

Testudostan: Our Post-Cold War Global Exploitation of a Noble Tortoise

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Abstract

From both the point of view of a person seeking a pet and from a conversation perspective Russian tortoises are one of the worst possible candidates available from the wild-caught reptile pet trade. Yet, for a variety of political and economic reasons this small tortoise has become one of the most commonly marketed species. Since the 1970s well over one million wild-caught adult Russian tortoises have been imported into the U.S. alone. Probably less than one or two percent of these are alive today.

Testudo (Agrionemys) horsfieldii, the Russian tortoise (Figure 1), is distributed throughout much of central Asia from northern and eastern Iran, Afghanistan, northern Pakistan, and northwest China, to the southern territory of the former Soviet Union, and throughout various ex-Soviet republics — Kazakhstan, Kirgizia, Tajikistan, Turkmenia and Uzbekistan (Figure 2; Iverson, 1992). Despite this seemingly extensive distribution, much of this area consists of climates, habitats and elevations of either marginal use or unsuited for these xeric tortoises. Based on Iverson's distribution map for this species these tortoises appear to be mostly limited to sites in valleys along major rivers. The climatic extremes result in abbreviated periods of annual activity; in some cases this can be less than two months (Atayev, 1985), and protracted periods of estivation and hibernation. In much of central Asia, estivation starts in May–June with the desiccation of ephemeral vegetation. In some areas estivation extends directly into hibernation and the tortoises remain inactive for three-quarters of the year or more. Lagarde et al. (2003) demonstrated these tortoises were active only three months of the year, and during this active season they were inactive 90% of the time. Adult tortoises spent less than 15 minutes a day foraging. They do not feed on grass and typically forage on plants highly toxic to grazing mammals, thus avoiding competition with them.

Three subspecies have been recognized but subspecific characteristics overlap geographically and detailed genetic studies and statistical analysis would be useful to determine the validity of these subspecific designations. A considerable number of publications have addressed the issue as to whether or not this tortoise should be considered as a separate genus — *Agrionemys* — or whether *Agrionemys* is a subgenus of *Testudo* (Nikolsky, 1915; Smith, 1931; Loveridge and Williams, 1957; Crumly, 1988; Bour, 1988; Das, 1991). The fact that Russian tortoises can hybridize with *T. hermanni* in captivity (Kirsche,



Figure 1. Russian tortoise, *Testudo horsfieldii*. Photograph by Michael Redmer.

1984) suggests they should remain in the genus *Testudo*, and that the subgenus *Agrionemys* is not valid.

In the past this tortoise has been placed in the genera *Homopus*, *Testudinella*, *Medaestia* and *Agrionemys* as well as under different species names — *burnesii* and *baluchiorum*. At times the races *kazachstanica* and *rustamovi* have been considered full species. The Russian tortoise also has been given quite a variety of English common names,

including: Central Asian tortoise; Four-toed tortoise; Afghan tortoise; Steppe tortoise; Horsfield's tortoise. A review of the current systematics of the species is as follows:

Testudo horsfieldii Gray, 1844:7, Type locality: Kabul, Afghanistan.

T. horsfieldii horsfieldii Gray, 1844:7, as above.

T. horsfieldii kazachstanica (Chkhikvadze, 1988:110), Type locality: Karatal, southern Pribalkhashye [= region south of Balkhash Lake, Kazakhstan].

T. horsfieldii rustamovi (Chkhikvadze, Amiranashvili and Ataev, 1990:72), Type locality: Madau Village, Kizyl Atrek Region, southwestern Turkmenistan.

Compared to any of our North American tortoises, or even some other species of *Testudo*, relatively little has been published on the natural history of Russian tortoises (see summary in Kuzmin [2002]). However, *Testudo horsfieldii* is well known from a physiological perspective. Fascinated by this tortoise's ability to survive cold temperatures for extensive periods, Russian biologists and the medical profession have focused on the species' "built-in antifreeze." The literature on the blood chemistry of these tortoises is extensive. It was apparently this knowledge that directed the decision to have a Russian tortoise become the first vertebrate to be launched into space. In Russia's effort to lead in the space race they picked the pint-sized

