

History of Central Asian tortoise *Agrionemys horsfieldii* (Testudinidae, Reptilia) harvesting in Uzbekistan, and its population impact

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Abstract. The harvesting of the Central Asian tortoise has been a longstanding practice in Uzbekistan. Throughout the 1930s–1950s, this species was harvested to feed farm livestock and shepherd dogs, and during the World War II, tortoise meat was used to provide additional nutrition to the people. The 1960s marked the start of commercial trade in tortoises. The annual volumes of legal harvesting of wild tortoises started to grow in the late 1990s, and reached 85 thousand specimens per year by 2017. The size of the populations at regular harvesting locations has dropped, and their gender and age composition has changed. The CITES export quota for tortoises bred in captivity was increased in 2018–2019 without valid justification, although small breeding centers have no capacity to breed the manifested quantities of animals. Consequently, Uzbekistan currently exports ranched individuals as well as young wild tortoises, mis-declared as bred in captivity. The export of Central Asian tortoises from Uzbekistan should be suspended temporarily until an expert assessment of the situation is made, and penalties for poaching these animals should be made more severe.

Keywords: *Agrionemys horsfieldii*, harvesting and turnover of Central Asian tortoise, Uzbekistan

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INTRODUCTION

The harvesting of Central Asian tortoise *Agrionemys horsfieldii* (Gray, 1844) is regulated by Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which lists most member of the family. The focal species is abundant in the desert plains and foothills of Central Asia and dominates other species of vertebrates, playing an important role in the functioning of desert ecosystems (Bondarenko, 2001) (Fig. 1). By the end of the last century, its extensive harvesting resulted in marked reduction in population numbers (Kubykin, 1982; Kubykin, Brushko, 1994; Bondarenko et al., 2008; Bondarenko, Duisebaeva, 2012; Chirikova, 2015). For this reason, the harvesting of *A. horsfieldii* has been banned in Kazakhstan and Tajikistan, and Uzbekistan remains the only country that receives annual CITES export quota for harvesting wild-born tortoises. The impact of this harvesting on the state of Central Asian tortoise population in Uzbekistan has been reviewed in print (Peregontsev,

Sorochinsky, 1997; Bondarenko, Peregontsev, 2006; Lee, Smith, 2010; UNEP-WCMC, 2010; Nuridzhanov et al., 2016; Bondarenko, Peregontsev, 2017), although no in-depth analysis of the problem has been performed. This article offers in-depth overview of the history, extent and ramifications of tortoise harvesting in Uzbekistan from the beginning to the present time.

Up to 1930, the Central Asian tortoise held no commercial interest for the people. The first data on large-scale harvesting of this species was reported by Shnitnikov (1934), which mentioned that in 1932, the Regional Hunting Union of Kazakhstan harvested 27,000 specimens. This was also the time harvesting of tortoises was recorded in neighboring Uzbekistan (Zakhidov, 1938). According to this report, in 1936, employees of Kenimekh state farm collected the tortoises to feed their shepherd dogs. During World War II, tortoises were harvested to provide additional nutrition to the people. A quote from Zakhidov (1971, pp. 149) testifies to the numbers of harvested animals:

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Fig. 1. Central Asian tortoise (*Agrionemys horsfieldii*) in the Kyzylkum desert. Sandy-loam ephemeral-wormwood plain. May 2016. (Photographed by Dmitry A. Bondarenko)

“... beginning in 1942, Uzbekistan’s economic entities began systematic harvesting of tortoises. Over these years, they harvested and sold several thousand tons of tortoises both as living specimens and as canned preserves, dried and air-dried meat.” The production of meat preserves was set up at the factory in the settlement of Muinak. Reportedly, tortoise meat was used to feed animals at fur farms (Zakhidov et al., 1971). During those years, the harvesting of *A. horsfieldii* was mostly done in the Jizzakh Province, in the Golodnaya, Obruchevskaya and Chardarinskaya steppes (the latter region later became a part of Kazakhstan). The duration of harvesting and the number of specimens extracted from the wild over this period are unknown because the tortoises were considered a harmful species, detrimental to local agriculture and no records were kept (Zakhidov, 1938, 1971; Polyakov, 1946; Bogdanov, 1960, 1978).

