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

Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 2019

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

To transfer all populations of the yet unlisted Spider-tailed Viper, *Pseudocerastes urarachnoides* to Appendix II of CITES.

a) in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, criteria A) It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix II in the near future; and

b) in accordance with Resolution Conf. 9.24 (Rev. CoP14), Annex 1, criteria B) It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

B. Proponent

Iran*:

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Squamata

1.3 Family: Viperidae

1.4 Genus, species or subspecies, including author and year: *Pseudocerastes urarachnoides* (Bostanchi, Anderson, Kami & Papenfuss 2006)

1.5 Scientific synonyms: None.

1.6 Common names: English: Spider-tailed False-horned Viper, Iranian spider-tailed viper
French: vipère à queue d'araignée
Spanish: víbora de cola de araña

1.7 Code numbers: N/A

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* *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.*

2. Overview

The purpose of this proposal is to transfer *Pseudocerastes urarachnoides* to Appendix II of CITES. As a fairly newly described species there is little information on its biology and life cycle. Accordingly, this species is considered as Data Deficient (DD) in the IUCN Red List (Anderson & Papenfuss 2009). But it seems that according to the populations and recorded localities, their distance and lack of proper contact and relationships, it is proposed to classify it at least as “Vulnerable” and has the potential to meet criteria as an “Endangered” species.

The Latin name of this species consists of the Greek words ura = tail, arachno = spider, and ides = similar to, reflecting the viper’s characteristic tail, which makes it one of the most spectacular snakes in the world. The species has already suffered considerable pressure of collections for the international pet trade, although captures and exports without permits are prohibited by the Government of Iran. According to Rastgar-Pouyani *et al.* (2015) the species is of particular conservation significance.

3. Species characteristics

3.1 Distribution

This globally unique viper is known only from a few localities the in the Zagros Mountains of western Iran (Bostanchi *et al*. 2006), ranging from Qasr-e-Shirin to Khuzestan (Fathinia *et al*. 2009). It has been recorded from '70km southwest of Ilam [probably on the road to Amirabad and Mehran], Ilam Province' (the type locality); from '25km south of Qasr-e-Shirin on road to Gilan-e Gharb, Kermanshah Province, at 200m asl' (Bostanchi *et al*. 2006); and most recently from Khuzestan Province (Fathinia *et al*. 2009, however, this latter locality is not confirmed, as the specimen, located in the collection of the Razi Institute, had a mistaken locality, discovered subsequent to the 2009 publicaton). The map indicates the extent of potentially suitable habitat, as the species is presumably more widely distributed within the Zagros Mountains and is likely to be present in adjacent areas of Iraq (Fathinia *et al*. 2009). In fact, a modelling distribution study reveals that suitable habitats of this viper extend beyond political borders of western Iran into Kurdistan regions in eastern Iraq. Environmental factors such as slope, EVI (enhanced vegetation index) seasonality and annual mean surface temperatures have the most contributions in the predicted geographic distribution of this species (Fathinia *et al.*, in review). The species is native (or even endemic) to I.R. Iran.

