CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Fifteenth meeting of the Conference of the Parties
Doha (Qatar), 13-25 March 2010

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

To transfer all populations of the unlisted yet critically endangered salamandrid species *Neurergus kaiseri*, endemic to four first order streams in highlands of the southern Zagros Mountains in Iran, to Appendix I of CITES.

a) in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, criteria A ii), iii) and v) owing to observed small fluctuating populations highly vulnerable to both intrinsic and extrinsic factors.

b) in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, criteria B i), iii) and iv) owing to a very restricted (far lees than 100 km2) and fragmented area of occupancy.

c) in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, criterion C ii) owing to a marked decline in the population size, inferred from habitat loss due to expansion of warm water of lake Dez dam containing cyprinoids fish to some *Neurergus kaiseri* streams and extremely high levels of harvesting for national and international trade.

B. Proponent

Iran*

C. Supporting statement

1. Taxonomy

1.1 Class: Amphibia

1.2 Order: Caudata

1.3 Family: Salamanderidae

1.4 Genus, species: *Neurergus kaiseri* (Schmidt, 1952)

1.5 Scientific synonyms: None.

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

1.6 Common names:

- English: Kaiser's spotted newt; Lurestan Newt; Lurestan Newt, Emperor Spotted Newt.
- German: Zagros Molch, Iranischer Bachmolch

1.7 Code numbers: N/A

2. Overview

The purpose of this proposal is to transfer all populations of the species *Neurergus kaiseri*, found in just four highland streams in southern Zagros Mountains in Lurestan Province in southern Iran, to Appendix I of CITES.

This newt is listed as Critically Endangered (A2d; B2ab(iii,v) ver 3.1) on IUCN Red list, because there appears to have been drastic population decline, estimated to be more than 80% over within recent years (2001-2005) (Mozafar Sharifi and Theodore Papenfuss pers. comm. September, 2008).

Main reasons are:

- over collection for the pet trade; collecting animals in the breeding period taking all adults before they have been able to breed (UNEP/WCMC, 2007);
- its Area of Occupancy is less than 10km2;
- its populations are severely fragmented, and there is a continuing decline in the extent and quality of its habitat

Although the trade is regulated nationally, it appears to be insufficient as outside of Iran the species is not protected. The few populations are likely to become depleted when international commercial trade is not stopped.

3. Species characteristics

3.1 Distribution

Neurergus kaiseri was first described as a subspecies of *Neurergus crocatus* (Schmidt, 1952) from two streams surrounding Shah Bazan. The first one is 8 km southwest of Ab-I-Cezar at approximately 1200 m elevation, the other is 8 km north-northeast of the upper part of the Tuba Creek valley at a Spring emerging from a cave at respectively 750 m, 1000 m and 1200 m elevation (Schmidt, 1955). In 1975, Schmidtler & Schmidtler reported of their visits to the Shahbazan region in 1968 and 1970. These authors elevated the subspecies to a full species based on specimens collected at Etwa (11 km north of Shahbazan, Lurestan Province, Iran). In 1995, Schultschik & Steinfartz (1996) revisited this species near Shahbazan and described some habitat characteristics. In recent years, Iranian herpetologists have collected new data and discovered two new locations; Taleh Zang stream in southern Zagros Mountains and Hajibarikab, Shahzade Ahmad Holley shrine (Sharifi et al. 2008; Barani et al, 2008).