In the 1950s, the locations of principal harvesting of *A. horsfieldii* were ploughed up as part of the virgin land reclamation campaign, and its population was reduced. There was also a slump in the harvesting of Central Asian tortoise. The demand for tortoises for zoological trade was amplified in the 1960s, and the Central Asian Regional Plant located in Tashkent continued to harvest the species in the Jizzakh Province of Uzbekistan and in neighboring Kazakhstan. The harvesting locations in Southern Kazakhstan had suitable logistical conditions (convenient approach to the harvesting district and proximity of transportation routes) and high density of species population. However, the extensive harvesting of Central Asian tortoise in Southern Kazakhstan throughout 1970s and 1980s vastly diminished its numbers (Kubykin, 1985; Kubykin, Brushko, 1994; Bondarenko et al., 2008). Du-

ring the Soviet period, zoological trade was controlled by the State and there was no private commerce, and consequently, no organized illegal animal trade. The urban population (Tashkent, Samarkand, Navoi, Karshi, Zarafshan and other cities) would catch a small number of tortoises locally to keep them as pets. Geologists and staffers of the anti-plague (medicine) service would sometimes hunt the tortoises for meat during field work.

After the country gained independence in 1991, customs restrictions were introduced between Kazakhstan and Uzbekistan. The harvesting of tortoises in Kazakhstan and their import to Uzbekistan for subsequent export were terminated. For several subsequent years, Jizzakh Province remained the principal location of harvesting, but the numbers of species dwindled

and by mid-1990s, harvesting moved to the central and south-western Uzbekistan. In the central Uzbekistan, the harvesting of Central Asian tortoise was now concentrated in the western foothills of the Nuratau Ridge and the southern part of Kyzylkum Desert. In the south-western Uzbekistan, the tortoises were harvested at the Karnabchul steppe and the southern foothills of Ziadin and Zirabulak mountains. The harvesting was done both legally and illegally. The density of the population was high at all of the locations, exceeding 10–15 specimens per hectare (Bondarenko, Peregontsev, 2006, 2017), and this made the harvesting profitable.

MATERIAL AND METHODS

The analysis utilizes the data from the author’s own observations in Uzbekistan over the course of 20 years (1998–2005, 2007, 2008, 2011, 2014, 2016 and 2018), as well as the data from specialized literature (Zakhidov, 1938, 1971; Zakhidov et al., 1971; Bogdanov, 1978; Bykova, 2007, 2009, 2013; Lee, Smith, 2010; Chirikova, 2015; Smith, Porsch, 2015; Nuridzhanov et al., 2016) and online resources (UNEP-WCMC, 2010a, b, 2016; CITES National Export Quotas, 2020 (www.gazeta.uz/ru/2016/05/23/turtles; news-asia.ru/view/uz/accidents/6406; informburo.kz/novosti/tri-meshka-krasnokniznyh-cherepah-pytalis-zavezt). Some information on the upkeep and breeding of *A. horsfieldii* in captivity and their illegal harvesting in the wild has been provided by the author’s colleagues from Uzbekistan. The quantitative censuses of tortoises were carried out by the straight-line transect method. We used a variant of the method at which the perpendicular distances of discovering individuals from the route line were

registered. This technique was used earlier for censuses of *A. horsfieldii* in desert regions of Central Asia and Iran (Bondarenko, 1994; Bondarenko, Peregon-tsev, 2006, 2009; Bondarenko et al., 2014). The reliability of this method was tested and to a great extent proven by experimental work (see Bondarenko, Chelintsev, 1996). Tortoises were observed during their optimal activity periods. As part of the registration the temperature on the soil surface was measured. The main quantitative of registration was carried out at soil temperature 26–39°C (Bondarenko, Peregon-tsev, 2009, 2019). Morphometric measurements were taken in the field with vernier calipers to the nearest 0.1 mm, and the tortoises were subsequently released. The age of tortoises was estimated from the number of rings on the costal horny scutes of the carapace. The sex of the turtles was determined by the shape and length of the tail: males, it was noticeably longer than females (Yakovleva, 1964). A multiyear monitoring of *A. horsfieldii* populations in harvesting locations has been conducted at the two localities in the Navoi Province: foothills of Nuratau Ridge and piedmont plain of North Kazakhtau in the Kyzylkum desert.

