

REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN INTERNATIONAL TRADE

Part II

(Version edited for public release)

**A report to the European Commission
Directorate General E - Environment
ENV.E.2. - Environmental Agreements and Trade**



by the

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TABLE OF CONTENTS

1. INTRODUCTION	4
1.1. SELECTION OF SPECIES FOR REVIEW	4
2. SPECIES REVIEWS	5
2.1. METHODOLOGY	5
SPECIES: <i>Bombina orientalis</i>	7
SPECIES: <i>Atelopus cruciger</i>	11
SPECIES: <i>Phyllodytes auratus</i>	14
SPECIES: <i>Caudioerbera caudioerbera</i>	16
SPECIES: <i>Platypelis milloti</i>	18
SPECIES: <i>Hynobius tokyoensis</i>	20
SPECIES: <i>Ranodon sibiricus</i>	23
SPECIES: <i>Plethodon petraeus</i>	27
SPECIES: <i>Cynops ensicauda</i>	29
SPECIES: <i>Echinotriton andersoni</i>	33
Introduction to the genus <i>Lyciasalamandra</i> :	36
SPECIES: <i>Lyciasalamandra antalyana</i>	38
SPECIES: <i>Lyciasalamandra atifi</i>	40
SPECIES: <i>Lyciasalamandra billae</i>	42
SPECIES: <i>Lyciasalamandra fazilae</i>	44
SPECIES: <i>Lyciasalamandra flavimembris</i>	46
SPECIES: <i>Lyciasalamandra luschani</i>	48
Introduction to the genus <i>Paramesotriton</i> :	51
SPECIES: <i>Paramesotriton deloustali</i>	54
SPECIES: <i>Paramesotriton fuzhongensis</i>	58
SPECIES: <i>Salamandra algira</i>	60
SPECIES: <i>Tylototriton kweichowensis</i>	63

1. INTRODUCTION

This report provides a review of 20 amphibian species which are not listed in CITES but for which regional or international trade was considered to be a major threat in the 2007 IUCN Red List.

This document is the second of two reports on trade in non-CITES amphibians. The first report provided an overall analysis of amphibian species that are not listed in CITES but for which regional or international trade was considered to be a major threat in the 2007 IUCN Red List; in-depth reviews were undertaken for 13 species. The present report includes in-depth reviews for a further 20 species to see whether they meet the criteria for listing in any of Annexes A, B or D¹ of Council Regulation 338/97.

According to the IUCN Red List (2007), regional/international trade was a major threat type for 134 amphibian species. Of these, 54 are globally threatened, and 46 are listed in CITES. 29 species, however, are globally threatened but not listed in CITES.

1.1. SELECTION OF SPECIES FOR REVIEW

The analysis presented in an SRG 42 document identified those amphibian species that are not listed in the appendices to CITES but for which regional and/or international trade was identified as a major threat by the Global Amphibian Assessment (IUCN *et al.*, 2006). This included both globally threatened (CR/EN/VU) species as well as those not considered to be globally threatened. This initial analysis highlighted species of amphibians that may warrant further review based on preliminary information on the trade in the species (giving priority to species for which international trade is a known ongoing threat) and on the threat status of species (giving higher priority to the most threatened species).

Five globally threatened species and 8 additional species were initially reviewed for SRG 42 to see whether they may warrant listing in the annexes of the EU wildlife trade regulations.

A further 20 species were selected by the SRG at SRG 44; these have been reviewed in this report and include 19 globally threatened species as well as one species that has been classified by IUCN as Least Concern (*Bombina orientalis*) (proposed for review by Sweden).

Further details on the review methodology are provided in section 2.1.

It should be noted that the 2008 IUCN Red List was published in October 2008. The classification of threats in the 2008 IUCN Red List differ from those in the 2007 IUCN Red List, with no distinction, for instance, between local, national or international trade as a threat in the newer version. The detailed GAA's species accounts, however, still refer to the threat categorisation used in the 2007 IUCN Red List. For this reason, and to provide a more logical follow-up to the SRG 42 document, the threat categories used in this report are also those used in the 2007 IUCN Red List.

REFERENCES:

IUCN, Conservation International, and NatureServe. 2006. Global Amphibian Assessment
URL: www.globalamphibians.org Accessed: 8-9-2008.

¹ Annex C was not considered relevant as it includes only species listed in CITES Appendices II or III.

2. SPECIES REVIEWS

2.1. METHODOLOGY

Preliminary information on known trade from the Global Amphibian Assessment (IUCN *et al*, 2006) formed the basis of the species selection as described in section 1.1. An extensive literature review and web survey was subsequently undertaken for the selected species to identify information on status and trade.

Since records of trade in non-CITES species are often non-existent or very limited and patchy at best, assessing whether these species are traded internationally or not, and especially assessing the levels of trade, sources and countries involved, is not a straightforward process. In the absence of other data, surveys of trade conducted over the Internet can provide an important source of trade information. However, such surveys can usually only provide an indication of availability or demand rather than information on whether trade actually took place and if so in what volumes.

