total of 110 600 Kazakh tenge had been requested (approx. US$ 2765 or £1843) for paper of basic quality. The project originator is Rudolf Kubykin, editor of the volume. Beside Rudolf Kubykin himself, contributors included Shcherbak, Bogdanov, Brushko and Semenov.

HERPETOLOGY IN KAZAKHSTAN

The amphibians and reptiles of Kazakhstan are described in two basic texts (Paraskiv, 1956; Iskakova, 1959), and included in others for the Soviet Union generally (Terentev & Chernov, 1949; Bannikov, Darevskiy & Rustamov, 1971).

Publications received: Among other publications received at the Zoological Institute, the following included herpetological subjects: Bachkova (1988), Kovshar (1990, 1993) and Sludskiy (1978). I had previously received reprints of work on *Agrionemys horsfieldi* by Brushko (1981a, 1981b), Brushko & Kubykin (1980, 1982), and Kubykin (1988).

RED DATA BOOK HERPETOFAUNA

The only amphibian included with the red data book for Kazakhstan (Sludskiy, 1978) is *Ranodon sibiricus*. Of reptiles, rare species among the saurians are *Phrynocephalus versicolor, Varanus griseus* and *Ophisaurus apodus*, and snakes *Coluber jugularis, C. rhodorhachis, C. spinalis, Elaphe quatuorlineata* and *Vipera lebetina*. Four of the names will be familiar to those with knowledge of the European herpetofauna. Brushko & Kubykin (1983) subsequently worked on *Phrynocephalus versicolor.*

HERPETOFAUNA RECORDED

During my overnight bus journey from Tashkent to Bishkek through Kazakhstan, a brief stop was made at a parking area with roadside stalls in the Karatau Range, some 25 km

W.S.W. of Dzhambul, at ca. 675 m. Emerging into fresh air at 1.30 in the morning (10 May), a number of male passengers bought bottles of beer with their Kazakh tenge to hand (apart from a few dollar bills, I still only had Uzbek sum). The call of a solitary *Rana ridibunda* could be heard in the cool still air from the valley below.

Site visits in the Central Kazakh steppe were made on 19 May. In the company of Rudolf Kubykin, a female interpreter and a Nature Reserves field warden, Vitaly Fyodorovich, departure from Almaty in a new Japanese Nissan Trooper was made at 05.30 h. Proceeding north along a tarmac road under an overcast sky, the most undistinguished looking town of Kapchagay, with the skeleta of incomplete workers' flats, situated at the head of a large reservoir of that name was passed by 07.15. Rather poor *datchas* were scattered on land around the town. A track to the left at 08.15 h led us to a point (rain started at 08.30 h) 40 km west of Aynabulak Station (156 km N.N.E. of Almaty). In the middle of steppe country with grass and scattered low shrubs, eight tortoises *Agrionemys horsfieldi* were found between 10.45 and 12.30 h (15.5-18.5°C), inactive in overcast conditions and rain by vegetation clumps or part-hidden in shallow burrows, and were measured with steel vernier calipers. A complete skeleton, and an adult female with unusually distinct, unabraded carapacial annuli, were collected (BMNH 1994.146 and 144, respectively). I marvelled that tortoises could survive in such exposed habitat with mean temperatures in winter (20 cm deep snow) and summer ranging from -42°C to 43°C. The eight living animals were sighted at the rate of 4.9 man-hour, and carapace straight length ranged from 78.5 to 166.0 mm. The head of a small lizard *Eremias arguta* placed on the end of a stick by a bird was also collected. Departing from the site, the opportunity to take refuge from the rain was provided by a *yurt*, a wooden frame, compacted wool-lined dwelling of local Kazakh steppe inhabitants, originally brought to Central Asia from eastern Mongolia by Genghis Khan's marauding hordes in the 12th century. The occupants slaughtered a sheep, and, on a table in the shelter of the *yurt* while rain poured down outside, skillfully skinned and butchered it in front of us. My companions purchased some of the resultant mutton joints. We passed two large galloping herds of horses as we slithered our way back in 4-wheel drive along the now wet and muddy track towards the tarmac road at Aynabulak. By 16.00 h, the rain had stopped, and allowed us to settle on a canvas sheet under a still grey sky to consume a picnic consisting of vegetable soup, rough-hewn slabs of brown bread, hard-boiled eggs, cold venison chunks, spring onions, huge radishes, apples and Russian black tea in a large Soviet-made thermos flask.

Back on the tarmac road and a diesel fill-up from the less expensive state-controlled pump, the second site visited was the proposed site of Kapchagay's new airport (20 km north of the town) in the Kerbulog Massif (up to 800 m), 88 km N. of Almaty. The only vegetation making up this completely flat plain was short grass. A study area of Rudolf Kubykin since 1975, it had the densest population of *Agrionemys horsfieldi* that he knew. He was now involved with tortoise relocation. Again, I marvelled that reptiles such as tortoises, the predominant species, could survive in a habitat and climate of this kind. In weak sunshine between 19.00 and 19.30 h (18.5°C), nine tortoises at the rate of 6.1 man-hour were found part-hidden in burrows and measured. Carapace straight length ranged from 63.5 to 153.2 mm, four were in the 150-159 mm range. The broken skeleton of a specimen was collected (BMNH 1994.145), and the carapace later pieced together with super glue for measurement (length: 151 mm). Three Kazakhs on horseback visited us; scattered herds of grazing horses could be sighted into the distance of this steppe country.

We halted on the return journey by the side of the Kaskelem River, 16 km south of Kapchagay, to remove the worst of the mud off the vehicle (mud-covered vehicles are not allowed into Almaty). Rudolf Kubykin in exuberant mood emitted a strikingly accurate imitation of the call of *Rana ridibunda*, which could be heard croaking among reeds at the

river's edge. As darkness closed in (19.15 h), I also heard the pong - pong - pong of some other amphibian species, but could not identify the call: it was not *Bufo viridis*!

During a walk through Almaty, the tadpoles of the ubiquitous *Bufo viridis* were observed (21 May) in a pool by the Hotel Kazakhstan and again in a slow-flowing stream by the Panfilov Park. In another park behind the former headquarters of the Communist Party off the top of ulitza Furmonova on my last evening in Almaty (22 May), yet again there was *Bufo viridis*, whose distinct call could be heard after darkness.

Before finally departing Almaty, I also received from Rudolf Kubykin a dried-out egg of *Agrionemys horsefieldi* that had been laid in captivity (BMNH.1994.147).

Part 2 will appear in Bulletin 53.