RESULTS

Legal harvesting and trade of Central Asian tortoise. Exploitation data on legal harvesting and turnover of Central Asian tortoise in Uzbekistan has been published since 1997 (Annex C: Reptiles and amphibians, 2004). Prior to that year, only anecdotal evidence existed on the legal trade. In 1997–1998, 20,000 and 25,000 specimens, respectively, were sent from Uzbekistan via Russia using re-export arrangements. From 1999 onward, CITES began to issue harvesting and export quotas for wild tortoises to the Republic (UNEP-WCMC, 2010 *a*). Over the course of the first ten years, the volume of export quotas varied from 22,000 to 35,000 specimens a year (Table 1), with a trend for reduction of volumes in 2001–2008. In 2009, the quotas for export of *A. horsfieldii* began to grow (UNEP-WCMC, 2016) and by 2017 reached the maximum of 85,000 specimens a year (CITES National Export Quotas). Thus, over the course of nine years the volume of authorized harvesting almost quadrupled, which can be explained by increased commercial demand for tortoises and the growth in number of

Table 1. CITES Export quotas of Central Asian tortoise *Agrionemys horsfieldii* from Uzbekistan, 1997–2020

No.	Year	Wild-taken (Source W)	Ranched (Source R)	Captive-bred (Source C)	Born in captivity (F or subsequent generation) as well as parts and derivatives	Eggs
1	1997	20000	–	–	–	–
2	1998	25000	–	–	–	–
3	1999	35000	–	–	–	–
4	2000	35000	–	–	–	–
5	2001	28000	2000	–	–	–
6	2002	28000	2000	–	–	–
7	2003	25000	5000	–	–	–
8	2004	23000	7000	–	–	–
9	2005	22000	13000	–	–	–
10	2006	22000	14000	–	–	–
11	2007	22000	13000	–	–	5000
12	2008	22000	17000	2000	–	5000
13	2009	29000	17000	–	–	5000
14	2010	29000	22000	–	–	–
15	2011	40000	30000	–	–	–
16	2012	42100	30000	–	–	–
17	2013	45000	45000	–	–	–
18	2014	50000	50000	–	–	–
19	2015	50000	50000	5000	–	–
20	2016	80000	20000	15500	–	–
21	2017	85000	31300	30600	11900	–
22	2018	30000	41650	11500	32270	–
23	2019	27000	10000	11000	55300	–
24	2020	14458	17100	6000	26446	–
Total		828585	437050	81600	125916	15000

firms with official trade permits. In 2002, there were two firms that harvested and exported tortoises in Uzbekistan, and by 2016 their number grew sevenfold. Over the last years (2018–2020), there has been a trend towards reduction of export quota for wild tortoises to the level of 2010 and below (CITES National Export Quotas). At the same time, the share of captive-bred and ranched tortoises in the overall quotas had grown considerably (up to 64%).