For the purpose of this report, web surveys to assess trade and demand consisted of Google searches, using the species' scientific name. Use of common names was avoided, as they were ambiguous (i.e. several species called the same name, different common names used for the same species), and as hobbyists and specialized shops often used scientific names. To focus specifically on the pet trade, terms such as 'buy', 'for sale', 'wanted' and 'pets' were used in addition to the species' scientific name in the Google searches. Synonyms of the species' scientific names (listed at the beginning of each species review) were also used, to check whether species might be traded under a different name. In addition to general web searches, and in order to focus more specifically on the pet trade in Europe, Google searches were performed limiting the search to pages from a selection of EU countries, namely Austria, Belgium, France, Germany, Italy, Portugal, Spain and the UK. If no or limited evidence of trade was found for those countries, additional searches were performed for the Czech Republic, Denmark, the Netherlands, Poland, and Sweden. Also, several hobbyist websites were specifically searched. These included:

- www.caudata.org (International)
- www.eurofauna.com (Europe)
- www.salamanderland.at (Austria)
- www.animalfarm.cz (Czech Republic)
- www.lafermetropicale.com (France)
- www.reptilica.de (Germany)
- www.aziendanaturaviva.com (Italy)
- www.caudata.nl (Netherlands)
- <http://members.chello.nl/a.kente/> (Netherlands)
- www.terrariumonline.com (Spain)
- <http://e-commerce.yisi.net/eshop/reptilmaniacom/> (Spain)
- www.dragoreptile.com (Spain)
- www.amphibian.co.uk (UK)
- www.exotic-pets.co.uk (UK)

The trade in frog legs was evaluated primarily through literature review and general web searches, but no targeted web surveys were conducted because, unlike for the pet trade, scientific names are seldom used when referring to frog legs; they appear to be rarely referred to using more accurate terms than simply frog's legs.

The criteria for listing in the annexes of Council Regulation 338/97 are specified in Article 3 of the regulation as follows:

1. Annex A shall contain:

- (a) the species listed in Appendix I to the Convention for which the Member States have not entered a reservation;
- (b) any species:

(i) which is, or may be, in demand for utilization in the Community or for international trade and which is either threatened with extinction or so rare that any level of trade would imperil the survival of the species;

or

(ii) which is in a genus of which most of the species or which is a species of which most of the subspecies are listed in Annex A in accordance with the criteria in subparagraphs (a) or (b)(i) and whose listing in the Annex is essential for the effective protection of those taxa.

2. Annex B shall contain:

(a) the species listed in Appendix II to the Convention, other than those listed in Annex A, for which the Member States have not entered a reservation;

(b) the species listed in Appendix I to the Convention for which a reservation has been entered;

(c) any other species not listed in Appendices I or II to the Convention:

(i) which is subject to levels of international trade that might not be compatible:

– with its survival or with the survival of populations in certain countries, or

– with the maintenance of the total population at a level consistent with the role of the species in the ecosystems in which it occurs:

or

(ii) whose listing in the Annex for reasons of similarity in appearance to other species listed in Annex A or Annex B, is essential in order to ensure the effectiveness of controls on trade in specimens of such species;

(d) species in relation to which it has been established that the introduction of live specimens into the natural habitat of the Community would constitute an ecological threat to wild species of fauna and flora indigenous to the Community.

3. Annex C shall contain:

(a) the species listed in Appendix III to the Convention, other than those listed in Annexes A or B, for which the Member States have not entered a reservation;

(b) the species listed in Appendix II to the Convention for which a reservation has been entered.

4. Annex D shall contain:

(a) species not listed in Annexes A to C which are imported into the Community in such numbers as to warrant monitoring;

(b) the species listed in Appendix III to the Convention for which a reservation has been entered.

5. Where the conservation status of species covered by this Regulation warrants their inclusion in one of the Appendices to the Convention, the Member States shall contribute to the necessary amendments.

Furthermore, the following guidelines for Annex D were agreed at SRG 36 on 9 March 2006 as follows:

A species may be included in Annex D where:

a) there is evidence of demand for it in the EU market and

b) it might be threatened by trade due its unfavourable or unknown conservation status, distributional, ecological or reproductive potential and

c) reliable trade data are not available from any other source.

REFERENCES:

IUCN, Conservation International, and NatureServe. 2006. Global Amphibian Assessment
URL: www.globalamphibians.org Accessed: 8-9-2008.

REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: BOMBINATORIDAE

SPECIES:	<i>Bombina orientalis</i>
SYNONYMS:	-
COMMON NAMES:	Oriental Fire-bellied Toad (English)
RANGE STATES:	China, Democratic People's Republic of Korea, Republic of Korea, Russian Federation
IUCN RED LIST:	Least Concern (↓) ²
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Bombina orientalis* was used internationally for medicine and the pet trade, and nationally for the pet trade. They estimated that >75% of specimens in commercial trade were wild-sourced and that moderate numbers were exported (mainly to western Europe and North America) in the international pet trade.

Based on trade data kept by the Agriculture and Fisheries Department, China, Lau *et al.* (1996) reported that "South Korea exported 34,000 Oriental Fire-bellied Toad (*Bombina orientalis*) to Hong Kong during the study period [November 1993 to October 1994]. Some of them were re-exported to other countries."

Using records of shipments into and out of the United States from the USFWS Law Enforcement Management Information System (LEMIS), Schlaepfer *et al.* (2005) reported the import of 1,016,579 wild-caught *B. orientalis* and the export of 78,606 wild-caught *B. orientalis* between 1998 and 2002, for purposes of the pet trade.

Szcodronski (2006) reported that *B. orientalis* was a popular toad species in the exotic pet trade, being hardy and long-lived.

Although no references were provided, contributors to the website Wikipedia (2008) reported that *B. orientalis* was one of the most commonly found species in the pet trade due to extensive collection from the wild, where hundreds of thousands of individuals are collected annually; they also suggested that high mortality rates may be experienced during shipping, and from poor husbandry at pet stores or by the final owner (Wikipedia contributors, 2008).