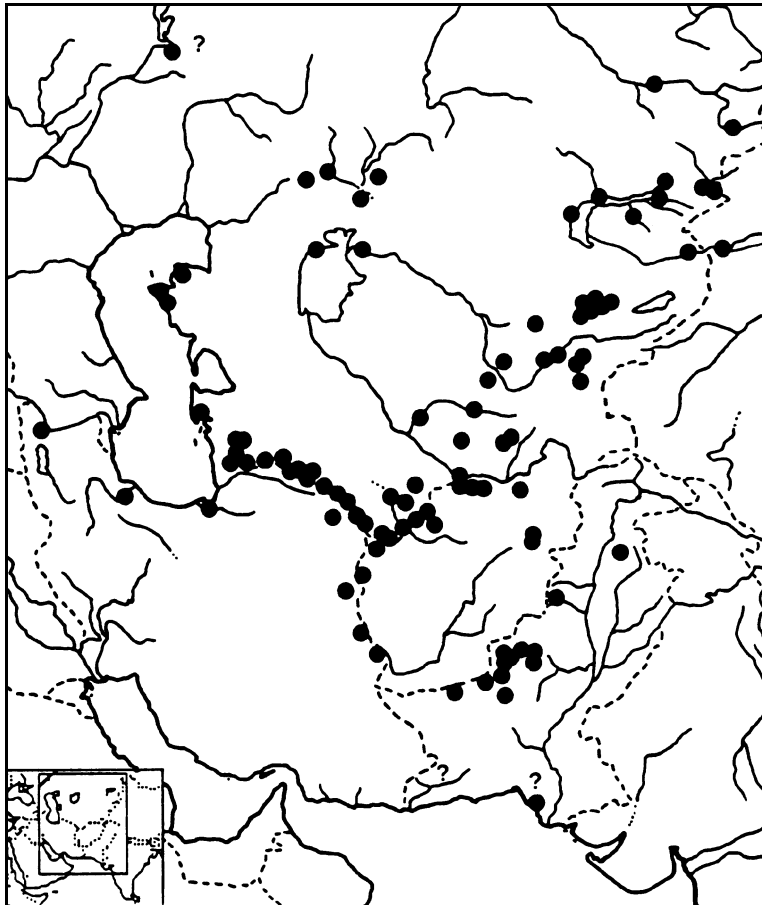


Figure 2. Distribution of *Testudo horsfieldii* (from Iverson, 1992).

reptile to be their first “astronaut.” So while Russian tortoises inhabit desolate and arid portions of countries and republics most of us would have difficulty finding on a map, they are on the forefront of our understanding of reptilian physiology, pioneers in space exploration, and well known in the pet trade.

The pet trade? Yes, unfortunately they have become one of the major exports of Middle Asia, and what follows is a rambling essay on a serious conservation issue. Of all the wild-caught reptiles currently in the pet trade, from both husbandry and conservation perspectives, it is hard to think of a less ideal candidate for a pet or for mass commercial exploitation.

While there are few studies on former and current population densities, based on habitat photos provided by Kuzmin (2002) it is difficult to think that the barren, arid landscapes depicted could support even modest densities of tortoises. Studies in Kazakhstan seem to be the most complete. In the 1950s, populations ranged from 5 to 72 individuals per hectare with the variation driven by habitat and latitude (Paraskiv, 1956). Similar studies conducted a quarter of a century later (1975–1979) indicated 0.2 to 29 individuals per hectare (Kubykin, 1982). By 2000, densities in the same region were estimated to be 3.9 to 10.3 tortoises per hectare (Kuzmin, 2002). In specific situations densities can reach 2,000 individuals per square kilometer, but typical densities were much lower even in the 1950s. Bogdanov (1962, 1965) indicated densities ranged from 0.5 to 50 tortoises per square kilometer. Thus, while the density studies are scattered in both time and location, and are based on far from con-

clusive data from the last half century prior to the international pet trade through the present, they suggest a marked decline, and show that natural population levels in many areas are quite low. Kubykin’s (1982) studies in Kazakhstan caused him to recommend decreasing allowed annual harvest and export as early as the 1980s. The overall size of wild-caught tortoises imported into the U.S. for the pet trade has decreased noticeably over the last two decades. It is not clear if this is a result of the centers of massive collection having shifted to areas of the species’ range where the tortoises are naturally smaller, if smaller sized individuals are being selected to reduce shipping cost, or if the overall average size of individuals the wild population has been reduced as a result of overcollecting.

There is surprisingly little information on the natural history of wild Russian tortoises. Based on what is known, and what has been learned about other tortoise species, the biology of this tortoise marks it as a poor candidate for long-term commercial harvest. The reproductive output of Russian tortoises is modest and is what would be expected for a tortoise of their size, up to about 12 eggs annually, occasionally more, deposited in 2–3 nests. There is little published information on survival of nests or young, but based on studies of other tortoise species living in xeric environments it can be expected to be low. Unpublished studies in Uzbekistan resulting from attempts to document sustainable economic use indicate that adult females tortoises produce 3 eggs annually, a 70–90% predation of first-year tortoises in the wild, natural densities ranging from 0.5 to 43

tortoises/ha, and areas of concentrations in southern Uzbekistan where 15.5–16 million tortoises occur with a total population of 20–30 million. Most of this research was generated by a commercial exporter, by its own scientific department, and it is used primarily to justify continued exploitation of the species. This exporter has continued to produce streams of professional presentations at scientific meetings and publications on various aspects of the biology, husbandry, and sustainability of export. Yet, while most or all of the information may be true, because of conflicts in interest, it certainly remains suspect.