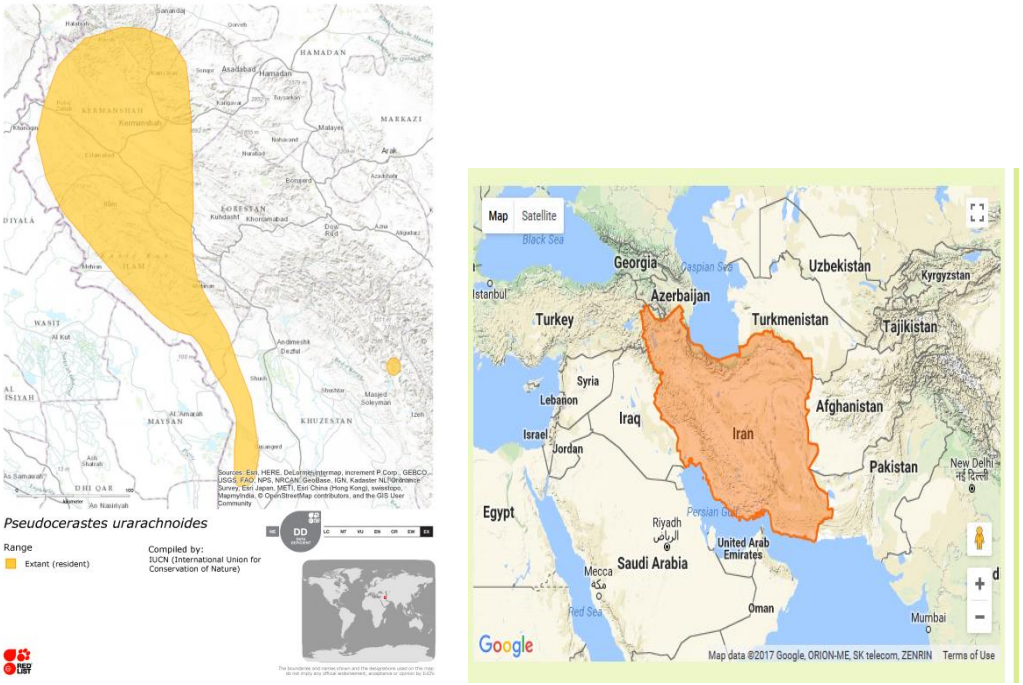

Figure 1. Distribution map of Spider-tailed Viper, *Pseudocerastes urarachnoides*

3.2 Habitat

With a divergence time estimation dating back to around 8.2 Mya (Fathinia *et al*., *in press*), the species is mainly found in hilly areas, and is associated with deep cracks in the limestone sediments, but chooses rocky habitats as well (Bok *et al*. 2017; Fathinia *et al*., 2009 & 2017). This viper depends on the presence of vegetation for ambush. This cover ranges from bushes to trees such as *Pistachia khinjuck*, *P. atlantica* and *Quercus brantii*. Slope of ambush site ranges from 0 to 90 degrees, but steeper slopes are favored by this viper (Fathinia *et al*., 2017).

3.3 Biological characteristics

Described in 2006, there is little information on the biology of the snake, and requires for more field and research work. The Spider-tailed viper is an oviparous, primarily diurnal species, while according to de Marmol *et al.* (2016) sexual activities are nocturnal. The annual above-ground activity of this viper begins with the emergence from hibernation in early April and ends with the entry into the hibernaculum in late November (Fathinia *et al*. 2017). The authors report a bimodal activity pattern with peaks in spring and late summer / early autumn. The species is currently the subject of more and extensive research work on biological aspects.

The viper with its very narrow and limited distribution has a fascinating story owing to its unique morphology and behavior, becoming an interesting species to many people around the world.

The species is a medium sized false-horned viper and mainly depends on scattered trees including *Quercus brantii*, *Pistacia khinjuk* and *Ficus carica* and shrubs and the rocky beds (mainly Gypsum) as refuge. The habitat situation and the behavior of the species suggest that it should have only short movement within its habitat. Fathinia *et al.* (2009) noticed both lateral and direct movements.

The species is sympatric with *P. fieldi* in Gilan-e-Gharb, next to Qasr-e-Shirin, Kermanshah, and with *P. persicus* in Bina and Bijar no-hunting area, Ilam province (Bok *et al*. 2017; Fathinia & Rastegar-Pouyani 2010).

3.4 Morphological characteristics

Species of the genus *Pseudocerastes,* also named false horned vipers, have hornlike scale structures on top of their supraocular scales, a convergence to the “true horned vipers” of the genus *Cerastes* (del Marmol *et al*. 2016; Stümpel & Joger 2008). Adult specimens have a total length of 55-86 cm and a short tail (TL/T= 9.65) (Fathinia *et al.*, 2009, 2017). According to the first description, *P. urarachnoides* has a short tail (TL/T = 9.65), few pairs of subcaudals (15 in the known specimens), the distal pairs forming an oval knob-like structure; lateral dorsal caudal scales projected to form elongate “appendages” along the sides of the terminal knob (Bostanchi *et al.* 2006). Scales are more prominently rugose than in any other snake found in Iran. Because of the prominent scales local populations call the species Mar-e-pardar (= feathered snake) (Fathinia *et al*. 2009). Bostanchi *et al*. (2006) highlight that this appears to be the most elaborate morphological caudal ornamentation yet reported in a snake, with the possible exception of some rattle snakes.