² Arrows refer to the population trend, as given in the 2008 IUCN Red List. Key ↑ = increasing, ↓ = decreasing, → = stable.

The following information was derived from the web survey (as outlined in the section on methodology):

- Advertised on the French websites <http://amphibiens.forumsactifs.com>, <http://pays-de-la-loire.kijiji.fr> and www.lafermetropicale.com for €7, €10 and €13 respectively. On the latter it was stated that “Due to the French regulation, we’re not able to keep this species in our retail shop. If you’re interesting to purchase this species, contact us for business conditions”.
- Advertised on the Belgian website www.neptunereptiles.be for €6.
- Advertised on several Spanish websites, including www.animalots.com, www.animal-center.es, www.weboryx.com, www.foroanimales.es, <http://e-commerce.yisi.net/eshop/reptilmaniacom> and www.mundoanuncio.com for €11, €12, €12, €13, €13 and €18 respectively.
- Advertised for sale on various Portuguese websites, including www.olx.pt and www.lojaselva.com for €12 and €5 respectively.
- Advertised on the Czech website www.animalfarm.cz for 200 CZC (about €8).
- Advertised on various Italian websites, including www.aziendanaturaviva.com, www.serpenti.it and www.flora-e-fauna.it for €5, €10 and €10 respectively.
- The Italian website www.dendrobatesitalia.it offered a report on the 2003 ‘Terraristika’ Hamm show (Germany), including an overview of price ranges for several species. *B. orientalis* specimens were reportedly offered for €7.
- Advertised on several German websites including www.reptilica.de, www.interaquaristik.de and www.reptilien-zierfische.de, for €19, €10 and €8 respectively.
- Advertised on the website www.eurofauna.com (with a link to the German website <http://camouflage-chamaeleons.de.tl/>) for €10.
- Specimens bred in captivity by German hobbyists advertised for €13 -15 on German classifieds websites (e. g. sibbesse.markt-gigant.de and kleinanzeigen.quoka.de).
- Advertised for sale on various British websites including www.arkanimalsupplies.net, www.reptileforums.co.uk, www.pollywog.co.uk/livestock.html, www.zoo-logic.co.uk, <http://southcoastexotics.com>, www.exotic-pets.co.uk and www.dartfrog.co.uk for £9, £12.95 (described as the “rare Russian golden form”), £5, £9.95, £8.95, £13.66 and £9.99 respectively.
- Reported to be available year round from the British website www.faunaimportuk.com/amphibs.htm, no prices were displayed.
- French hobbyists expressed interest in obtaining this species on the forums www.webdonline.com/fr/services/forums and <http://batraciens-reptiles.com/forum>.
- Hobbyists discussed the price of *B. orientalis* on the forum <http://dragonsdasgard.actifforum.com>. A hobbyist reported seeing them advertised for €26 in France, whereas other hobbyists reported seeing them for much less (€5-10) in Belgium.
- Information and care sheets for *B. orientalis* were found on many pet/ hobbyist websites, for example: www.amphibian.co.uk, www.exotic-pets.co.uk, www.amphibiancare.com, www.petsforyou.com, www.batraciens.net, www.wnyherp.org, www.anaspid.org, <http://allaboutfrogs.org>, www.peteducation.com, www.pollywog.co.uk, www.petplace.com, <http://beginnersreptiles.com>, www.iguania.com, www.petsuppliesplus.com, unke.essling.at/unke/haltung.php, www.aquarium-forum.at and www.frosch-unke.de. Comments on the species included: “These toads represent the hardiest, long-lived and ostentatious of all amphibians” (www.amphibian.co.uk), “Fire-bellied toads are enjoyable to keep. They are brightly colored, diurnal, and hardy; a combination that is hard to beat” (www.amphibiancare.com), “They are probably the best terrestrial frogs as pets for the beginner” (<http://allaboutfrogs.org>) and “For many years now the Oriental Fire-bellied Toad has been a favorite with starter hobbyists and advanced herpetologists alike” (www.pollywog.co.uk).

- Posts by hobbyists discussing purchase, captive care or breeding of *B. orientalis* were found on several internet forums including www.amphibianforum.com (international), www.caudata.org (international), www.practical-pet-care.com (international), www.amphibio.org (Portuguese), www.terraon.de (German), www.pacmanfrogs.de (German), <http://forum.doctissimo.fr/animaux> (French), <http://forum.reptiles-passion.com> (French), <http://urodeles.forumpro.fr/> (French) and www.terrарistik.com (German), www.pollywog.co.uk (British).
- Several hobbyists claimed owning *B. orientalis* on forums of various Portuguese websites (inc. www.aquariofilia.net and www.felinus.org), Spanish websites (inc. www.acuaterra.net, www.reptiles.com, www.terrariomania.mforos.com and www.faunaexotica.net), Italian websites (inc. www.sanguelfreddo.net, www.tartaportal.it and www.animalinelmondo.it), French websites (<http://forum.doctissimo.fr>) and international websites (inc. www.caudata.org and www.amphibianforum.com).
- There was discussion on internet forums and hobbyist websites about breeding of *B. orientalis* hybrids, and the market for so-called 'Frankenstein Fire Bellied Toads' (e.g. www.caudata.org, www.freewebs.com/atanurans/firebelliedtoad.htm).

CONSERVATION STATUS in range states

B. orientalis was classified as Least Concern in the IUCN Red List of Threatened Species in view of its wide distribution, presumed large population, and because it was considered unlikely to be declining fast enough to qualify for listing in a more threatened category (Kuzmin *et al.*, 2004).