Like most tortoises in the wild, and as would be further expected by their brief period of annual activity, Russian tortoises exhibit slow growth. Published age estimates of various size classes are not from long-term field studies. They all seem to be based on growth ring counts. Males mature earlier and at smaller sizes than females. Reported ages based on annuli indicate nine years for females to reach 10 cm. Maturity is first attained at 10–11 cm for males and 13–14 cm for females, and for them sexual maturity may take from 10 to 15 years (Chernov, 1959). Maximum reported size for females is 28.64 cm, but size and growth varies geographically (Yakovleva, 1961; Ananjeva et al., 1998). With other studies age of maturity has been estimated at 10–25 years. However, growth rings have been shown to be unreliable, meaningless, and even outright misleading in aging turtles and tortoises (Wilson et al., 2003) and in most cases counting the number of rings greatly underestimates the actual age of individuals. Furthermore, these rings are particularly difficult to count on Russian tortoises, even small ones. Whatever the case, it is clear that Russian tortoises, despite their small size, are slow to mature. Droughts and other events would be expected to further slow annual growth rates and affect the general health of all age classes. Longevity information is all but lacking, but based on long-term captives imported as adults, it certainly exceeds 50 years.

No turtle or tortoise population can support a sustained harvest. This has been demonstrated for many species in a number of areas throughout world. This is true for both the adults and their eggs. Even fast-growing turtles that produce large egg clutches, such as common snapping turtles and soft-shells, cannot support a sustained harvest. The only variation is that some species respond more immediately to commercial exploitation than others, but all populations collapse eventually with any level of continual take (Doroff and Keith, 1990; Ceballos and Fitzgerald, 2004; Congdon et al., 1994; Gibbons et al., 2000). Slow-growing, xeric tortoises with limited reproductive output are probably the worst chelonians to consider for commercial harvest.

Soviet conservation legislation is all but non-functional, and in the various ex-Soviet Republics its effectiveness is highly variable, leading to illegal collecting and trafficking between, and export from, the various political units. Thus, the exporting republics are not necessarily the ones from which the tortoises originate. It appears the animals are being “laundered” from “closed” republics through “open” republics. The collecting of any reptile is prohibited without official government permits, but no more than 15% of the tortoises are taken with official government permission (Kuzmin, 2002). As of 2002, other than

Russia and Uzbekistan, none of the former communist bloc republics are CITES members. In 1977, along with other tortoises, the Russian tortoise was listed as CITES Appendix II, meaning that the exporting countries need to approve international transactions and verify that the commercial market will not negatively impact wild populations. Revised annual quotas for export (2001) of Russian tortoises are 35,000 for Uzbekistan and 39,000 for Kazakhstan. There is little political cooperation between republics so suppliers and exporters simply work the system, and numbers appearing in paperwork only account for the legal exportation; real numbers may actually represent 200,000 tortoises per year. These numbers are rather consistent with what was reported prior to the break-up of the Soviet Union. Between 1968 and 1978, 13 government-licensed collectors averaged 193,947 turtles and tortoises per year for the pet trade. Nearly all of these were *Testudo horsfieldii*. Pet trade harvest pressure on Russian tortoises has increased in recent years as European Union countries and CITES regulations have diminished the pet trade markets for Greek and Hermann’s tortoises. It is impossible to say if the recent price jump in Russian tortoises is a result of tightened regulations on these other species, if wild tortoises are harder to come by, or if the middlemen are simply taking bigger cuts of the profits. Much of the information presented in this paragraph comes from Kuzmin (2002). It is interesting to see his spin of the issues, after citing all the figures on collecting and discussing both internal and external pleas for tighter regulations, he downplays the problem and considers the tortoise populations stable and the harvest sustainable. The text is all but paradoxical.

The European Union became concerned with the import of wild-caught Russian tortoises into European countries; this in turn resulted in development of a program for sustainable economic use for Uzbekistan. Their national Strategy Action Plan calls for captive breeding, and collection of eggs from the wild for sustainable use. The captive-hatched tortoises are exported to Europe, and the wild-caught ones to the United States. The company overseeing the tortoise farming operation is exporting both wild-caught and captive-hatched tortoises and they estimate that they need a standing brood stock of 13,000 adult tortoises to produce their current goal of 25,000 captive-hatched per year.

So where are these tortoises coming from? Most are being collected in the various ex-Soviet republics. *Testudo horsfieldii* occurs in Kazakhstan, Kirghizstan, Turkmenia, Uzbekistan, and Tajikistan. The majority of the tortoises marketed in the United States are reported to come from Uzbekistan and Tajikistan. They are also being exported from the Russian Federation, Ukraine, Slovenia, Pakistan and Turkey. This list is somewhat misleading as each year many additional Russian tortoises are shipped into Russia from former Soviet Republics, 10,000 are sold locally in pet shops and another 25,000 are exported internationally to Western pet markets.