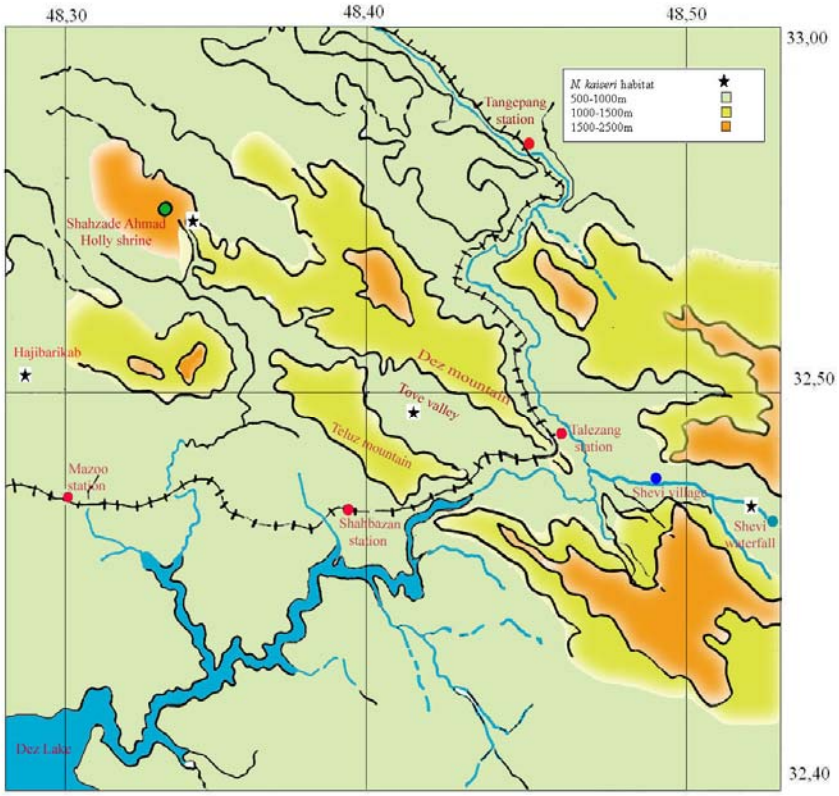

Figure 1. Distribution map of *N. kaiseri* in southern Zagros Range in Lurestan Province, Iran. It has been found in four localities (scale 1: 250.000).

3.2. Habitat

Neurergus kaiseri is endemic to just four streams (in a single catchment area) within a restricted area of the southern Zagros Mountains of Lurestan, Iran. It has an altitudinal range of 1,000-2,000m above sea level. Interaction of the two different climatic systems from south (warm and dry) and north (mild and wet) provides a very steep environmental gradient. Within relatively short distance from high lands of the Iranian plateau to the southern lowlands there are also many deep valleys which receive one of the highest precipitation rate in the country giving rise to many streams which eventually discharge their surface waters into the Mesopotamian Marshland. In only four of many small first order streams which originate from the high lands of the southern Iranian plateau there must be very narrow and short reaches which are enough cold to support this beautiful mountain newt with its ecological requirement still dictated by its Palearctic ancestors.

The first order streams normally receive their water from karst limestone springs. The water discharge and nutrient content of water is low. In these streams, the primary productivity is low and the water column has a low algal production. As a result, the water is very clear. The main source of nutrients for primary production is organic matters produced in the catchment area by the terrestrial vegetation cover. Despite scarce nutrients, there is often a strong and diverse assemblage of heterotrophic and autotrophic components (periphyton community), which provides food for many aquatic invertebrates.

Terrestrial habitats along the streams occupied by *N. kaiseri* consists of, loosely defined, as oak-pistachio open woodland dominated by *Quercus brantti* and two species of *Pistachio* (*P. vera* and *P. khonkich*). This open woodland grows on steep slopes on gravelly soils. Along streams, there is always a dense cover of hydrophilic species such as willow (*Salix* sp.). The vegetation cover in these areas is less than along streams in western Zagros (Iran) where *N. microspilotus* is found (Sharifi and Assadian, 2004). Terrestrial habitats are essential for survival out of the breeding period and for non-breeding individuals and also for provision of food for the periphyton community (Sharifi et al, 2008).