It was reported to be generally threatened by habitat loss and degradation, with collection for trade a potential threat in the Russian Federation (see Trade Patterns) (IUCN *et al.*, 2006). The China Species Information Service (CSIS, 2008) listed traditional Chinese medicine as a threat to the species, with secretions from the mouth or whole body used as an ingredient.

IUCN *et al.* (2006) reported that *B. orientalis* inhabited a wide range of natural and modified habitats. The species was also reported to be an opportunistic species, common in agricultural landscapes and villages (AmphibiaWeb, 2008).

CHINA: *B. orientalis* was reported to occur in northeastern China and to be regarded as common (IUCN *et al.*, 2006). A small-introduced population of this species was also reported to occur close to Beijing (IUCN *et al.*, 2006).

The China Species Information Service (CSIS, 2008) gave the conservation status of *B. orientalis* as "not threatened". Within China, it was reported to occur in Neimenggu, Liaoning, Helongjiang, Jiangsu and Shandong provinces.

AmphibiaWeb (2008) reported that *B. orientalis* was "one of the most common amphibians in the central part of the range, comprising a large proportion (to 29%) of their total number" with the population density at breeding sites reaching eight specimens per square meter.

IUCN *et al.* (2006) reported that *B. orientalis* was present within a number of protected areas in China.

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA: *B. orientalis* was reported to occur throughout the Democratic People's Republic of Korea (IUCN *et al.*, 2006).

REPUBLIC OF KOREA: *B. orientalis* was reported to occur throughout the Republic of Korea including within a number of protected areas in the Korean Peninsula (IUCN *et al.*, 2006).

RUSSIAN FEDERATION: *B. orientalis* was reported to occur in the Khabarovsk and Primorye regions of the Russian Federation and to be regarded as common (IUCN *et al.*, 2006).

AmphibiaWeb (2008) reported that *B. orientalis* in the Khabarovsk Region, at the northern margin of its range, was "a rare species, known by only a few individuals".

Kuzmin (1996) listed *B. orientalis* as one of the amphibian species of threatened and uncertain status in the Russian Federation.

The Declining Amphibian Database (DAPTF, 2003), based on information from Adnagulov (2000), contained information on *B. orientalis* from the Khabarovskii Region, Russian Federation. In 2000, the population at this site was reported to be rare with a decline category of Undetermined. It was reported to be known only from two localities (Strelnikov Ridge and central part of Moadi River, near Arsenievo village), although may be found at other sites, and to be vulnerable to human disturbance such as logging and road traffic. However, it was reported to be “a common species in the south of the Russian Far East”.

Collection of animals for traditional Chinese medicine was reported to pose a potential threat in Russia (IUCN *et al.*, 2006).

B. orientalis was reported to be listed on the Red Data Book of Khabarovskii Region, Russian Federation and to be present in six nature reserves (IUCN *et al.*, 2006). IUCN *et al.* (2006) stressed the need to monitor the relatively small Russian population.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: BUFONIDAE

SPECIES:	<i>Atelopus cruciger</i>
SYNONYMS:	-
COMMON NAMES:	Veragua Stub-footed Toad (English)
RANGE STATES:	Venezuela (Bolivarian Republic of)
IUCN RED LIST:	Critically Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) listed overcollecting for scientific purposes or the pet trade as a potential threat to the species. They reported that this species was used both nationally and internationally for the pet trade, with an estimated 0-25% of specimens in commercial trade coming from the wild (IUCN *et al.*, 2006).

In their study of the status of the genus *Atelopus*, La Marca *et al.* (2005) interviewed six anonymous German importers of amphibians and reported that the results indicated a robust trade in wild-sourced *Atelopus* species, with 12 species appearing in the European pet market between 1970 and 2002, including >20 lots of *A. cruciger*. However, they also noted that “there is no evidence that overcollecting has been so intense that it contributed to widespread extirpation of populations of any species.”

No national trade statistics were identified for *A. cruciger* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

TAXONOMIC NOTE: Lötters *et al.* (2004) investigated the taxonomic status of *Atelopus* populations from the coastal mountain range of Venezuela (which were formerly associated with the name *A. cruciger*) and redescribed *A. cruciger*, following the discovery that the original type material represented *Atelopus varius* of Central America. They also considered what was formerly classified as the subspecies *A. cruciger vogli* to be a distinct species: *A. vogli* (Lötters *et al.*, 2004).

A. cruciger was classified as Critically Endangered in the IUCN Red List of Threatened Species because of a drastic population decline, estimated to be more than 80% over the last three generations, inferred from the apparent disappearance of most of the population, probably due to chytridiomycosis (Manzanilla *et al.*, 2004).

VENEZUELA (BOLIVARIAN REPUBLIC OF): The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that “This species is restricted to several localities in the northern and southern versants of the Cordillera de la Costa of Venezuela (Estados Aragua, Carabobo, Miranda, Vargas, Yaracuy and the Distrito Federal) and recently from the Cerro Azul (Estado Cojedes) (Rivas Fuenmayor, 1998) which suggests that the species might be present throughout the entire mountainous area of the central coastal range (Lötters *et al.*, 2004).”