The tail of *P. urarachnoides*, resembling a spider to lure insectivorous birds, is an amazing evolutionary trait closely related to the feeding behavior of the species as well as making it unique in the world.

3.5 Role of the species in its ecosystem

The spider tail viper is a “bird eating” snake, which uses its tail, mimicking a spider, to attract small birds, convincing them that they have found a suitable prey, but trapping them with the venomous fangs of the snake (Fathinia *et al.* 2015). Based on direct observations and fecal samples, the species seems to mainly prey on small passeriform migratory birds like shrikes, larks and warblers (Fathinia *et al.* 2009). While adult specimens are said to almost exclusively feed on birds (de Marmol *et al.* 2016) there are some records that the snake’s diet also includes small mammals (e.g. shrews), lizards and arthropods (Fathnia *et al*. 2006; 2009).

4. Status and trends

4.1 Habitat trends

As with the species, little is known about the habitatsof this snake, which seem to be untouched in most places and under development and destruction in some other parts. The habitats nearby the border of Ian-Iraq seems to be safer for the species as there is few activities in this areas.

4.2 Population size

According to the IUCN assessment the species is known only from a few specimens (Anderson & Papenfuss 2009); del Marmol *et al.* (2016) describe it as rare. There is no estimation available for population size of this species from recorded sites. However, considering the substantial distance between different habitats and very rough topography it appears unlikely that habitat connectivity is playing any role in regional distribution and abundance of *P. urarachnoides*. Evidence based on field observations indicates that this species is rare and the lack of reliable data prevents estimation of the total population and there are currently no exact data available, as very few scientific researches have been done. Following this situation, as well as the scattered and small populations, providing clear estimation of the population structure and trends is not possible.

4.3 Population structure

No data

4.4 Population trends

The species is considered to be rare. Off-takes for the international pet trade are expected to have a negative impact on the wild populations of this species (Rastegar-Pouyani *et al*. 2015).

4.5 Geographic trends

Until now, the species has been reported only from two provinces in western parts of Iran in the Zagros Mountains and from about 50 localities (Fathinia *et al*., 2010, 2014). More research may lead to discovery of more localities and specimens.

5. Threats

The principal and immediate threat to the species is the illegal collection to cover the demand for national and international trade. There are some records that the species unfortunately has been illegally traded to some countries in EuropeFurthermore, like for most species, habitat destruction and global warming effects, like drought, may affect survival of this species. Presumably animals are also killed when encountered by villagers because of fear and superstitions (Rastegar-Pouyani *et al*. 2015; Fathinia *et al.* 2009).

6. Utilization and trade

Rumored use in the pet trade.

6.1 National utilization

There is not any use of the species in Iranfor traditional medicines or other purposes.

6.2 Legal trade

There have been no legal captures and exports in this species for commercial purposes and no permits have been issued in this regard.

6.3 Parts and derivatives in trade

None.

6.4 Illegal trade

Illegal trade has been identified for a variety of Iranian endemic reptiles (Rastegar-Pouyani *et al*. 2015; Altherr *et al.* 2016). While detailed records for the volume of illegal trade are by nature lacking, there are strong indications that this species is illegally collected and smuggled out of the country:

1) In June 2018, based on received photos from Germany on Community networks, smuggling of ten specimens of *P. urarachnoides* to Germany was confirmed see figure 2a.

2) In 2016, de Marmol *et al*. report that the species is kept in European terrariums.

3) In a recent survey among German pet keepers, on behalf of the German Government, *P. urarachnoides* was confirmed to be kept in private households (Krautwald-Juncker & Cramer, *in litt*. 2018).

4) According to a post in the closed Facebook group "Venomous snake longue: for trade and more" several specimens are kept in captivity and at least one pair was sold in 2017 (see figure 2b).