Türkozan et al. (2008) present an important and timely review of the international pet trade in *Testudo*. Information presented starts in 1975 when record keeping of international wildlife trafficking became required. They show that: 1) between 1975 and 2007 Russian tortoises made of nearly 50% of

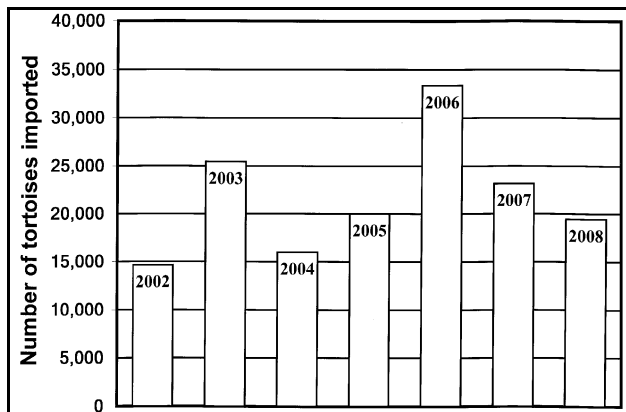


Figure 3. Numbers of Russian tortoises imported into the United States for commercial purposes (2002–2008), by year (constructed from raw USFWS data).

the total trade for the genus with nearly one million individuals of this species were exported during this time period, 2) between 2000 and 2005 the number of documented Russian tortoises exported was about 45,000 per year, 3) since 1985 the number of Russian tortoises exported per year has been increasing while other species (*T. graeca*, *T. hermanni*) have leveled off or declined, 4) there is nearly a threefold difference between the number of Russian tortoises documented as imports compared to the declared number of exports, 5) of the Russian tortoises exported, 40,314 (4.1%) are permitted from countries in which the species does not occur and for another 153,652 (15.6%) the country of origin is unknown, and 6) the major importing countries are Great Britain, Germany, the United States and Japan. Türkozan et al. (2008) put the number of Russian tortoises imported into the U.S. pet trade between 1975 and 2005 at 196,979. From 2006 through 2008 inclusive an additional 75,989 have been imported into this country [U.S. Fish and Wildlife Service, unpublished] (Figure 3). The earliest figures available show 91 Russian tortoises imported into the U.S. pet trade in 1970, and 22 in 1971. By the late 1980s through early '90s (1989 to mid-1994), an average of 4,048 per year were imported into this country. During the period from 1992 to 1996, 92,548 Russian tortoises were exported globally for the pet trade (Lee, 2000). While there is some variation in the way records are tallied and reported, and some of the information appears to be conflicting, it is clear that very large numbers of Russian tortoises are being exploited annually, the trend is consistent, and the numbers are gradually increasing.

Interestingly enough, one of the major exporters of Russian tortoises is a company that is a travel agency headquartered in Tajikistan. A business providing the perfect opportunity to traffic tortoises from countries with different export regulations and quotas. In Uzbekistan even the government-run zoo is in the business of exporting wild-caught tortoises. For 2010 this zoo has requested an increase in their export quota to 11,000 tortoises

Examination of the U.S. Fish and Wildlife Service (USFWS) import data shows that of 142,475 wild-caught tortoises imported between January 2002 and December 2008, five were for scientific purposes; the remainder were commercial imports. U.S. imports showed an upward trend during this period (Figure

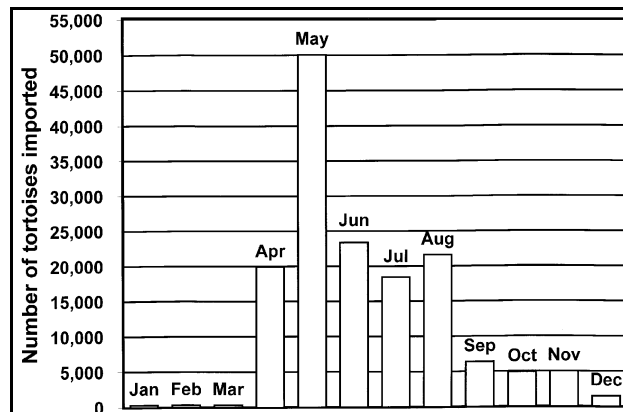


Figure 4. Numbers of Russian tortoises imported into the United States for commercial purposes (2002–2008), by month (constructed from raw USFWS data). Note that the bulk of the exportation is during and just after the tortoises' period of activity. Once in the U.S. the tortoises still need to get to the dealers and retail stores, often resulting in an additional 3- to 4-month period of living in packing box conditions.

3). Most of the imports were between April and August (Figure 4), and the predominant countries of origin were Uzbekistan and Tajikistan. Most individual shipments consisted of 1,000–2,000 tortoises but there were several shipments of 4,000 individuals. The 9,642 “captive-bred” tortoises shipped in this same time period into the U.S. from El Salvador all originated in Tajikistan. The majority of the exports to the U.S. were from just two companies in ex-Soviet Republics. Commercial importers of wildlife into the United States are required to obtain import permits from USFWS. Based on the names that appear on the permits issued during this time period, importers of Russian tortoises consisted of about ten independent reptile dealers, with LA Reptile being by far the single largest and most frequent importer. Other major importers were The Reptile Farm, Global Tropical Imports/Exports, William Brant, Two Amigos Import and Export and Burgundy Reptile Traders, each importing Russian tortoises by the thousands. In case you are wondering, the export companies are shipping the wild-caught tortoises to U.S. importers for as little as \$15 each when orders are in quantities of 500 or more (November 2009 price quotes from Uzbekistan). Hoover (1998) provides an overview of the international trade of live reptiles for the U.S. pet market.