3.3. Biological characteristics

Newts of the genus *Neurergus* have been reported to have a relatively wide distribution, ranging from western Iran (Zagros Mountains) and extending into Iraq and southeastern Turkey (Schmidtler & Schmidtler, 1975;

Baloutch and Kami, 1995). One species is endemic for Turkey; *Neurergus strauchii* (see Pasmans et al., 2006; Bogaerts et al., 2006). In Iran this genus encompasses three allopatric species including *N. kaiseri* in southern Zagros, *N. microspilotus* in several highland streams in western Zagros (see Sharifi and Assadian, 2004), and *N. crocatus* in northern Zagros on the Iraq-Iranian border up into SE Turkey (Papenfuss et al., 2008).

All species seem to have a similar biology. Breeding takes place in first order mountain streams during end of Winter - Spring, and the rest of the year they live a secretive terrestrial life. Eggs are laid singly or in small clumps on vegetation or on rocks in the stream in March-April. Larvae feed on small invertebrates. Schmidtler & Schmidtler (1975) found larvae nearing metamorphosis in a water body with water temp. exceeding 20ºC. High temperatures lead to rapid metamorphosis. In captive animals metamorphosis takes place after three and a half months at a length of 45-55 mm (Schultschik, 2007).

N. kaiseri is the smallest of the genus *Neurergus* and has the smallest clutch size, one female lays about 45 – 60 eggs (Schultschick, 2009). Adults feed on a variety of invertebrates in captivity. There is no available data regarding the diet of *N. kaiseri* in wild populations. However, studies made on the diet of *N. microspilotus* based on faecal analysis has shown that newt fed entirely on aquatic invertebrates during the aquatic period (Akia, 2005). Percent volume and frequency of prey category identified in 93 slides prepared from faeces of *Neurergus microspilotus* has shown that *Gammarus* sp. was the most abundant prey category representing 37% of the total volume, and 27% of frequency. The second most important prey category was *Asellus* sp., which represented 36% of the volume and 27% of the frequency. The third and forth prey were Gastropoda and Gyrinidae spp. (Akia, 2005).

Land habitat is of key importance for survival of the adults and young. The young first enter the breeding waters again when they reach maturity after probably two to four years.

Although no information is available regarding terrestrial activity of *N. kaiseri*, the aquatic appearance of the animals in March and their disappearance in June suggests that this newt uses aquatic habitats mainly for breeding and spends a considerable amount of time in a terrestrial habitat, similar as in other *Neurergus* species. Considering that all streams with *N. kaiseri* are located in deep valleys with very sharp slopes and are well separated it is unlikely to expect the newt can disperse far from their streams during their terrestrial phase in summer, autumn, and winter.

3.4. Morphological characteristics

Mature *Neurergus kaiseri* are 109 – 131 mm in total length. Color black with irregular-shaped white blotches covering head, back and sides of body and tail. White blotches sometimes forming white bands on the sides. Yellow-orange stripe along the back, bordered with irregular white spots, forming a wave pattern. Sometimes orange spots on white patches in paratoid region. Limbs white or orange with black patches. Ventral surface of head, body, limbs and tail orange (Sparreboom, 2009). It differs from all other *Neurergus* species by it's typical black and white coloration. *N. crocatus, N. microspilotus* and *N. strauchii* all have small or large round yellow-orange dots covering the dorsal side of the body, but never white colored spots.

3.5. Role of the species in its ecosystem

Neurergus kaiseri in its high land aquatic environment occupies a specialized niche which is similar to other vertebrates of freshwater streams such as dipper *Cinclus cinclus*: a top predator of benthic invertebrates. Such a predator may play a key role in controlling productivity and species composition of the periphyton community. In freshwater streams herbivory is often a major factor that influences the trophic structure and food web dynamics and top predator such as *N.kaiseri* may exert strong effects on vertical strata or horizontal patches of the assemblage by controlling populations of grazing invertebrates. Dependency of these newts to freshwater arthropoda makes them perfect candidates for being ecological indicator species of water quality because freshwater arthropoda are among first groups of biota to disappear when water quality deteriorates.