Figure 2a: specimens of *P. urarachnoides* were smuggled Germany

Figure 2 b: Facebook conversation on specimens in captivity

6.5 Actual or potential trade impacts

Collection for pet trade has already resulted in local extinction of some populations of the other two species of the *Pseudocerastes* genus, i.e. *P. persicus* and *P. fieldi* (de Marmol *et al.* 2016 and literature therein). The morphological and behavioral uniqueness of *P. urarachnoides* makes it also a target for wildlife trafficking. The IUCN assessment noted already in 2009: "It is an unusual snake and is potentially threatened by future over-collecting for the international pet trade" (Anderson & Papenfuss 2009). Since then it has become obvious that illegal captures of *P. urarachnoides* are taking place on a regular basis. This factor, together with its small distribution range, makes preventive actions extremely necessary to avoid this snake becoming a critically endangered species in the next few years (del Marmol *et al.* 2016; Rastegar-Pouyani *et al*. 2015).

7. Legal instruments

7.1 National

In accordance with the Environmental Protection and Enhancement Act (1974) and the Executive By-Law on the Game and Fish Law (1967) any hunting, killing or catching of all wild mammals, birds and reptiles as well as fishing, killing or catching aquatic animals is prohibited. In addition, any export of live wild animals without a license or approval from the Department of Environment is also prohibited. While this legislation is valid for all wildlife, level of fines is higher for endangered species. The Department of the Environment (DOE) recently has listed *P. urarachnoides* as "Nationally *endangered species*"category. Any illegal and not permitted collecting of this snake is subjected to a fine of 50 million

Rials (more than $US 500 by official currency rate). 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

On the international level *Pseudocerastes urarachnoides* is not legally protected, but negotiations between IUCN Redlist and DOE are underway to define a suitable conservation status for the species.

8. Species management

8.1 Management measures

The species lacks a formal “conservation action plan” by the Department of the Environment in Iran. But according to need for information some projects on basic information collection have been started. The species has been subject to various research work in universities. DOE has planned to prepare the related CAP as soon as possible. Inclusion of the species in CITES Appendix II would encourage the national interests and provide an international base for its conservation.

Besides stopping illegal international commercial trade by listing the snake in CITES appendix II, Iranian and international authorities can initiate a strategic conservation plan for the national protection of the species focusing on:

1) Protection of current known populations in recorded sites. 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 spider tailed viper in the known habitats, aiming to obtain information on biology, population size, population trends, and population distribution.

3) Developing an *ex situ* conservation plan to secure the species.

8.2 Population monitoring

Reptilian populations are experiencing decline globally caused by different factors, namely habitat loss, environmental deterioration, unsustainable harvesting, contaminants, climate change, and exotic species (Böhm *et al*. 2013). *Pseudocerastes urarachnoides* as an endemic and recently discovered species needs a monitoring program that should aim to answer several important questions, especially regarding demographic characteristics.

8.3 Control measures

8.3.1 International

Placement of *Pseudocerastes urarachnoides* in CITES appendix II is undoubtedly the most important tool to control the demand from the international markets and establish an international conservation tool for the species.

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). DOE has put a fine on any harvest of this species and recently included it in the protected wildlife species in “Nationally Endangered” category, receiving highest conservation status. Moreover in collaboration with IUCN Red List and interested scientists, the conservation status of this species should be defined clearly, based on the current information, by the situation; it is obvious that the spieces could meet one of the categories of the threatened species, at least as’ Vulnerable”. The game guards of DOE in the provinces that the snake is found, are directly responsible for preventing any harvest and harm to the species and its habitats.

8.4 Captive breeding and artificial propagation

8.5 Habitat conservation

8.6 Safeguards

9. Information on similar species

The Iranian spider-tailed viper is one of three species in the genus *Pseudocerastes*. According to Bostanchi *et al.* (2006) *P. urarachnoides* most closely resembles *P. persicus* in the dorsal scale characters, which distinguish that species from *P. fieldi*, apart from the greatly shortened tail and the elaborate caudal appendage, which set it apart from both.

10. Consultations

As this species is so far only known from Iran no consultation with other range states was needed.

11. Additional remarks

Pseudocerastes urarachnoides is an extremely rare viper that occurs only in small parts of I.R. Iran. Ample evidence suggests that populations of this snake are subject to harvesting for national and international trade. Rastegar-Pouyani *et al*. (2015) underline that exploitation should be minimized. It is therefore recommended that *Spider-tailed viper* be placed in the Appendix II of CITES.

12. References

Altherr, S.; Schuller, A. and Fischer, A. (2016): Stolen Wildlife II – Why the EU still needs to tackle smuggling of nationally protected species. Pro Wildlife (ed.), Munich, 36 pp.

