

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



Seventeenth meeting of the Conference of the Parties  
Johannesburg (South Africa), 24 September – 5 October 2016

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of *Cnemaspis psychedelica* in Appendix I, in accordance with Article II, paragraph 1 of the Convention and satisfying Criteria B i) in Annex 1 of Resolution Conf. 9.24 (Rev. CoP16).

B. Proponents

Viet Nam and the European Union and its Member States \*

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Squamata

1.3 Family: Gekkonidae

1.4 Genus, species or subspecies, including author and year: *Cnemaspis psychedelica* (Grismer, Ngo & Grismer, 2010.)

1.5 Scientific synonyms:

1.6 Common names:

|             |                             |
|-------------|-----------------------------|
| English:    | Psychedelic Rock Gecko      |
| French:     | Gecko psychédélique         |
| Spanish:    | La salamanquesa psicodélica |
| Vietnamese: | Tac ke duoi vang            |

1.7 Code numbers:

2. Overview

*Cnemaspis psychedelica* is a moderately-sized gecko, endemic to Hon Khoai Island in southern Viet Nam. The species has an extremely small extent of occurrence of less than 6 km<sup>2</sup>. The total population size on Hon Khoai is small, and unlikely to be much greater than the estimated effective size of around 507 individuals or 732 total individuals, based on preliminary surveys of the majority of suitable habitat sites in March and November 2015, and January 2016.

---

\* 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.

Both sexes have a bright, attractive colouration with orange forelimbs and forelegs and a blue-grey trunk (Grismer *et al.*, 2010). Demand from the international pet trade appears to be increasing, with the species being regularly on offer on internet platforms since 2013, mainly in Europe and the Russian Federation (Nguyen *et al.* 2015a).

The species may be affected by trade according to the definition in Annex 5 ii), and qualifies for inclusion in Appendix I by satisfying the following criteria of Annex 1 of Resolution Conf. 9.24 (Rev. CoP16):

B. The wild population has a restricted area of distribution and is characterized by:

i) fragmentation or occurrence at very few locations

### 3. Species characteristics

#### 3.1 Distribution

*Cnemapsis psychedelica* was reported to occur on Hon Khoai Island, Ngoc District, Ca Mau province, Viet Nam, 18km south of Point Ca Mau, off the southern tip of Viet Nam (Grismer *et al.*, 2010; Grismer *et al.*, 2014). The occurrence of the species on smaller neighbouring islands is unconfirmed. Hon Khoai Island has a total area of 8km<sup>2</sup> (Grismer *et al.*, 2014); it is one of the largest islands in Rach Gia Bay and the eastern most island (Grismer *et al.*, 2011). *C. psychedelica* was reported to occur only in lower elevation areas of the island where granite boulders occur (Grismer, 2015 pers. comm. to UNEP-WCMC). As the granite outcrops are not evenly distributed throughout Hon Khoai Island, the effective area available for *C. psychedelica* is considered "limited" (Grismer *et al.*, 2010; Nguyen *et al.*, 2015b). Nguyen *et al.* (2015b) reported that *C. psychedelica* was distributed on Hon Khoai Island in areas with granite outcrops in secondary forest interspersed with shrubs. According to the Southern Institute of Ecology, Viet Nam (cited in Hoàng Trí, *in litt.* to UNEP-WCMC, 2016), the area of occurrence was 5-6 km<sup>2</sup>.

#### 3.2 Habitat

The habitat of *C. psychedelica* was characterized by Nguyen *et al.* (2015a) as thick forest cover dominated by secondary semi-deciduous forest. Secondary forest was observed to comprise medium and small hardwoods mixed with shrub and vines, with some coconut and fruit tree plantation (Nguyen pers. comm. to UNEP-WCMC, 2016). The species has been described as a microhabitat specialist preferring large, granite boulders in the shade of the forest canopy (Grismer *et al.*, 2010). On Hon Khoai Island, small to large boulder outcrops provide this microhabitat type, which is surrounded by dense vegetation of mainly small trees (Grismer *et al.*, 2014), with a leaf-covered forest floor (Nguyen *et al.*, 2015a). It was noted that individuals retreat into cracks in the rocks, between rocks or beneath ledges when threatened (Grismer *et al.*, 2010). According to field observations by Grismer *et al.* (2010), individuals bask in filtered sunlight and did not restrict activity to deeply shaded surfaces. It was reported that few lizards were observed during evening surveys, and at night most *C. psychedelica* were found below overhanging granite boulders or deeply retreated into crevices (Grismer *et al.*, 2010).