Analysis of existing data shows divergence between the numbers of specimens in the annual CITES export quota and those that were actually sent to the buyers (UNEP-WCMC, 2010 *a*; Smith, Porsch, 2015). The timings and quantities of tortoises delivered to the customers depend on many conditions which is why the data in the reports diverge. The export quota data is a more reliable source of information to calculate the numbers of animals harvested in the wild, because the volumes of tortoise harvesting in the republic more or less conform to the quotas. Moreover, the tortoises are actually harvested in excess in order to compensate the losses in case of their premature death. In 2001, CITES began to authorize the export of specimens ranched at small breeding nurseries. In the export quotas of 2001–2002, there was no partition of wild-collected and ranched tortoises, and the total number amounted to 30,000 specimens (UNEP-WCMC, 2010 *b*; CITES National Export Quotas, 2020). According to the adjusted data, during these years the wild tortoises accounted for 28,000 specimens and ranched – for 2,000 specimens (Bykova et al., 2007; UNEP-WCMC 2010 *a*, p. 148, Table 9). Taking this into consideration, in the period from 1997 to 2020, 828,585 wild tortoises were exported from Uzbekistan. The total number of ranched tortoises exported over this period amounted to almost 44,000 specimens. In 2015, the export quotas were included captive-bred tortoises, and in 2017, born in captivity tortoises were added to the list. Altogether, in 1997–2019, over 1,473,000 specimens (wild, ranched, captive-bred and born in captivity) were legally exported from Uzbekistan.

Poaching and illegal trade of Central Asian tortoises. The poaching of Central Asian tortoises was amplified after Uzbekistan declared its independence in 1991. The worsening of the economic situation and declining living standards motivated the population to earn income from animal smuggling. The harvested tortoises were initially sent via Kazakhstan to Russia, Ukraine and the countries of Eastern Europe, primarily Poland. Each year, up to 50,000 specimens were exported illegally (Bondarenko, Peregontsev, 2006). In later years, the harvested tortoises were sent to Russia and to the lesser extent to Ukraine. Between 1998 and 2016, there was no legal export of Central

Asian tortoise to Russia. In 2016 and 2017, only 4,000 specimens were exported. Beginning in 2017, all of the tortoises sold in Russia are imported to this country illegally. In the late 1990s and early 2000s, at least 10,000 specimens of *A. horsfieldii* were illegally exported from Uzbekistan each year (Bondarenko, Peregontsev, 2006). In the subsequent years, the numbers of poached tortoises were amplified. In 2014–2019, no less than 40,000 specimens were illegally harvested in the wild each year. Overall, no less than 600,000 specimens were exported in 1997–2019. The facts of illegal export of tortoises from the republic are regularly publicized in the media but they do not reflect the real volumes of illegal turnover of Central Asian tortoise in Uzbekistan. In 2014–2019, there were several confiscations made during attempts to smuggle tortoises to Russia. On 23 April 2014, at the Saryagash border crossing with Kazakhstan, seven sacks with tortoises weighing a total of 280 kg were confiscated on a train (Smugglers tried to take out seven bags of tortoises from Uzbekistan. News-Asia, April 23, 2014; www.news-asia.ru/view/uz/accidents/6406 (accessed March 10, 2020). In May 2015, 1,995 tortoises were confiscated at Kaplanbek checkpoint during an attempt to smuggle them in a car from Uzbekistan to Kazakhstan (Three bags of Red Data Book tortoises tried to be brought to Kazakhstan. Informburo.kz, May 21; <http://informburo.kz/novosti/tri-meshka-krasnoknizhnyh-cherepah-pytalis-zavezt>). In March–April 2016, the Border Patrol and Customs Services together with the State Biocontrol Inspectorate of Uzbekistan thwarted the smuggling of 2,949 specimens (Gosbiokontrol stopped the export of almost 3,000 tortoises. Gazeta.uz. 2016; www.gazeta.uz/ru/2016/05/23/turtles).

The poaching is inspired by demand for living tortoises, economic situation in Uzbekistan (high levels of unemployment and low incomes of the population) and simplicity of tortoise harvesting. In 2018, the cost of harvesting one specimen, including its trapping and delivery to Tashkent was less than US\$1. With such costs, the trade in tortoises will continue to be extremely profitable.