The problems are not limited to the importers. There are additional issues with our U.S. based reptile and amphibian distributors. As recently as mid-December 2009, U.S. Global Exotics, a distributor of wild-caught exotic animals that sells turtles and tortoises was raided and thousands of creatures were seized from their Arlington, Texas, warehouse. The reptiles and other animals that were confiscated were taken because of the deplorable conditions in which they were kept (Solis, 2009). While news of raid this found its way into major media outlets, anyone who has visited one of these animal supply houses, and seen firsthand the conditions under which stocks of live animals are stored, can only wonder why this does not occur more frequently and how any of them can remain in business.

Over the last several decades there has been a tremendous increase in our knowledge of tortoise husbandry, and specifically captive breeding. With this current knowledge and a

combined 1,131,334 Russian tortoises imported into the United States between 1975 and 2008, the potential for the availability of tortoises of captive-bred origin would seem high, but this is not the case. While a number of people are breeding Russian tortoises, this has had no effect on the international commercial market. This can probably be explained by 1) the relatively inexpensive nature of imported wild-caught Russian tortoises, 2) the market being largely comprised of novice individuals purchasing tortoises from chain retail pet shops, and 3) the general poor health of the imports by the time they reach the retail market. Most of these tortoises die within a year or their health is so compromised that they are not in condition to breed.

At least one of the major chain retail pet shops currently sells Russian tortoises that they claim to be captive-bred. These tortoises are being imported from El Salvador where one of the larger reptile dealers has allegedly set up a captive-breeding program. The import permits for these tortoises are all identified as captive-bred. Let's think this through; you are a business trying to make money off of captive-bred Russian tortoises. Would you choose a humid, tropical country for breeding xeric, temperate tortoises? These are tortoises that quickly succumb to various fatal respiratory diseases when exposed to humid conditions and whose physiology and reproductive cycle evolved in an ecosystem where they spend three-fourths of the year estivating and hibernating.

Natural egg incubation temperatures would be lower than the ambient temperatures at the Central American breeding facility. There is the additional issue of getting the hatchlings of a slow-growing tortoise to 10 cm (four inches), which is the minimum allowable size for commercial importation into the United States for any turtle or tortoise. Examination of these "captive-bred" tortoises shows them to all be adults. Their growth rings are, for the most part, worn smooth, and there is no indication of growth acceleration between the rings as would be expected on captive-raised hatchlings where the focus would be on quick growth to market-sized animals. But why go to the trouble even to attest that these tortoises are captive-bred? The pet shop chain in question has told their suppliers that they want to shift their stock to only captive-bred reptiles. Since 2006, over 9,600 Russian tortoises, allegedly captive-bred, have been exported from two farms in El Salvador to the United States. Each farm serves as a sole source supplier for a single distributor. If the captive-breeding program is actually successful, why are thousands of Russian tortoises continually being imported *into* El Salvador? These same exporters and distributors are also responsible for the mass importation of farm-hatched green iguanas for the retail pet shop industry.

Since 1997, a Russian tortoise ranching program has been conducted by one of the commercial exporters in Uzbekistan (Bykova et al., 2007). The program consists of the collection and artificial incubation of eggs and rearing of the young to marketable size. Eggs are obtained from captive stocks, from adult females collected and released after oviposition, and from eggs collected in the wild. The released females were marked and re-collected and produced additional clutches in subsequent years. Typically 20,000 eggs are collected annually and about 15,000 hatch (75%). The tortoises are raised for seven months

prior to marketing (with about a 5% mortality). Thus, the egg and hatchling mortality is much lower than would be expected in the wild (70–90% by their calculations). Significant numbers of head-started young have been experimentally released into the wild but survivorship seems to be low, and the captive-raised tortoises are experiencing a number of health issues. While this program seems promising, the research and information presented is by the very commercial enterprise that is raising the tortoises and supported by the republic's action plan for sustainable economic use. The majority of the tortoises exported by this company continue to be mostly wild-caught individuals (64–91%). It is interesting to note that while Bykova et al. (2007) provide information on size and weights of eggs and hatchlings and document mean, standard error and range of tortoises raised in this program, they give no indication as to the numbers of individuals in their various study groups. However, other information in their paper suggests that 2,000–11,000 captive-raised Russian tortoises go into the international pet trade annually.