#### 3.3 Biological characteristics

*C. psychedelica* is mainly a diurnal species, but is also partially found active during the night (Grismer *et al.*, 2010). Grismer *et al.* (2010) and Ngo *et al.* (in prep. in Nguyen *et al.*, 2015b) observed gravid females carrying two eggs; egg clusters were also observed on the undersides of overhanging boulders (Grismer *et al.*, 2010). Nguyen *et al.* (2015b) recorded egg deposition sites at a maximum height of 2 m and observed several clutches at the same location, along with the remains of former clutches. Gravid females and hatchlings were observed around June by Grismer *et al.* (2010); 9% of all females encountered in November 2015 by Ngo *et al.* (in prep. in Nguyen *et al.*, 2015b) were gravid. The species was described as being similar in all aspects of its behaviour to *C. boulengerii* (Grismer *et al.*, 2010). Females of *C. boulengerii* were observed carrying two eggs during field observations as well as incubating tens of eggs in communal laying sites in rock cracks and caves in August (Grismer *et al.*, 2014). In captivity, egg depositions of *C. psychedelica* have so far been recorded from June to August (Ziegler *et al.*, *in prep.* in Nguyen *et al.*, 2015a). Nguyen *et al.* (2015b) found evidence for sedentary behaviour; as part of a mark-recapture survey, all individuals recaptured were recorded within 0.3-10 m from the original recorded location.

### 3.4 Morphological characteristics

The species is not sexually dimorphic; both sexes are described as having bright orange forelimbs, forelegs, hands, feet and tail, a blue-grey to light purple trunk with yellow transverse stripes on the flanks and bright yellow reticulum with thick black stripes (Grismer *et al.*, 2010). The ventral surface is beige and the head is greenish (Grismer *et al.*, 2010). Males are reported to reach a snout-vent length of at least 75.3 mm and females 72.2 mm (Grismer *et al.*, 2010). At night the trunk is reported to become magenta (Grismer *et al.*, 2014).

### 3.5 Role of the species in its ecosystem

The species was first described in 2010 (Grismer *et al.*, 2010), thus little is known about the ecology of the species or its role within its ecosystem. Grismer *et al.* (2010) assumed that aposematism (i.e. an antipredator adaptation) might have caused its bright coloration, and as most of the diurnal mammalian predators on the island are colour blind, it was considered likely that *C. psychedelica* has an avian predator. Sexual selection and camouflage were ruled out as both sexes have highly conspicuous colouration.

## 4. Status and trends

### 4.1 Habitat trends

The main threats to biodiversity on Hon Khoai were identified by the Ca Mau Provincial Forest Protection Department (*in litt.* 2000, in Anonymous, 2004) as exploitation of forest products and forest fires. Whilst it was reported that public access to Hon Khoai Island is prohibited as the island is an occupied outpost of the Ca Mau border army (Grismer *et al.*, 2010; Altherr, 2014), several tourist websites were found to offer tours to the island. Nguyen *et al.* (2015a) noted that public access to the island was “generally prohibited”. It was also reported that Ca Mau provincial department of fisheries were constructing a fishing port on Hon Khoai Island, which could lead to an increased human population on the island (Ca Mau provincial FPD *in litt.* 2003, in Anonymous, 2004).

### 4.2 Population size

A preliminary population assessment of *C. psychedelica* on Hon Khoai Island was carried out using a mark re-capture method along five transects within suitable habitat (covering just over 2 km) in November 2015, with repeated surveys in January 2016 (Nguyen, pers. comm. to UNEP-WCMC, 2016). A total of 526 individuals were encountered, with numbers of individuals at single sites estimated to range between 6 and 124 individuals (Nguyen, pers. comm. to UNEP-WCMC, 2016). The mean density of *C. psychedelica* along suitable habitat sites was estimated to be around 120 individuals per km/transect in November 2015 and 192 individuals per km/transect in January 2016. The total population was estimated to be approximately up to 732 individuals, with an effective population of around 507 mature individuals (Nguyen, pers. comm. to UNEP-WCMC, 2016). It was noted that the assessment had probably not included all *C. psychedelica* sites on Hon Khoai, but had included the majority of suitable habitat sites.

Grismer *et al.* (2010) reported the species was “very common on granite boulders on Hon Khoai” and considered the species as abundant during the day. It was also reported that the abundance of the species was likely to be similar to that of *C. boulengerii* which was described as extremely abundant in lowland forest habitats (Grismer *et al.*, 2010).