4. Status and trends

4.1. Habitat trends

Generally, water used by *N. kaiseri* is not subjected to pollution because there is no cultivated land or human settlement along the streams. There is no water extraction in contrast to mid-Zagros mountains where the aquatic habitats of *N. microspilotus* are systematically deprived from water (Sharifi and Assadian, 2004). However, an important threat to *N. kaiseri* is the introduction of several species of fish that have recently been able to expand their range upstream because of the great lake of Dez Dam (Fig 1).

Terrestrial habitat of *N. kaiseri* is temporarily used by nomads. The energy demand of these nomads is mainly supplied by trash wood. There is no systematic logging, or commercial trade of wood, thus use of terrestrial vegetation in areas where *N. kaiseri* is found appears to be sustainable. However, this small-scale subsistence use, coupled with the effects of recent severe droughts, could be threats to the survival of the species (N. Rastegar-Pouyani pers. comm.). Direct negative effect may be expected to happen in Taleh Zang stream where an increasing number of visitors come to see the Shevi Water fall during the Iranian new year holiday starting in 21 of March during the time male *N.kaiseri* are reluctantly expose themselves to find females (figure 2).

Fig. 2. Shevi fall on Taleh Zang stream in southern Zagros Range divides *Neurergus kaiseri* habitat. Newts bellow this fall are few and have presumably been drifted by spring flushes where they encounter cyprinid fish.

4.2. Population size

There is no estimate available of population size of *N. kaiseri* in any known of the four streams in southern Zagros Range. However, considering substantial distant between different aquatic habitats and very rough topography (Fig 1) of *N. kaiseri* terrestrial habitats it appears unlikely that habitat connectivity as it has been reported for pond breeding amphibian is playing any role in regional distribution and abundance of *N.kaiseri*. Evidence based on field observations indicate that this species is rare with a dramatic decline within the previous ten years (Mozafar Sharifi and Theodore Papenfuss pers. comm. September, 2008). The total population is estimated to number fewer than 1,000 mature individuals (Sharifi et al., 2008). But there are currently no exact data available as no scientific researches have been done.

4.3. Population structure

There is no information available regarding any component of population structure such as sex ratio, age groups and dispersion of *N. kaiseri.* Limited skeletochronology has been applied to several specimens of *N. microspilotus* in western Iran, showing that maximum life span is 14 years (Akia, 2005).

4.4. Population trends

There is no population trend information available for populations of *N. kaiseri*. However, in recent years it has become extremely rare to observe this newt in the wild (Mozafar Sharifi pers. comm.). This may be partly due to natural fluctuation of population size but more likely it is a result of the species being harvested for national and international pet trades.

4.5. Geographic trends

Until 2007, *N. kaiseri* was reported only for two localities in southern Zagros in Shahbazan and Talezang. A recent study reports the presence of *N. kaiseri* at two new localities (Barani et al, 2008). Although this recent study reports new localities for the species, and a few more populations may remain undiscovered, the status of the species will remain critically endangered because of their very small areas of occupancy with deteriorating habitats due to the illegal collections, and of secondary threat the presence of introduced fish.

5. Threats

The principal and immediate threats to the species are illegal collecting for national and international pet trade. In at least one stream (Taleh Zang stream), fish have moved into *N. kaiseri* habitat owing to the expansion of Dez Dam. Furthermore, global warming may affect survival of *N. kaiseri* through fluctuation of stream discharge and most likely by contraction of optimum habitat as a result of increasing water temperature.

There is no information on cytrid fungus being a threat, which could have been introduced by collectors or researchers.

6. Utilization and trade

6.1. National utilization

Neurergus kaiseri is illegally traded, both at national and international level (Sharifi pers. com for national trade: please add reference for international trade here). Although *N. kaiseri* is protected in Iran, animals have been observed for sale in Tehran pet shops for local use in aquaria. Main concern is the trade in the species for the international pet trade. Individuals caught in the wild are being illegally exported out of Iran, and are finding their way into the pet trade (Raffaeli, 2007).

6.2. Legal trade

No legal trade of wild caught *N. kaiseri* out of Iran has been reported by DOE.