Anderson, S. and Papenfuss, T. (2009): *Pseudocerastes urarachnoides*. The IUCN Red List of Threatened Species 2009: e.T164664A5916336. http://dx.doi.org/10.2305/IUCN.UK.2009.RLTS.T164664A5916336.en. Downloaded on 19 July 2018.

Böhm, M.; Collen, B.; Baillie, J.; Bowles, P.; Chanson, J. *et al.* (2013): The conservation status of the world's reptiles. *Biol. Conserv.* 157: 372-385

Bok, B.; Berroneau, M.; Yousefi, M.; Nerz, J.; Deschandol, F.; Berroneau, M. and Tiemann, L. (2017): Sympatry of *Pseudocerastes persicus* and *P. urarachnoides* in the western Zagros Mountains, *Iran. Herp. Notes* 10: 323-325

Bostanchi, H., Anderson, S.C., Kami, H.G., Papenfuss, T.J. (2006): A new species of *Pseudocerastes* with elaborate tail ornamentation from western Iran (Squamata: Viperidae). *Proc. Calif. Acad. Sci.* 57(14): 443–450.

del Marmol, G.M.; Mozaffari, G. and Gállego, J. (2016): *Pseudocerastes urarachnoides*: the ambush specialist. *Bol. Asoc. Herpetol*. Esp. 27(1): 34 – 42

Fathinia, B. (2014): Taxonomic status of the genus *Pseudocerastes* Boulenger, 1896 (Ophidia: Viperidae) in Iran based on molecular and morphological characters. *PhD. Thesis, Razi University*, 195 pp.

Fathinia, B., Anderson, S.C., Rastegar-Pouyani, N., Jahani, H., Mohamadi, H. (2009): Notes on the natural history of *Pseudocerastes urarachnoides* (Squamata: Viperidae). *Russian J. Herp.* 16(2): 134–138.

Fathinia, B., Rastegar-Pouyani, N. (2010): On the species of *Pseudocerastes* (Ophidia: Viperidae) in Iran. *Russian J. Herp*. 17: 275–279.

Fathinia, B., Rastegar-Pouyani, N., Rastegar-Pouyani, E., Todehdehghan, F., Amiri, F. (2015): Avian deception using an elaborate caudal lure in *Pseudocerastes urarachnoides* (serpentes: Viperidae). *Amphibia-Reptilia*. 36: 223–231.

Fathinia, B., Rastegar-Pouyani, N., Rastegar-Pouyani, E., Todehdehghan, F., Mansouri, M. (2017): Annual activity pattern of *Pseudocerastes urarachnoides* Bostanchi, Anderson, Kami & Papenfuss, 2006, with notes on its natural history (squamata: serpentes: Viperidae). *Herpetozoa*. 29: 135–142.

Fathinia, B., Rastegar-Pouyani, N., Rastegar-Pouyani, E. (in press). Molecular phylogeny and historical biogeography of genera *Eristicophis* and *Pseudocerastes* (Ophidia: Viperidae). *Zoologica Scripta*.

Fathinia, B., Rödder, D., Rastegar-Pouyani, N., Rastegar-Pouyani, E., Hosseinzadeh, M.S., Kazemi. S.M. (in press). Modelling spatial distribution of a venomous snake, *Pseudocerastes urarachnoides* (Serpentes: Viperidae), in western Iran. *Amphibia-Reptilia* in press

Krautwald-Junghans, M. & Cramer, K. (2018): Species list of private keepers, recorded in the EXOPET study. The compiled list was sent to Pro Wildlife on 4th June 2018.

Rastegar-Pouyani, N.; Gholamifard, A.; Karamiani, R.; Bahmani, Z.; Mobaraki, A.; Abtin, E.; Faizi, H.; Heidari, N.; Takesh, M.; Sayyadi, F.; Ahsani, N. and Browne, R. (2015): Sustainable Management of the Herpetofauna of the Iranian Plateau and Coastal Iran. *Amph. Rept. Conserv.* 9 (1): 1-15.

Stümpel, N. & Joger, U. (2009): Recent advances in phylogeny and taxonomy of Near and Middle Eastern Vipers – an update. *ZooKeys* 31: 179–19.