Although once abundant, *A. cruciger* was reported to have undergone an extreme decline (beginning in the 1980s), to the point that despite extensive surveys, no specimens had been seen since 1986 and there were no museum records after 1988 (La Marca, 1995; La Marca & Lotters, 1997; Manzanilla & La Marca, 1999; Lötters *et al.*, 2004 in: IUCN *et al.*, 2006). Sharp population declines were also reported by La Marca & Reinhaller (1991) and Young *et al.* (2001). However, a small population of *A. cruciger* was found recently in Venezuela (just south of the town of Cata within the limits of the 107,000-ha Henri Pittier National Park), 17 years after it had been declared extirpated and after 8 years of intensive searching (Manzanilla & La Marca, 2004 in: La Marca *et al.*, 2005).

The Declining Amphibian Database (DAPTF, 2003) (based on information from: La Marca & Lotters, 1997; SCAPNHP, 2003) contained information on *A. cruciger* from Henri Pittier National Park, Caribbean Coastal Range, Venezuela. Surveys were reported to have been conducted in 1994 (visual searches, concentrating on small streams where larvae usually occur) and in 2003 (a biological inventory on a transect from Rhancho Grande Biological Station to Cato, on the coast). No individuals were found in 1994 but in 2003 several individuals were recorded in a ravine in the Rio de Cata drainage within Henri Pittier National Park. Comments on this species occurrence were as follows: “Considered abundant in 1966 when Rancho Grande Biological Station was founded and for next 20 years. 1987 - 1993, systematic searching by Jesús Manzanilla (involving pitfall traps) found no individuals. Not seen between 1982 and 2003. Most areas inhabited by this species are within protected areas and there are no obvious explanations for 20 year absence, and the population located in 2003 appeared healthy.”

In a recent assessment of the current distribution and status of *A. cruciger*, 15 locations where the species was formerly known to occur were explored and two populations were detected (Rodriguez-Contreras *et al.*, 2008). After intensive searching, researchers detected two *A. cruciger* populations (a total of 83 individuals), both on the northern slope of the Henri Pittier National Park, indicating that the species persists on the northern slope of the Cordillera de La Costa but in a more restricted area than formerly. Rodriguez-Contreras *et al.* (2008) suggested that *A. cruciger* populations from lower altitude sites were recovering, although the presence of the chytrid fungus *Batrachochytrium dendrobatidis* was still a threat.

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that the major cause of the observed population decline in *A. cruciger* was chytridiomycosis, but that pollution by acid rain could be another possible threat, as well as droughts and flash floods and overcollecting for scientific purposes or the pet trade.

In their evaluation of population status of *Atelopus* species, La Marca *et al.* (2005) found the genus to be in critical condition, with 81 percent of the species for which there was adequate data showing evidence of decline (including *A. cruciger*). The authors reported that whilst habitat degradation had occurred within the ranges of many *Atelopus* species, it was not a factor strongly linked with declines (a large number of species declined or disappeared despite occurring in areas protected from habitat destruction), and they proposed that infection with *B. dendrobatidis* was the most likely cause, possibly compounded by indirect effects of climate change. They stated that “our findings point to *Atelopus* as the most striking case of catastrophic species loss ever documented for a single amphibian or perhaps vertebrate genus in recent history.”

Regarding conservation measures for this species, IUCN *et al.* (2006) reported that: "Many of the known localities are within the Parque Nacional Henri Pittier, Parque Nacional Rancho Grande, and Parque Nacional San Esteban. Monitoring of the populations, establishment of a captive-breeding population and disease management are all urgently required."

Lötters *et al.* (2005) reported that *ex situ* conservation measures to facilitate later reintroduction were needed for *Atelopus* spp. and that a workshop on the *ex situ* conservation of *Atelopus* had been held at Atlanta Botanic Garden, USA in 2005.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: HYLIDAE

SPECIES:	<i>Phyllodytes auratus</i>
SYNONYMS:	<i>Amphodus auratus</i>
COMMON NAMES:	Trinidad Heart-tongue Frog (English)
RANGE STATES:	Trinidad and Tobago
IUCN RED LIST:	Critically Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Phyllodytes auratus* was used internationally for specimen collection. They estimated that 0-25% of specimens in commercial trade were wild-sourced.

No national trade statistics were identified for *P. auratus* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

P. auratus was classified as Critically Endangered in the IUCN Red List of Threatened Species because its extent of occurrence was thought to be less than 100 km² and its area of occupancy less than 10 km², with a severely fragmented distribution, and continuing decline in the extent and quality of its habitat (Hardy, 2004).

TRINIDAD AND TOBAGO: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *P. auratus* was known only from its type locality, the summit of Aripo, in the Northern Range, and probably also Morne Bleu Ridge, Trinidad Island, in Trinidad and Tobago. The total range of the species was estimated to be 10km² or less (IUCN *et al.*, 2006).

The frogs and their larvae were reported to be found only in the water tanks of one species of large bromeliad, *Glomeropitcairnia eretifolora*, with tank water volume thought to be a major limiting factor (Clarke *et al.*, 1995).

P. auratus was described as a rare species with a very specific microhabitat and not to be adaptable to disturbance of its habitat (IUCN *et al.*, 2006). It was reported to be threatened by the collection of bromeliads from the forest, and the overcollecting of specimens (IUCN *et al.*, 2006).

Clarke *et al.* (1995) estimated a population of approximately 20,000 bromeliad-dwelling *P. auratus* on the single peak of El Tucuche, with another less defined population on Cerro del

Aripo, Trinidad's highest peak. There were thought to be no other populations of this species in the world.

The conservation status of this species was reported to be of concern, due to its limited distribution of just two sites, the increasing accessibility to these two sites (recent cutting of clear paths to both summits has increased the accessibility of these areas to humans), and lack of a clear policy for their protection (Clarke *et al.*, 1995). Disappearance of *G. eretifolora* from a third peak (Chaguaramal) in recent years was thought to have possibly extinguished a third population (Clarke *et al.*, 1995).