### 4.3 Population structure

Based on field observations, Grismer *et al.* (2010) reported that it was common to see two to five individuals together on the same rock with representatives of both sexes and different age classes. Nguyen *et al.* (2015b) noted that a preliminary population assessment in November 2015 found the population to consist of about 70% adults and 30% juveniles, with a sex ratio of 64% males to 36% females.

### 4.4 Population trends

As the species was only described in 2010 and only one preliminary population assessment has been carried out (Ngo *et al.*, in prep. in Nguyen *et al.* 2015b), no information on long-term population trends is available. However, Ngo *et al.*, (in prep.) indicates a seasonal variation in numbers of observed

animals, namely higher observed abundances during the dry season in January 2016, compared to the wet season in 2015. Grismer (pers. comm. to UNEP-WCMC 2015) reported that the species has no official conservation status in Viet Nam. The species has not yet been assessed by the IUCN Red List of Threatened Species.

#### 4.5 Geographic trends

### 5. Threats

Collection for the pet trade was considered to be a threat by several authors (Altherr, 2014; Ziegler and Nguyen, 2015). Grismer (pers. comm. to UNEP-WCMC 2015) and Nguyen *et al.* (2015a) reported that illegal collection for commercial trade was a major threat to the species. Nguyen *et al.* (2015b) considered the species to have a low capacity to recover from overharvesting due to the small estimated population size, and the species low reproductive rate. It was also reported that the illegal introduction of the long-tailed macaque (*Macaca fascicularis*) to Hon Khoai Island posed a threat to *C. psychedelica*, as the macaque was observed to eat geckos attached to rocks and their eggs (Grismer *et al.*, 2010). Nguyen *et al.* (2015b) assumed the species to be very sensitive to habitat alteration and fragmentation due to its sedentary nature and specialized microhabitat, and noted proposed ecotourism programs planned for Hon Khoai, which include the alteration and destruction of rock habitats.

### 6. Utilization and trade

#### 6.1 National utilization

No reports of national utilisation were located.

#### 6.2 Legal trade

The United States Law Enforcement Management Information System (LEMIS) database indicated that there have been no imports of *C. psychedelica* (as reported at the species level) into the U.S<sup>1</sup>.

#### 6.3 Parts and derivatives in trade

*C. psychedelica* are traded as live individuals.

#### 6.4 Illegal trade

The CITES Management Authority of Viet Nam stated that they possessed information to indicate that the species was being poached and illegally traded (Manh *in litt.* to German Federal Ministry for the Environment, 2015).

Live individuals of the species have reportedly been offered for sale in Europe and the Russian Federation. Grismer *et al.* (2014) reported that reptile dealers were selling illegally collected individuals of *C. psychedelica* online in the Russian Federation for EUR 3500/pair in December 2013. It was also reported that in June 2014, nine pairs of *C. psychedelica* were found advertised for sale online, to be sold at the reptile trade fair "Terraristika" in Hamm, Germany; the market price for live pairs was reported to be up to EUR 2500-3500 (Altherr, 2014). Ziegler *et al.* (2015) reported that specimens were advertised for sale online in Spain, Czech Republic and Germany. Nguyen *et al.* (2015a) reported 21 online adverts for the sale of *C. psychedelica*, two of which had also been reported by Altherr (2014); the majority of adverts were from the Russian Federation (Nguyen *et al.*, 2015a).

#### 6.5 Actual or potential trade impacts

Grismer *et al.* (2014) warned that the discovery and description of the species could lead to its extinction due to potential over-collection for the international pet trade. Nguyen *et al.* (2015a) reported that there were insufficient data available to assess the sustainability of harvest on the species, but assumed that the species reproduction rate would limit its capacity to recover from harvesting. As the population is restricted in range, the species is considered 'especially prone to

---

<sup>1</sup> Data received on 9 November 2015.

extinction' and poaching is assumed to have a large impact on the ability of the species to survive (Nguyen *et al.*, 2015a).

## 7. Legal instruments

### 7.1 National

*C. psychedelica* has only been recorded on Hon Khoai Island. Although Hon Khoai was reported to fall under the protection of the Kien Giang Biosphere Reserve (Grismer *et al.*, 2010), the Viet Nam Man and Biosphere Committee confirmed that the island is not protected by any Biosphere reserve (Hoàng Trí, pers. comm. to UNEP-WCMC, 2016). Nguyen *et al.* (2015a) reported that the catching, trapping and caging for forest animals must be permitted by competent state bodies in accordance with the Law on Forest Protection and Development No. 29/2004/QH11.

### 7.2 International

None.