While the Uzbekistan program appears promising, it is not relevant to U.S. imports and it is in no way affecting the number of wild tortoises exported annually from this republic, or helping conservation. The tortoises are grown to 6–8 cm, 2.2 cm smaller than the size required for importation into the U.S.. The entire farmed stock is sold to Japan and European countries. There are four major exporters of Russian tortoises in Uzbekistan, and each is allowed to export 27,000 wild-caught tortoises annually, with about 12,000 of these going into the U.S. pet trade. If one of the companies fails to sell all of its annual quota allotment of wild-caught tortoises, the others can then export additional shipments until the annual quota is reached. This is just the major exporters. And because bribery is an acceptable form of business in the CITES office there, the actual annual export numbers probably exceeds the 35,000 annual export quota for this one republic. The number of farmed tortoises exported has no bearing on the annual quotas of wild-caught tortoises exported.

To make matters worse, significant numbers of Russian tortoises are smuggled from Uzbekistan into neighboring Tajikistan where the export is even less regulated. Collectors in Uzbekistan say that Russian tortoises in Tajikistan are in sites where collecting is difficult and tortoise densities are low. Yet Tajikistan continues to be one of the major exporting countries for this species.

Several years back hundreds of Russian tortoises claimed to have been captive-bred appeared on the tables of various vendors at the Daytona National Reptile Breeders Expo. They were recent hatchlings and there was no question that they were not wild-caught tortoises. However, even with the same vendors exhibiting at the Expo the following three years, no additional hatchlings have been seen for sale. What apparently happened was that a significant number of animals were collected soon after emergence from hibernation and were efficiently shipped to U.S. wholesale distributors. They were then resold quickly to the reptile dealers. Many of the tortoises were gravid, laid eggs and the young hatched out just prior to the Expo. In checking the import records (USFWS), sure enough, that spring 10,000

wild-caught Russian tortoises were exported by a single supply company in Uzbekistan, and shipped through the Los Angeles airport to three major wholesale distributors in the United States.

There is of course captive breeding of this species by any number of hobbyists and a few commercial breeders in the United States, but the number produced annually pales compared to the number of imports. Perhaps the best measure of successful commercial breeding is in the annual number of imports. One would expect some sort of correlation with a downward trend in importation as an increased number of captive-bred tortoises reached the market. This has not been the case either in the U.S. or world pet trade for Russian tortoises.

In January 2009, *Reptiles* magazine ran an article on the desirability of Russian tortoises as a pets (Foose, 2009). The article tells how to keep them in captivity and implies that they are easy to maintain and make good pets. There is no mention of the endless health issues related to this species, the inhumane conditions under which they are imported, or conservation concerns regarding their mass exploitation. *Reptiles* magazine is a trade magazine for reptile hobbyist and commercial reptile dealers. They generally have little to say about the conservation issues of any of the commercially available species they promote. The general readership is basically novice to intermediate reptile keepers looking to purchase new pets. Such readers/consumers often have not yet learned how to find factual information on a species. Furthermore, the publishers of *Reptiles* inform their advertisers as to what topics articles will cover months in advance of the magazine's publication and distribution date. This in turn allows importers, distributors, and pet shops and other retail dealers the opportunity to stock up on the product prior to the release of the magazine. Attempts to work detailed conservation and ethical information into articles in *Reptiles* result simply in the deletion of the information during the editing process.

The issues are not limited to conservation. Mass importation of relatively inexpensive tortoises leads to all sorts of humanitarian problems associated with disposable pets. Because of their relatively low market value, tortoises captured by collectors often sit for weeks or months stacked in crates or crowded into bags before they are picked up and delivered to the exporters. The tortoises then await sales, price negotiations, payment, and the clearing of wire transfers and paperwork prior to overseas shipment. Once the tortoises arrive in the United States the process starts anew with the tortoises awaiting advertisement, distribution to wholesalers and retailers and eventually to buyers. Minimally the entire process takes months with the tortoises housed in cramped unsanitary containers, shipping boxes, and aquariums in pet shop showrooms. The inhumane treatment of Russian tortoises is not limited to our modern-day pet trade era. In the early 20th century tortoises were shipped from central Asia to St. Petersburg by rail and shipping took 3 to 9 months. They arrived alive and were reported to be "healthy" (Nikolsky, 1915).

The extended period of time from collection to purchase by the eventual pet owner, of course, takes its toll on the tortoises; Between 5% and 25% of the tortoises die during shipping (Kuzmin, 2002). Most individuals seen in pet shops have all sorts of

obvious respiratory and eye disorders, support heavy internal parasite loads, and have been exposed to countless pathogens during their prolonged, crowded journeys to retail markets. The mortality rate is exceptionally high and many tortoises, even when given extensive veterinary care, many still fail to survive. Vasiljev (1999) provides information on the many diseases of captive Russian tortoises. These disposable pets are typically sold with no information on their basic care for the retailer or the purchaser, and most people even if they are able to tell that the animal is sick are unwilling to spend hundreds of dollars on veterinary work for a \$70 tortoise. At one reptile show in the Carolinas, a dealer had a hundred or so Russian tortoises in a box. The tortoises were stacked 3–4 deep, which raised the obvious question as how does he keep them when they are not out on display. The true meaning of a disposable tortoise hit home last summer. We attended an annual 4th of July turtle race in Belair, Maryland. Along with the 100 or so box turtles that had been gathered up for the race there was one rather unhealthy male Russian tortoise. A parent had purchased him that week so that her son would have a "turtle" to enter in the race. We asked what they planned to do with the tortoise once the race was over. They actually had not thought about that, but they suspected they would just release it. We wonder what new strains of bacterial and viral disorders were spread among the local box turtles as a result of being confined with the tortoise prior to the race.