6.3. Parts and derivatives

N. kaiseri has only been traded as a pet and there is no evidence indicating that any part or derivative of this newt has been used.

6.4. Illegal trade

There is strong evidence that indicates that *N. kaiseri* is being retailed in several European countries and in Japan. Live specimens are collected and smuggled out of Iran, probably via Azerbaijan Republic, Ukraine, and Russian Federation (Raffaelli, 2007; and see UNEP/WCMC, 2007).

TRAFFIC North America (2006) reported that: "In December 2004, 50 specimens of Kaiser's spotted newt were offered for sale via an Internet web site. The seller was located in Canada but the specimens were offered to the US market […] If they were from the wild, then these specimens would have accounted for approximately five per cent of the known population – a devastating blow to the survival of the species. The demand for this species in the international amphibian pet trade is likely due to both its rarity and its attractive colour pattern. As a result, the price for one Kaiser's spotted newt, up to CA $350 per specimen, is high compared to most salamander species.

The Department of Environment Iran (DOE) has reported to the Iranian CITES management authority the smuggling of live *N. kaiseri* DOE has repeatedly confirmed that it has not issued permits for the trade or export of *N. kaiseri*.

6.5. Actual or potential trade impacts

It was determined that several shipments have been made in successive years to North America and Europe by a dealer in Ukraine (http://www.bion.com.ua/stocklist/ (in 2005, 2006, 2007, 2008 and 2010) who seems the center of distribution.

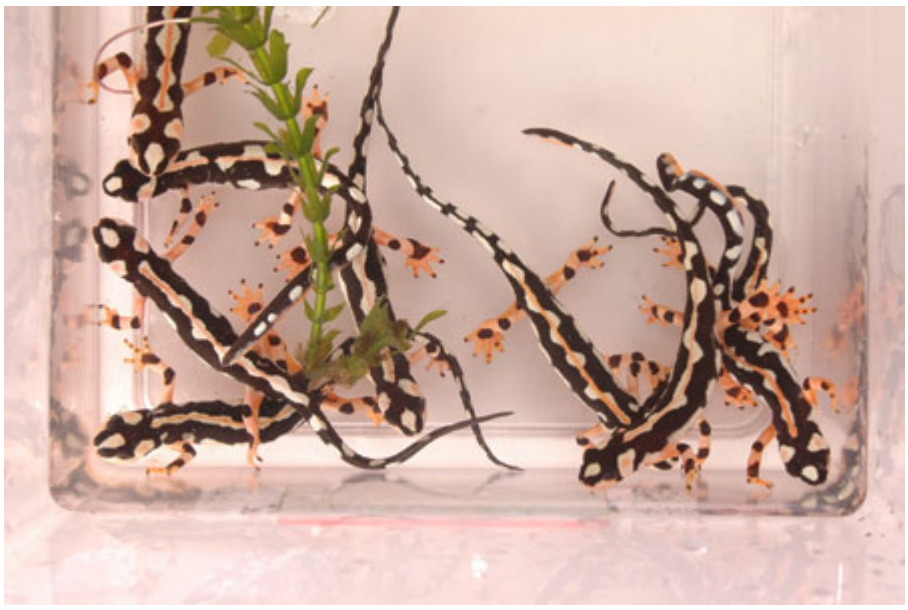

Figure 3: Specimen sold at Bion, Ukraine.

Correspondence with this dealer in 2005 confirmed that they import and sell wild-caught specimens of Kaiser's spotted newts (among other species). According to the dealer, in early 2005 they traded approximately 200 specimens and they were expecting to have approximately 250 more available by January 2006. A wholesale trader in France offered them for 135 euro each (http://www.lafermetropicale.com/) and other large trader in Germany has been offering this species every year since 2005 (http://www.tropenparadies.org/). For 2010 again is announced (pers. com. S. Bogaerts with Bion) that wild caught adults and captive bred juveniles will be traded.