## 8. Species management

### 8.1 Management measures

The habitats on Hon Khoai Island were not included within the list of habitats identified as having special priority for conservation (Cuong and Brown, 2013). It was reported that a special-use forest management board was established for Hon Khoai in 1995 (Ca Mau Provincial FPD *in litt.* 2003, in Anonymous, 2004).

One of the targets of the 2013 national biodiversity strategy for Viet Nam was to control illegal hunting, trade and consumption of wild fauna and flora (Viet Nam's Ministry of Natural Resources and Environment, 2014). Grismer (pers. comm. to UNEP-WCMC, 2015) noted that management of the species could be achieved by not allowing access to Hon Khoai Island.

### 8.2 Population monitoring

No details relating to population monitoring were located.

### 8.3 Control measures

#### 8.3.1 International

None located.

#### 8.3.2 Domestic

None located.

### 8.4 Captive breeding and artificial propagation

Ziegler and Nguyen (2015) reported that Cologne Zoo (Germany), the Institute of Ecology and Biological Resources, Hanoi and an NGO, Wildlife at Risk, have collaborated to develop a conservation breeding programme for *C. psychedelica*. The local administration was reported to have authorised the capture of several wild breeding pairs of *C. psychedelica*, which were moved into the purpose-built facility of Wildlife at Risk in March 2015 (Ziegler and Nguyen, 2015). First egg depositions took place in the breeding facility (Ziegler *et al.*, in prep. in Nguyen *et al.*, 2015a) and first successful reproduction in captivity was reported by Ziegler *et al.* (submitted).

## 8.5 Habitat conservation

There are no existing measures to conserve the habitat of *C. psychedelica* or specifically protect the species. The Forest Protection Department of Ca Mau Province were reported to be considering a biodiversity assessment for Hon Khoai Island in order to establish conservation measures for the island (Ziegler *in litt.* to UNEP-WCMC, 2016).

## 8.6 Safeguards

### 9. Information on similar species

The genus *Cnemaspis* comprises 121 species from three non-monophyletic groups in Africa, South-Asia and South-east Asia (Gamble *et al.*, 2012; Uetz and Hošek, 2015). Five species within the genus *Cnemaspis* have been recorded from Vietnam in addition to *C. psychedelica*, namely *C. boulengerii* (Strauch, 1887), *C. caudanivea*, *C. aurantiacopes*, *C. nuicamensis* and *C. tucludensis* (Grismer and Ngo, 2007).

*C. boulengerii* was reported to be similar in all aspects of its behaviour to *C. psychedelica* (Grismer *et al.*, 2010). *C. boulengerii* occurs on Con Dao islands off the east coast of Ca Mau Peninsula (Grismer *et al.*, 2010).

### 10. Consultations

A consultation was launched by the European Union and its Member States to Viet Nam as only range State. The Government of Vietnam indicated that it would support a proposal to include *C. psychedelica* in Appendix I.

### 11. Additional remarks

### 12. References

- Altherr, S. 2014. *Stolen Wildlife - Why the EU needs to tackle smuggling of nationally protected species. Report by Pro Wildlife*. Munich, Germany. 32 pp.
- Anonymous 2004. Hon Khoai Proposed Cultural and Historical Site. *Sourcebook of existing and proposed protected areas in Viet Nam, Second Edition*. Available at: <http://thienhiviet.org.vn/sourcebook/pdf/4MekongDelta/HonKhoai.pdf>. [Accessed: 25 February 2016].
- Cuong, C. V. and Brown, S. 2013. Using biosphere reserve as an integrated planning and management tool: a case study in Kien Giang, Vietnam. In: *Balance-Unbalance 2013 International Conference, Noosa 2013*. 1–9.
- Gamble, T., Greenbaum, E., Jackman, T.R., Russell, A.P. and Bauer, A.M. 2012. Repeated origin and loss of adhesive toepads in geckos. *PLOS One*, DOI: 10.1371/journal.pone.0039429.
- Grismer, L. 2015. L. Grismer (Director of Research, Department of Biology, La Sierra University, CA, USA) pers. comm. to UNEP-WCMC 9 October 2015.
- Grismer, L.L., Grismer, J.L., L., P. Jnr, W., Ngo, V.T., Neang, T., Chan, K.O., Wood, P.L., Ngo, V.T., Neang, T. and Chan, K.O. 2011. Herpetology on the fringes of the Sunda Shelf: a discussion of discovery, taxonomy, and biogeography. In: Schuchmann, K.L. (Ed.). *Tropical vertebrates in a changing world*. Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany. 57–98.
- Grismer, L.L. and Ngo, V.T. 2007. Four new species of the gekkonid genus *Cnemaspis* Strauch 1887 (Reptilia: Squamata) from southern Vietnam. *Herpetologica*, 63: 482–500.
- Grismer, L.L., Ngo, V.T. and Grismer, J.L. 2010. A colorful new species of insular rock gecko (*Cnemaspis* Strauch 1887) from southern Vietnam. *Zootaxa*, 58: 46–58.
- Grismer, L.L., Wood, P.L., Anuar, S., Riyanto, A., Ahmad, N., Muin, M.A., Sumontha, M., Grismer, J.L., Onn, C.K., Quah, E.S.H. *et al.* 2014. Systematics and natural history of Southeast Asian Rock Geckos (genus *Cnemaspis* Strauch, 1887) with descriptions of eight new species from Malaysia, Thailand, and Indonesia. *Zootaxa*, 3880(1): 1–147.
- Hoàng Trí. 2016. Nguyễn Hoàng Trí, Man and the Biosphere Viet Nam, pers. comm. to UNEP-WCMC, 23 February 2016.