One of us (KS) oversees a turtle and tortoise rescue/adoption group in the Baltimore area. Although only a handful of Russian tortoises show up for adoption each year, most are surrendered because they are *too* active! Keepers often try to house Russian tortoises in small indoor enclosures (mimicking the set-up displayed in local pet shops where they were purchased), yet these active tortoises end up creating considerable noise as they attempt to burrow or escape their enclosures and create microhabitats in their environment.

Those that are surrendered often suffer from a host of health issues related to improper husbandry. Most recently, two males were surrendered by a keeper who had purchased both tortoises as wild-caught subadults from a chain pet store six years earlier. Although the owner took his tortoises to a veterinarian every year and tried to do what was best for the animals, the tortoises arrived with overgrown beaks and nutritional deficiencies. The veterinarian was not experienced with reptiles, and in addition to failing to realize that the beaks were overgrown, he failed to recommend a more qualified veterinarian to the owner, even though there are several excellent chelonian veterinarians in Maryland. The Russian tortoises were kept on a rabbit pellet substrate, which is too dry, can be damaging to leg and foot joints, and prevents digging—a natural behavior. To make matters worse, the tortoises lived in an eight-foot-square space with a female Russian tortoise. This small space made it difficult, if not impossible, for proper thermoregulation and the burrow microhabitats that tortoises create in their natural environments.

When an experienced reptile veterinarian used a Dremel tool to file down the beaks, the beaks were extremely soft and offered little resistance against the Dremel tool. The tortoises had



Figure 5. Russian tortoise confiscation.

dry, flaky skin, and had been treated repeatedly for eye infections that were likely simply the symptom of an inappropriate habitat and substrate. Sadly, this scenario is all too common. Even when keepers try to do the right thing, misinformation abounds and the animals suffer for it. Typically people duplicate the housing they see for these tortoises when the tortoises are purchased in pet shops—a 30-gallon aquarium with wood shavings, and a half dozen or more adult tortoises with no shelters, basking lights or water. Often in the pet shops the tortoises share their space with three-toed box turtles, which can result in cross-contamination of parasites, viruses, and other potential diseases between the two species.

Wild-caught Russians may also pose a threat to native North American herpetofauna. In the summer of 2008, an adult Russian tortoise was found wandering the woods of the C&O Canal State Park in Maryland, and a number of them have been found in various places in North Carolina. They are obviously released pets. In addition to the intestinal parasites and lungworms often seen in imported Russian tortoises, they've been known to carry a chelonian version of the herpes virus that has recently been found in native box turtle populations (Marchang, 1999). Considering that keepers report successful hibernation of their Russian tortoises in areas of the mid-Atlantic, this species is able to survive year-round in Western Hemisphere habitats and potentially pass on pathogens to domestic box turtle populations, and in portions of the country, to our native tortoise populations (Pasmans et al., 2008).

During the 15 years the Tortoise Reserve has been in existence we have been given dozens of orphaned Russian tortoises. They do well here in outdoor pens, hibernating from late October through mid-March and they are generally inactive throughout the heat of the summer. Health issues often arise when new individuals are introduced in with the established stock. Despite several months of isolation and quarantine, apparently healthy tortoises carry various pathogens to which they are immune but other tortoises are not. It is not clear if these are diseases they have picked up during captivity or if wild tortoises from various portions of their range have immunity to different pathogens. The only solution has been to not introduce new animals to established groups. This does not seem to be a major issue with other species of tortoises.

Do people only care about the wildlife indigenous to our

own country or state? Why is it acceptable for U.S. based businesses to create markets and exploit the wildlife from other nations? While this concern is not limited to Russian tortoises, this tortoise is the poster child of commercial exploitation by the pet trade. The problem is not just the importers, distributors, retailers and advertisers (both the Internet and trade magazines); it's also the uninformed public. We can all love our pet turtles and tortoises, but are we loving them into extinction? We are incensed at the slaughter of whales and the killing of mountain gorillas so their hands can be made into ash trays and sold to tourists. Yet, the purchase of a 30- to 50-year-old tortoise snatched from the wild is OK? What about 20,000 of just this one species per year coming to the U.S.? How important is it to purchase a wild-caught Russian tortoise? Do possession and ownership outweigh moral fiber? Are the profit margins of chain pet stores, businesses that care about homeless cats, heartworms in our dogs, and promote "adoption first," so narrow that they are willing to seriously deplete populations of wild tortoises? Who is it that is actually willing to support a marginally legal group of reptile exporters, importers, distributors and dealers at the expense of wild populations? Apparently quite a few people: sometimes as many as 30,000 in a single year just in the United States. A survey of pet shops in Texas showed Russian tortoises to be one of the top three species of chelonians sold as pets in that state (Ceballos and Fitzgerald, 2004). At the same time state wildlife regulations typically only protect native species and they have no jurisdiction over the trade in exotic reptiles within their states.