IUCN *et al.* (2006) reported that it was not known if the species was present within any protected areas, but maintenance and protection of its habitat was urgently required.

An assessment report of the Northern Range, Trinidad, found the western section to be seriously degraded, with forests declining in extent and quality (Agard *et al.*, 2005). The main threats to the local biodiversity were reported to be habitat destruction (including fragmentation) resulting from forest fires, logging, clearing for housing and agriculture, and over-exploitation of wildlife species. This was thought to have negative consequences for many species including *P. auratus*.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: LEPTODACTYLIDAE

SPECIES:	<i>Caudiverbera caudiverbera</i>
SYNONYMS:	<i>Calyptocephalella gayi</i> , <i>Calyptocephalella caudiverbera</i>
COMMON NAMES:	Helmeted Water Toad (English)
RANGE STATES:	Argentina?, Chile
IUCN RED LIST:	Vulnerable (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *C. caudiverbera* was used nationally and internationally for food. They estimated that >75% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be increasing, as was the trend in the amount of offtake/harvest produced through domestication/cultivation over the last five years (IUCN *et al.*, 2006).

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- The Italian website www.dendrobatesitalia.it offered a report on the 2003 'Terraristika' Hamm show (Germany), including an overview of price ranges for several species. *C. caudiverbera* specimens were reportedly offered for €59.
- Advertised for sale on the German website www.animal-paradies.de, but currently not available. Said to be available rarely, price range €40-80.
- Advertised for sale on several American websites, including www.alligatoralley.com for \$20, www.reptilesncritters.com for \$30 (currently out of stock) and www.usglobalexotics.com (prices not displayed).
- Hobbyists requested and posted information about this species on several American web forums (e.g. <http://fatfrogs.7.forumer.com>, <http://forum.kingsnake.com>). Comments indicated some interest in keeping the species, but that it was rare in captivity and hard to come by.
- A care sheet for *C. caudiverbera* was found on the British website www.reptilehouse.net.

No trade statistics or information about the volume of *C. caudiverbera* meat exported from Chile was found from literature and web searches.

CONSERVATION STATUS in range states

C. caudiverbera was classified as Vulnerable in the IUCN Red List of Threatened Species because of a population decline, estimated to be more than 30% over the last ten years, inferred from direct observation and over-exploitation (Veloso & Formas, 2004).

ARGENTINA: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that this species was possibly present in Argentina, but this has not been confirmed.

CHILE: *C. caudiverbera* was reported to occur from Coquimbo (at approximately 29°S) to Puerto Montt (40°S), in Chile, with an altitudinal range of 0-500m above sea level (IUCN *et al.*, 2006).

Populations were reported to be declining in central Chile and it was reported to be “practically absent in ponds and lagoons close to towns where it was very abundant only a few years ago” (IUCN *et al.*, 2006). However, populations in southern Chile were reported to be “apparently common and stable” (IUCN *et al.*, 2006).

The main threats to *C. caudiverbera* were reported to include harvesting as an exotic food source and water pollution due to agriculture, with introduced trout and the drainage of ponds for development and agriculture reported to be additional threats (IUCN *et al.*, 2006). It was recommended that the harvesting of this species from the wild needed to be managed sustainably” (IUCN *et al.*, 2006).

Duellman (2003; in: AmphibiaWeb, 2008) reported that *C. caudiverbera* populations have declined due to hunting as well as loss of habitat, and that they are a food source for the Chileans.

C. caudiverbera was reported to be farmed for up-market hotels and restaurants in Chile, who buy it for around \$25/kg (from farms) or \$1.5/kg (from poachers) (Verdejo Vega, 2007).

Classified as Vulnerable by the ‘Comisión Nacional del Medio Ambiente’ (CONAMA, 2008), Decree Nr. 5 of 1998 prohibits the harvest of this species from the wild in Chile (SAG, 2004).

C. caudiverbera was reported to occur in several protected areas (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: MICROHYLIDAE

SPECIES:	<i>Platypelis milloti</i>
SYNONYMS:	-
COMMON NAMES:	Nosy Bé Giant Tree Frog (English)
RANGE STATES:	Madagascar
IUCN RED LIST:	Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that there was no known utilization of *Platypelis milloti*, but noted that “its bright colouration might make it attractive for future commercial collecting” and listed regional/international trade as a future threat to the species.

Occurrence in the pet trade was not listed as a threat to *P. milloti* by Andreone *et al.* (2005).

No national trade statistics were identified for *P. milloti* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

Platypelis milloti was classified as Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is continuing decline in the extent and quality of its forest habitat (Raxworthy & Glaw, 2004).

MADAGASCAR: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *P. milloti* was apparently restricted to a small area in extreme north-western Madagascar, from Tsaratanana to Manongarivo, including the island of Nosy Be. It was reported to be found only in pristine rainforest and to be locally abundant (IUCN *et al.*, 2006).

In their account of the species, Henkel & Schmidt (2000) reported that *P. milloti* was mainly known from its type locality (Lokobe, Nosy Bé) but it had also been found in northern Madagascar.

P. milloti was recorded in two surveys of Réserve Naturelle Intégrale de Lokobe, Nosy Be (in 1992 and 1993) but was not recorded on a shorter survey conducted in the same location in 1999 (Andreone *et al.*, 2003).