The impact of harvesting on the population of Central Asian tortoise. The long-term harvesting has changed the sex and age structure of tortoise population. In Uzbekistan, the size of legally harvested tortoises usually doesn't exceed 12 cm (the length of the carapace measured by slide gauge) (Fig. 2). The United States imports tortoises with a length of 10–12 cm. The export of larger specimens is rare. Tortoises with a length of 5–8 cm are sent to Europe and Asia. The poachers and illegal traders prefer smaller specimens that are more cost-efficient for smuggling. For example, a standard box for shipment of bananas



Fig. 2. Central Asian tortoise (*Agrionemys horsfieldii*) temporarily collected in a concrete water tank before transportation to Tashkent city. Nuratau Ridge, May 2019. (Photographed by Dmitry A. Bondarenko)

can fit over 400 specimens with a 7 cm shell. At the harvesting locations, the greater part of sexually mature males aged up to 15 years falls within the “up to 12 cm” size range, as adult males are smaller than females. In the Kyzylkum desert (in the vicinity of Kazakhtau Mountains) where the harvesting is done, males with a shell length of 12 cm were 15–17 years old. The females with such length of the carapace were rarely older than 14 years, and usually are younger. If 12 cm-long tortoises are regularly withdrawn from the population, in eight to ten years it will consist mostly of females.

A multiyear monitoring of *A. horsfieldii* population has been conducted at the two principal harvesting locations in the Navoi Province, at the foothills of Nuratau Ridge and in the Southern Kyzylkum desert. The harvesting of Central Asian tortoise at the foothills of Nuratau Ridge that began in the second half of 1990s led to the noticeable reduction of its numbers. By 2008, the density of tortoise population

in the two control locations near Nuratau Ridge fell by 36 and 27%, respectively (Table 2). After 2008, the harvesting was moved from this region to the southern Kyzylkum, but ten years after its termination the density of *A. horsfieldii* population has not recovered to the previous levels at either of control locations. The tendency for reduction of the species' density can also be observed in the Kyzylkum desert, where the harvesting has been going on for more than ten years.

The sex and age structure of tortoise population is disrupted at the locations of long-term harvesting. The survey of Central Asian tortoise population conducted at three locations with an interval of 20 years has demonstrated a noticeable percent drop in the numbers of males and immature specimens aged up to 10 years (Fig. 3). Changes in the sex – age structure of the population were also recorded in the Zaamin district of Jizzakh Province (vicinity of Beshkube village) where the harvesting was done in the 1990s. According to the quantitative accounting data, in the spring of 1998, 80% of specimens in *A. horsfieldii* population were represented by females over 15 years old (Bondarenko et al., 2001).

In some cases, the disproportion in the sex and age structure of the population may result from the catch of mature females in order to harvest their eggs. The females are often moved to the small farms where they are monitored until they lay eggs. In 2014–2015, in the foothills of Malguzar Ridge, the females caught in the field were taken to the village located at a distance of 20–30 km and after harvesting the eggs, the tortoises were released back into the wild in the vicinity of the settlement. As a result, the males became prevalent in the locations of the catching and the females – in the location of release (Table 3).

The side effect of the harvesting is also manifested by the increase in the share of animals with deviations, because the specimens with congenital

Table 2. Accounting results of Central Asian tortoise (*Agrionemys horsfieldii*) at female harvesting and releasing localities in the spring of 2014–2016 in the Malguzar Ridge foothills (Uzbekistan)

Date	Place location	Locality	Route, km	Registered individuals				Ratio ♀:♂	Population density and SE, ind./ha
				Total	Females	Males	Immature		
Female harvest area									
4.05.16	3 km S vil. Achi	39°54'10"N, 68°13'37"E	3.1	94	31	58	5	1:1.9	8.1±1.2
4.05.16	11 km S vil. Achi	39°50'24"N, 68°11'08"E	1.4	51	9	38	4	1:4.1	12.9±4.9
4.05.16	3.3 km S vil. Mugol	39°55'36"N, 68°17'24"E	2.9	40	14	24	2	1:1.7	4.6±0.3
Female release area									
3.05.16	1 km S vil. Turkmen	39°56'17"N, 68°23'59"E	2.4	37	28	9	0	1:0.3	3.4±1.8