Meanwhile, from these wild caught animals the first captive bred animals by private persons have been offered for sale in 2006, 2007, 2008 and 2009 at lower prices (around 50 euro to 100 euro) compared with wild caught animals (100-150 euro).

7. Legal instrument

7.1. National

By Iranian environmental legislation *N. kaiseri* is considered an endangered species and is therefore protected by law. Any collecting of this amphibian is subjected to provision of a permit issued by CITES office in the legal department of DOE (Department of the Environment) in Tehran. An illegal collecting or keeping is subjected to a fine, but not imprisonment. If game rangers of any regional office of DOE encounter an illegal collector in the field, they are entitled to confiscate the specimens collected and the instrument by which they have been collected.

7.2. International

Neurergus kaiseri is not legally protected internationally.

8. Species management

8.1. Management measures

The species lacks a formal "conservation action plan" by the Department of the Environment in Iran. In September 2008, a IUCN Global Reptile and Amphibian Assessment workshop was held in Antalya, Turkey. At this meeting the Iranian Endemic Working Group unanimously recommended to propose *N. kaiseri* for listing in the CITES appendix I.

Besides stopping international commercial trade by listing *N. kaiseri* CITES appendix I, Iranian and international authorities can initiate a strategic conservation plan for the national protection of *N. kaiseri*, focusing on:

1- Securing current breeding streams in four known streams, including Etwa stream, Taleh Zang stream, Hajiabad Stream and Shahzadeh Ahmad stream. Although formal protection should be developed through a legal instrument under jurisdiction of DOE, it is important to collaborate with local NGOs and individuals to develop an integrated and realistic conservation plan.
2- Systematic monitoring of populations of *N. kaiseri* in the known habitats, aiming to obtain information on population size, population trends, and population distribution.
3- Securing a small captive population in one of Iranian universities, possibly in conjunction with a captive breeding scheme in Azna or Doroud in Lurestan Province.
4- Developing an *ex situ* conservation plan based on a worse case scenario to secure the species if all efforts to protect the species *in situ* fail.

8.2. Population monitoring

Amphibian populations have been declining globally over the past few decades (e.g. Wake, 1991; Brito, 2008). Many different hypothesizes have been put forward as the main causal factor for the decline in amphibian population. Habitat loss, environmental deterioration, unsustainable harvesting, contaminants, increasing UV radiation, climate change, exotic species and emerging diseases are among these factors. *N. kaiseri* needs a monitoring program that should aim to answer several important questions and may better be conducted with conjunction of a research project.

8.3. Control measures

8.3.1. International

Placement of *N. kaiseri* in CITES appendix I is undoubtedly is the most important tool to decrease the demand from the European and Japanese markets.

8.3.2. Domestic

In Iran, the Department of Environment (DOE) is responsible for protecting wild animals and plants. This department has general jurisdiction for environmental protection based on the Game and Fish Law (1967) and The Environmental Protection Law (1975). However, most conservation activities performed by the Department of Environment in Iran have been directed toward preserving large mammals and birds, because they are often the prime targets of poachers. The CITES office in DOE is responsible for issuing formal permits for those wishing to collect endangered species with a legitimate reason.. The control and surveillance in the area where *N. kaiseri* exists is the responsibility of the Regional Office of Environment in Khoramabad, Lurestan However, the personnel of this regional office have no planned program to conduct periodic checks to prevent illegal collection. By present legislation, members of DOE are entitled to confiscate all live specimens in pet shops and also in the field. However, there is no evidence indicating how effectively this has been enforced.

8.4. Captive breeding

So far *N. kaiseri* has been bred only irregularly by private persons (see http://www.caudata.org/cc/species/Neurergus/N_kaiseri.shtml). There is a German studbook for this species run by private persons (see www.ag-urodela.de). There is a growing interest in zoos to start *ex situ* breeding programs (e.g. Amphibian Ark) for rare and endangered amphibian species. However, this ability has rarely been documented in scientific journals.