- Manh, V.T. 2015. Vuong Tien Manh (Deputy Director of Viet Nam CITES Management Authority) *in litt.* to Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit Referat N I 3, 20 August 2015.
- Ngo, H.N., Nguyen, T.Q., Nguyen, T. V., van Schingen, M. and Ziegler, T. In prep. First assessment of the existing status of the Psychedelic rock gecko (*Cnemaspis psychedelica*). *Amphibian and Reptile Conservation*.
- Nguyen, T.Q., Ngo, H.N., Pham, C.T., van Schingen, M., Nguyen, K. V, Rauhaus, A. and Ziegler, T. 2015a. Population assessment, natural history and threat evaluation of the Psychedelic rock gecko (*Cnemaspis psychedelica*). Part I: trade analysis, literature survey, own data; October 2015. *Unpublished report for the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Division Species Protection, Bonn, Germany and for the Species Programme, UNEP World Conservation Monitoring Centre, Cambridge, UK*, 1–18.
- Nguyen, T.Q., Ngo, H.N., Nguyen, T. V., van Schingen, M. and Ziegler, T. 2015b. Population assessment, natural history and threat evaluation of the Psychedelic Rock Gecko (*Cnemaspis psychedelica*). Part II: Preliminary data on population status, natural history and threats; December 2015. *Unpublished report for the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Division Species Protection, Bonn, Germany and for the Species Programme, UNEP World Conservation Monitoring Centre, Cambridge, UK.*, 1–6.
- Nguyen, T.Q. Truong Nguyen, Institute of Ecology and Biological Resources, Viet Nam Academy of Science and Technology. pers. comm. to UNEP-WCMC, 28 & 30 March 2016.
- Strauch, A.A. 1887. Bemerkungen über die Geckoniden-Sammlung im Zoologischen Museum der Kaiserlichen Akademie der Wissenschaften zu St. Petersburg. *Mém. Acad. Impér. Sci. St.-Pétersbourg*, 35(2): 1–72.
- Uetz, P. and Hošek, J. 2015. *The Reptile Database*. Available at: <http://www.reptile-database.org>. [Accessed: 25 March 2015].
- Viet Nam's Ministry of Natural Resources and Environment 2014. *Vietnam's fifth national report to the United Nations Convention on Biological Diversity*. 1-106 pp. Available at: <https://www.cbd.int/doc/world/vn/vn-nr-05-en.pdf>. [Accessed: 25 February 2016].
- Ziegler, T. and Nguyen, T.Q. 2015. Neues von den Forschungs - und Naturschutzprojekten in Vietnam und Laos. *Zeitschrift des Kölner Zoos*, 58: 79–108.
- Ziegler, T., Rauhaus, A., Nguyen, K.V. and Nguyen, T.Q. Submitted. Building of a conservation breeding facility for the Psychedelic Rock Gecko (*Cnemaspis psychedelica*) in southern Vietnam. *Der Zoologische Garten*.
- Ziegler, T., Rauhaus, A., Nguyen, T.Q. and Nguyen, K.V. 2015. Aufbau einer Erhaltungszuchtanlage für Echsen in der Hon Me Station von Wildlife at Risk in Südvietnam. *ZGAP Mitteilungen*, 31: 30–33.
- Ziegler, T. Thomas Ziegler, Department of Terrestrial Ecology, Institute of Zoology, University of Cologne, Germany. *in litt.* to UNEP-WCMC, 29 March 2016.