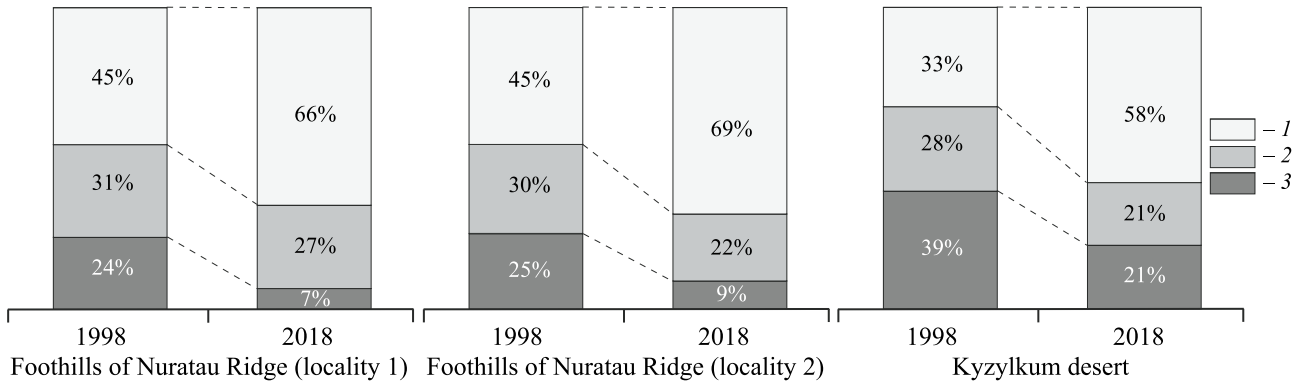


Fig. 3. Sex and age structure change of Central Asian tortoise (*Agriemys horsfieldii*) population in the long time harvesting areas: 1 – female, 2 – male, 3 – immature

abnormalities of scutes and signs of disease are left at the harvesting locations.

DISCUSSION

In Soviet Uzbekistan, the range and numbers of Central Asian tortoise were greatly reduced due to the virgin lands campaign and the harvesting of animals for various economic needs. The harvesting itself was secondary importance. The principal impact on the population was made by the destruction of its habitat. However, after 1991, the principal pressure on the population has been applied by the harvesting because ploughing up of virgin lands was greatly curbed.

It is clear that the catch of tortoises for zoological trade is, in fact, a disguised form of extermination because the animals are prematurely removed from the wild and condemned to the slow death in captivity. Nonetheless, the legal and illegal export of *A. horsfieldii* from Uzbekistan has grown against the backdrop of decline in the species' numbers. Accord-

ing to my estimates, between 1997 and 2019, more than 1,400,000 wild specimens were exported from the republic both legally and illegally.

The ranching method practiced in Uzbekistan is also exerting a pressure on wild populations because the eggs are harvested from the wild specimens and the natural populations lose their replenishment. Nonetheless, the impact of ranching on the population is much smaller than the direct withdrawal of tortoises from the wild. In the wild, the main share of juvenile specimens perishes of natural causes. The ranching method preserves a large share of newborn tortoises and this helps to reduce their harvesting in the wild, compensating the overall commercial demand.

In 2019, a high export quota of 66,300 specimens was allocated for captive-bred and born in captivity tortoises. For the wild tortoises the quota was reduced to 27,000 specimens or 26% of the total amount. Commercial demand for the Central Asian tortoise remains high. It is clear that the CITES Scientific and Management Authorities of Uzbekistan that

issue permits for tortoise harvesting wanted to reduce the pressure on the natural populations of *A. horsfieldii* by increasing the share of tortoises born in captivity. For this reason, many of the firms engaged in the sales of Central Asian tortoise began to maintain a breeding stock of mature tortoises at their farms. Nonetheless, the number of farm-born tortoises remains substantially below the issued quotas and is unlikely to reach even 20,000 specimens a year. This is confirmed by the data published in specialized literature and by personal information received from the specialists engaged in the breeding of turtles. Thus, over the last eight years, Uzbekistan's largest company Zoocomplex Ltd has kept 2,925 specimens that

Table 3. Accounting results (population density and SE, ind. / ha) of Central Asian tortoise (*Agriemys horsfieldii*) in harvesting areas in April 1998–2018