8.5. Habitat conservation

The habitat is currently not under threat (see section 4.1). The species is protected by Iranian national legislation. The area that the species is known from is close to the Zagros Oak Forest protected area.

9. Information on similar species

The genus *Neurergus* encompasses four species distributed in Iran, Iraq and Turkey. Of these, three species occur on the Iranian Plateau, in northern, central and southern parts of the Zagros Mountains, western and southwestern Iran, as follows: *N . crocatus*, *N . microspilotus* and *N . kaiseri.* All species of *Neurergus* occur on the Red list of the IUCN and are listed either as Vulnerable, Endangered, or, in the case of *N. kaiseri*, as

Critically Endangered. The presence of *N. crocatus* in Iran needs confirmation. Possibly, populations exist near the Iraqi border, but recent observations are lacking.

The northernmost species of the genus *Neurergus, N. strauchii, N. crocatus* and *N. microspilotus*, are similar in general appearance, with dark colored bodies contrasting bright yellow spots. *Neurergus kaiseri*, occurring in southern part of the distribution, is typically different by its black and white mottling, and orange dorsal stripe. All species of the genus *Neurergus* appearto be stream dwellers.

Neurergus crocatus (**Cope, 1862**)

N. crocatus is similar to *N. strauchii* in size and coloration; i.e. black dorsal coloration with contrasting yellow spots, and lengths of up to 18 cm. However, the spots of *N. crocatus* are larger than those of *N. strauchii*, and the belly is solid or nearly solid red-orange, as opposed to the thin orange ventral stripe of *N. strauchii* (Sparreboom et al., 2000).

Neurergus microspilotus (**Nesterov,** 1917)

N. microspilotus is also dark colored with bright yellow spots. This species is rather small compared to *N. strauchii* and *N. crocatus*, reaching lengths of 14-15 cm total. The ventral coloration is similar to *N. crocatus*, consisting of solid or nearly solid orangish-red. Like *N. crocatus*, *N. microspilotus* males do not develop a bluish sheen along the tail during breeding season (Sparreboom et al., 2000). Dorsal spots of *N. microspilotus* are small and similar to *N. strauchii.*

Neurergus strauchii strauchii (Steindachner, 1887) and ***Neurergus strauchii barani*** (Öz, 1994)

N. strauchii spp. reaching up to 18 cm in total length. The dorsum is black or dark brown with contrasting yellow to orange spots. The spots are found from the head, to the tip of the tail, including the limbs, head, and flanks. *N. s. barani* possess less dorsal spots than *N. s. strauchii*. In *N. s. strauchii* the number of spots increases with age, whereas in *N. s. barani* they increase very little (Pasmans et al., 2006). The belly of both subspecies consists of an irregular orange line extending from the chest to the tail tip, and surrounded in dark coloration that lacks yellow spotting. Males of both subspecies develop laterally compressed tails, and a bluish-white sheen along the lateral side.

Neurergus kaiseri (**Schmidt**, 1952)

N. kaiseri is markedly different in appearance and morphology than the other species. *N. kaiseri. N. kaiseri* also possess orange colored dorsal stripes, bellies, undersides of limbs, and orange coloration about the upper limbs and feet, adding to the striking color. It has large, irregular black and white markings of various size and shape about the dorsum. The percentage of black or white coloration varies among individuals, with some being mostly white, mostly black, or anywhere in between.

10. Conclusions

Neurergus kaiseri is an extremely rare mountain newt that occurs only in four first order streams. Ample evidence suggests that populations of this amphibian are depleted by harvesting for national and international trade. It is therefore recommended that *N. kaiseri* be placed in the Appendix I of CITES.

11. Additional remarks

Neurergus strauchii and *N. crocatus* are strictly protected species by the Convention on the Conservation of European Wildlife and Natural Habitats (also known as Bern Convention). In Resolution No. 6 (1998) of the Standing Committee, *N. strauchii* is listed as a species requiring specific habitat conservation measures.

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