The major threat to the species was reported to be habitat loss due to subsistence agriculture, timber extraction, charcoal manufacture, the spread of invasive eucalyptus, livestock grazing,

fires and expanding human settlements (IUCN *et al.*, 2006). *P. milloti* was reported to occur in a fragmented region of rainforest, where continuing habitat loss was expected.

Henkel & Schmidt (2000) reported that little was known about the biology of the species, and they did not report any threats to the species.

P. milloti was reported to occur in three protected areas: the Réserve Naturelle Intégrale de Lokobe, the Réserve Spéciale de Manongarivo, and the Réserve Naturelle Intégrale du Tsaratanana (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: HYNOBIIDAE

SPECIES:	<i>Hynobius tokyoensis</i>
SYNONYMS:	-
COMMON NAMES:	Tokyo Salamander (English)
RANGE STATES:	Japan
IUCN RED LIST:	Vulnerable (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Hynobius tokyoensis* was used nationally and internationally for pets/display animals. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown.

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Listed on the German website www.animal-paradies.de, but reported to be currently unavailable and available rarely.
- Several hobbyists on the international forum www.caudata.org reported keeping this species, one hobbyist commented that he had found *H. tokyoensis* “quite difficult to keep and breed.” There was also a discussion about raising *H. tokyoensis* from eggs, and one hobbyist reported that egg sacs were collected from the wild. Another hobbyist commented: “I’ve seen *Hynobius* for sale on German price lists, and they are apparently in pet stores in Japan. But I’ve never seen them available within the U.S.”
- Care sheets for this species were found on the German forum www.terra-animals.de and the Austrian website www.salamanderland.at.
- Hobbyists discussed care on the German forum www.agurodela.de. One person claimed to have received three juveniles directly from Japan.

CONSERVATION STATUS in range states

TAXONOMIC NOTE: There is some confusion over the taxonomy of *Hynobius* species on mainland Japan, particularly the taxonomic status of *H. tokyoensis* from Aichi (Matsui *et al.*, 2001). For example, Matsui *et al.* (2001) reported that “*Hynobius tokyoensis* has been regarded as a close relative of *H. nebulosus* from southwestern Japan (type locality = Nagasaki) based on morphological and ecological similarities (Sato, 1934; Sato, 1943), and has recently been treated as a subspecies of *H. nebulosus* (Nakamura & U’eno, 1963; Matsui, 2000).” Based on their genetic study of 110 salamanders (*Hynobius lichenatus*

H. nebulosa and *H. tokyoensis*), from eight localities, Matsui *et al.* (2001) reported that “*H. tokyoensis* from Aichi and *H. nebulosus* on the one hand, and the westernmost population of *H. tokyoensis* from Kanagawa and *H. lichenatus* on the other, form two distinct genetic groups.” Matsui *et al.* (2001) concluded that “This result conforms well to reported results of morphological and genetic studies, and the salamander from Aichi, now called *H. tokyoensis*, should be identified as *H. nebulosus*, which is sufficiently diverged from *H. tokyoensis* to be considered a distinct species.”

H. tokyoensis was classified as Vulnerable in the IUCN Red List of Threatened Species because its extent of occurrence is less than 20,000 km², its distribution is severely fragmented, and there is continuing decline in the extent and quality of its forest habitat on Honshu, Japan (Kaneko & Matsui, 2004).

JAPAN: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *H. tokyoensis* was a Japanese endemic mainly distributed in Kanto District on Honshu Island. Frost (2008) reported that *H. tokyoensis* occurred on the Pacific lowlands of Fukushima prefecture southwestwards through Tokyo to Kanagawa Prefecture of the Kanto District, Honshu.

Matsui *et al.* (2001) reported that *H. tokyoensis* was “distributed in two completely isolated regions: (1) from Fukushima Prefecture southwestwards through Tokyo to Kanagawa Prefecture of the Kanto District; and (2) Aichi Prefecture of the Chubu District of Honshu, the main island of Japan.” Its habitats were reported to be rapidly diminishing (Matsui *et al.*, 2001).

In a study investigating the factors influencing the distribution of *H. tokyoensis*, it was reported that its distribution consists of at least five disjunct areas in the Kanto region, east central Japan and that this discontinuous distribution pattern was probably related to the distribution of hills or small mountains with places that are kept moist by underground water (Ihara, 2001).

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that most populations of *H. tokyoensis* were believed to be in decline. The major threats to the species were reported to be habitat loss due to infrastructure development (housing and road construction), water pollution, invasive species, and the drying out of its habitat. Collection for the pet trade was also reported to be a threat (IUCN *et al.*, 2006).

AmphibiaWeb (2008) reported that the main threats to *H. tokyoensis* were urban construction, water pollution, invasive species and habitat loss.

Rapid range expansion of the feral raccoon (*Procyon lotor*) in Kanagawa Prefecture was reported to pose a threat to native species, including *H. tokyoensis* (Hayama *et al.*, 2006).

H. tokyoensis was classified as a ‘local population’ (Lp) on both the 1991 and 2000 versions of the Red List of Japan, which is a category for endangered local populations deserving special conservation attention because of their particular academic value or geographic extremes (Ota, 2000).

IUCN *et al.* (2006) reported that there were currently no known conservation measures in place for this species.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: HYNوبيIDAE

SPECIES:	<i>Ranodon sibiricus</i>
SYNONYMS:	-
COMMON NAMES:	Semirechensk Salamander (English), Siberian Salamander (English)
RANGE STATES:	China, Kazakhstan
IUCN RED LIST:	Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Ranodon sibiricus* was used at subsistence level for medicine (human and veterinary). They also reported that *R. sibiricus* was particularly susceptible to over-exploitation (for medical, commercial and scientific purposes). The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

AmphibiaWeb (2008) reported that “sometimes the salamanders are collected for scientific aims and pet trade (illegally). In the past, they were also collected for Chinese traditional medicine.”