Year	Foothills of Nuratau Ridge		South Kyzylkum, North Kazakhtau
	40°46'–40°47'N, 65°51'–65°52'E (Locality 1)	40°47'–40°48'N, 65°47'–65°48'E (Locality 2)	41°18'–41°19'N, 65°05'–65°06'E
1998	48.1±9.9	67.2±7.0	–
2000	–	51.2±7.1	46.0±8.1
2003	30.8±1.9	–	–
2004	–	–	56.7±26.8
2008	30.7±6.1	49.0±0.1	–
2011	32.1±4.5	–	32.3±9.3
2014	31.3±2.1	41.4±4.3	–
2018	25.5±1.0	19.8±2.5	–

Note. Tortoises harvesting period toned.

each year produce between 4,000 and 8,000 eggs (G. Ya. Sorochinsky and E. V. Bykova, personal comm.). Of those numbers 16% are weeded out before incubation. Of the remaining eggs, 25% suffer embryonic mortality during incubation, 5% of tortoises die after hatching before they become merchantable (Bykova et al., 2007, 2013). As a result, only 60% of the laid eggs end up as export-quality tortoises. One season may bring up to 4,800 specimens, although sometimes the numbers may be greater. According to the information provided by three other firms, the numbers of eggs harvested at the farms is even less. In the first year, one breeding stock female laid 2–4 eggs, in the second year, just 1 egg, and in the third year, one female accounted for just 0.5 egg! This means that in the third year 6,600 females kept at three farms laid only 3,300 eggs. The practice of keeping tortoises has shown that their breeding in captivity demands much more time and financial commitment than the trapping of wild animals. This is why tortoise breeding is less profitable than the trade in wild animals. According to G. Ya. Sarochinsky, E. V. Bykova and E. A. Perogontsev (personal comm.) who are engaged in tortoise breeding, it's difficult to guarantee high birthrates of *A. horsfieldii* in captivity. They require spacious open-air cages, the right temperature conditions, exposure to the sun, abundant nutritious fodder, etc. Additionally, the tortoises' reproductive performance in captivity is gradually reduced, and therefore the breeding stock requires rotation and replenishment from the wild. To ascertain the physical availability of the breeding stock and to exclude fraud, the tortoises should be branded. To exclude any mistakes in identification of specimens, individual chipping may be used as a method of breeding stock's monitoring.

Since the breeding stock fails to provide the necessary amount of eggs, their collection in the wild has increased. The hatchlings are raised and exported under the guise of born in captivity (source F) tortoises. It is impossible to prove that the eggs in question come from the wild because there is no control by the CITES over this matter. According to some information, the proportion of tortoises raised from the breeding stock eggs to tortoises raised from the wild eggs is 1:10 (Bykova et al., 2009). Earlier reported (Lee, Smith, 2010; Smith, Porsch, 2015) about probable falsification of facts regarding the export of ranched and bred in captivity tortoises from Uzbekistan. These authors suggested that grown wild specimens were exported instead.

The CITES Scientific and Management Authorities of Uzbekistan unreasonably increased the quotas for captive-bred and born in captivity tortoises. In reality, these bodies did not have accurate information about the true origin of the animals for which the Certificate was issued. The high quota for born in captivity tortoises has created conditions for the poaching of eggs. The total quantity of animals permitted for export remains high (more than 100,000 specimens a year), but their substantial numbers (more than 50%) are made up of wild tortoises, some of which are actually wild-taken (source W), but others are ranched and disguised as born in captivity (source F) or partially captive-bred (source C).

Up to now, there has been no scientific substantiation for the problem of releasing the confiscated tortoises into the wild. This is especially true for the specimens that were illegally poached in Uzbekistan and confiscated in other countries (Kazakhstan, Russia). It has been established that different populations of tortoises have different genetic characteristics. A misguided release of large batches of confiscated tortoises into the wild may impact the genetic identity of local populations, therefore it would be expedient to release the animals at the locations populated by tortoises with similar genetic characteristics. Since the poachers collect the tortoises from a limited territory, the problem may be resolved if the specialists have the molecular genetic analysis data for the specimens from the confiscated batch. The data on geographical distribution of haplotypes of natural populations is available from the relevant literature (Vasiliev et al., 2008; Fritz et al., 2009). This data may be used as guidelines when releasing the tortoises into the wild.