These tortoises did not survive the hardships of the Great Steppes of Russia and reach maturity to be made into short-term disposable household pets for children. There is something seriously wrong when the tortoise with one of the widest distributions of any species of tortoise in the world, living primarily in sparsely populated areas, becomes listed as Vulnerable by the IUCN Red Book (Hilton-Taylor, 2000). The Vulnerable category is based on a predicted loss of 25% of the total wild population in 10 years or less.

What can you do about it?

Less than five years ago, representatives of the Tortoise Reserve, the World Chelonian Trust, and the Mid-Atlantic Turtle and Tortoise Society met with regional managers of a national chain pet store to persuade them to stop the sale of wild-caught Russian tortoises. The managers made it clear that they would continue to sell wild-caught tortoises and turtles because other stores in the country also sold wild-caught animals, and they saw no need to stop this practice so long as their competitors were doing the same thing. The lesson? The sale of wild-caught animals is based on consumer driven economics. By continuing to purchase wild-caught animals, either intentionally or through a lack of knowledge, we are contributing to the destruction and inhumane treatment of this species.

Do your research thoroughly before getting a pet. Learn what the market holds, and talk to more than just one source. A seller is trying to make a sale – visit other sources of information before considering the purchase of a tortoise. Ask for copies of CITES permits to insure, at least, that the tortoises

were imported legally and identified as captive-bred.

Avoid dealers and pet shops that sell wild-caught animals to the general public. Don't subscribe to trade magazines that promote or advertise the sale of wild-caught reptiles.

Never buy a wild-caught animal to "rescue" it. You are only rewarding the seller, who may use part of the profit to obtain more wild-caught animals to sell. Be proactive in other ways to prevent the future sale of wild-caught tortoises. You'll save many more animals this way.

Boycott reptile trade shows that allow the sales of wild-caught reptiles. Write to the organizers and ask them to ban the sale of wild-caught animals to the general public.

Talk to the managers and owners of local pet shops – let them know why you are boycotting. Ask them to provide captive-bred alternatives. If this meets with resistance, consider writing an editorial piece to your local newspaper explaining why you are taking your money elsewhere. Write to the corporate headquarters of chain stores that sell wild-caught animals or that misrepresent the requirements of the animals they are selling.

Call and write letters to corporations and magazines that continue to exploit wild-caught tortoises and other reptiles. The website www.planetfeedback can help with sending a letter to various corporations, and let others see that they are not alone in their concern. Ask your local turtle and tortoise clubs and other reptile groups to do the same.

Support stronger import regulations and stricter enforcement of CITES regulations. It is time for Russian tortoises to be elevated to a CITES I species. Encourage state wildlife agencies to add regulations overseeing non-native species.

Spread the word! Make copies of this and similar articles to distribute to members of local turtle clubs, pet shops, and at reptile trade shows and pet expos. If someone admires your animal(s), make them aware of the wild-caught trade and how to

avoid purchasing a wild-caught pet.

Promote captive breeding and, if purchasing a pet reptile, purchase only from dealers that sell exclusively captive-bred animals.

It's interesting to dissect the problem. If you set aside all the greedy middlemen, promotional magazines, internet reptile sales, and pet shops profiting from sales of inappropriate housing and food products for the tortoises (aquariums, substrates, lighting, water dishes, turtle eye drops, and canned tortoise treats) and look at all this from just the endpoints—the buyer and the tortoise collectors of central Asia—it's a strange scenario. The retail purchase, made by a person who loves animals and obviously really likes tortoises, and the collectors who need to protect their resource, have the real investment. They are the two groups that actually should have control over the marketing of the tortoises, and the most interest in their overall long-term welfare. In truth the middlemen drive the market, as they are calling the shots and controlling the exploitation. The history of mankind is a history of exploitation of natural resources. Whether it's mining, overfishing, overhunting, overgrazing, the lumber industry, or water use, we seem incapable of self-regulation and understanding the basics of good stewardship. And what of all our agencies and international agreements and treaties that are responsible for overseeing the misuse of wildlife? By law they have the powers for protection and regulation of the trafficking of tortoises and other species. Yet, their powers are so entrenched in the agencies directing them that the concerned public no longer has a voice in any of this, while a few people continue to profit from a small tortoise that has absolutely no say in its future.

Enjoy listening to your child's wild-caught Russian tortoises as they bang about in living room aquariums, and ponder the thought that they do not quite understand where they are, the aspects of global shipping, the value of the American dollar in Turkmenistan, or the concept of glass walls. They are just trying to get back home.

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