It is also necessary to respect the seasonal activity of the species that hibernate up to three months a year when releasing the confiscated tortoises into the wild. If confiscation takes place after the end of the seasonal activity – in the summer or fall – the animals should be kept in temporary foster care before being released into the wild in the spring of next year. Releasing the tortoises into the wild in the summer may lead to their death caused by the scarcity of feed. The foster care of tortoises requires the proper premises and the money to pay the upkeep costs. Clearly, the costs of releasing tortoises into the wild should be charged to their sellers. If sellers remain unidentified, compensation of expenses should be charged to the transportation company that was carrying the illegal cargo. Other specialists share this opinion (Chirikova, 2015).

In view of the existing situation, the sex and age composition as well as the numbers of *A. horsfieldii* population at the harvesting locations should be restored. In order to do this, the Uzbekistan CITES Authorities should temporarily suspend the issue of quotas for catching and export of this species from Uzbekistan. The decision on the resumption of harvesting of wild tortoises can be made after an expert assessment of the species populations at the harvesting territories. The growth in numbers has to be confirmed by quantitative accounting. To reduce poaching, the annual export quota should be reduced to 15,000 specimens for ranched tortoises (source R), 15,000 specimens for bred in captivity tortoises (source C) and 2,000 specimens for born in captivity tortoises (source F).

It must be conceded that the ban on legal captures of tortoises will not stop the poaching. The tortoises will be harvested until the commercial demand, high profitability of their harvesting and conditions for smuggling all remain in place. Adding the Central Asian tortoise to the vulnerable species list, which has recently published (Red Data Book of the Uzbekistan, 2019), may serve as a safeguard measure. There are no compelling reasons to include the Central Asian tortoise in the Red Data Book because it is widespread to Uzbekistan. The total area of its habitat amounts to 300,000 km² (Bondarenko, Peregontsev, 2017), while the area of the harvesting territory is just 1,500 km², or 0.5% of the total. At the same time, the status of protected species will bring attention to the poaching and limit the trade in wild tortoises. It is also possible that substantial reduction in population numbers will worsen the species' situation, and its protected status will become warranted. This requires a constant monitoring of population density and sex-age structure of tortoise populations. Illegal export of *A. horsfieldii* from Uzbekistan to Russia may be reduced by strengthening customs controls at the border and by substantially increasing punitive sanctions. However, all of these measures won't be sufficient. An effective way to substantially limit illegal sale of *A. horsfieldii* is to eliminate the channels for distribution of the poached animals and to stiffen the penalties for the illegal trade within Russia.

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**История промысла среднеазиатской черепахи
Agrionemys horsfieldii (Testudinidae, Reptilia)
в Узбекистане и его влияние на численность популяций**

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Аннотация. Промысел среднеазиатской черепахи в Узбекистане имеет многолетнюю историю. В 30 – 50 гг. прошлого века ее заготавливали для кормления животных на фермах и пастушьих собак, а в годы Второй мировой войны для питания людей. В 1960-е годы черепаху начали ловить для зоологической торговли. С конца 90-х годов ежегодный объем легального промысла черепахи в природе начал увеличиваться и к 2017 г. достиг 85 тыс. особей. В местах регулярного промысла снизилась численность популяции, изменился ее половой и возрастной состав. В 2018 – 2019 гг. необоснованно увеличилась экспортная квота СИТЕС на разведенных в неволе черепах. Однако небольшие питомники не имеют возможности разводить заявленное количество животных. Поэтому под видом разведенных экспортируются особи, полученные из яиц диких черепах и подросшие черепашки из природы. Необходимо временно прекратить экспорт черепах из Узбекистана до проведения экспертной оценки и ужесточить наказание за нелегальную добычу.

Ключевые слова: *Agrionemys horsfieldii*, промысел и торговля, Узбекистан

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