Jensen & Camp (2003) listed *R. sibiricus* as an example of an amphibian species for which overcollection for the pet trade had had a negative effect on wild populations.

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Several hobbyists expressed interest in obtaining *Ranodon* spp. (with one mention of *R. sibiricus* specifically) on the international forum www.caudata.org. Discussion indicated that all *Ranodon* spp. were very hard to come by, both wild-caught and captive bred. One hobbyist commented “3 years ago 2 *Ranodons* were offered for sale in Gersfeld and I missed the chance to buy them (approx 125 USD each)... so far no other such animals were imported again”.
- On the forum www.drpez.net/panel a Russian hobbyist reported that a friend was giving him a *R. sibiricus*.
- A care sheet for *R. sibiricus* was found on the German website www.molchkeller.wg.am.

CONSERVATION STATUS in range states

R. sibiricus was classified as Endangered in the IUCN Red List of Threatened Species because its area of occupancy is less than 500 km², its distribution is severely fragmented, and there is

a continuing decline in the extent and quality of its habitat, in the number of subpopulations, and in the number of mature individuals (Kuzmin *et al.*, 2008).

Its range was reported to be severely fragmented due to the scarcity of suitable habitats (IUCN *et al.*, 2006). At suitable sites, its population density was reported to vary from 1.6 to 62 animals per 100 m of stream bank (Brushko *et al.*, 1988 in: Kuzmin, 1996).

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that major threats to *R. sibiricus* were over-exploitation, habitat degradation (caused by over-grazing of forest, lowering of the water table, soil erosion, and desiccation of streams), accidental mortality caused by the trampling effects of livestock during summer grazing, and local fishing practices.

AmphibiaWeb (2008) reported that “there is continuing constriction of the range of *Ranodon sibiricus*, whose current distribution is estimated as about 160 km². Suitable habitats are not numerous on the Junggarian Alatau, but the salamander was proved to be absent even from many of these.” Predominantly anthropogenic factors were thought to be responsible for the recent range constriction, such as destruction of forests by people and cattle, landscape amelioration, collecting salamanders for commercial and scientific purposes and local fishing practices.

The use of this species in Chinese traditional medicine was reported to have led to the extinction of many populations in Kazakhstan and, evidently, almost total extinction of the species in Xinjiang (AmphibiaWeb, 2008).

R. sibiricus was also reported to be a species particularly vulnerable to environmental change, with various biological characteristics (high site-fidelity, low rate of population turnover and specialization to habitat) possibly posing an important constraint on dispersal (AmphibiaWeb, 2008).

Kuzmin (1994 in: Kuzmin, 1996) reported that *R. sibiricus* appears to be declining as a result of deforestation, habitat destruction by cattle, drainage works for agriculture, collection for commercial and scientific purposes and the local practice of fishing by diverting streams.

It was reported that “the species is in the worst condition among all the amphibians of the former Soviet Union. It needs immediate and effective measures for conservation. Without creation of a special nature reserve, it may become extinct in the near future” (AmphibiaWeb, 2008).

IUCN *et al.* (2006) reported the following conservation measures for *R. sibiricus*: “This species is listed in the Red Data Books of the USSR and Kazakhstan and is listed as a Class I protected species by the Xinjiang Uygur Autonomous Region, China. The range of this species is thought to be within the Hecheng Four-Claw Turtle Nature Reserve of China, although this requires confirmation. Existing conservation measures are considered to be insufficient, and there is a need for the immediate development and implementation of an effective system for conservation of the species at national (Kazakhstan and China) and international level. The most important measure recommended is the urgent creation of special strict nature reserves.”

CHINA: *R. sibiricus* was reported to occur in Mount Tianshan in Wenquan County, Xinjiang Uygur Autonomous Region, China and may also occur in the adjacent Yining, Huocheng and Tacheng Counties of China (IUCN *et al.*, 2006). It was also reported to have been found historically in Hergos County (IUCN *et al.*, 2006).

Frost (2008) reported that *R. sibiricus* was found in small mountain creeks with rapids streams and falls, at altitudes of 15000-2500 m, in the coniferous forests of Junggarian Ala Tau, northwestern Xinjiang, China.

R. sibiricus was reported to be an extremely rare species, the total population size in China estimated at around 6,000 individuals (IUCN *et al.*, 2006).

Feng *et al.* (2007) listed *R. sibiricus* as a species of very high priority for conservation attention in China (being Critically Endangered in Xinjiang), but not listed as Critically Endangered globally, due to its presence in Kazakhstan.

Threats to the species listed in the Chinese Species Information Service (CSIS, 2008) included unavailability of prey (causing adults to swallow their young), habitat degradation, floods and capture by tourists.

KAZAKHSTAN: *R. sibiricus* was reported to be restricted to the southern and south-western spurs of the Junggarian Alatau [Altao] Ridge in southern Kazakhstan (IUCN *et al.*, 2006). Frost (2008) also reported that *R. sibiricus* occurred in southern Kazakhstan.

The Declining Amphibian Database (DAPTF, 2003), based on information from Kuzmin *et al.* (1998), contained information on *R. sibiricus* from Junggarian Alatau, Kazakhstan. Based on museum records and a survey of all historical and potential sites conducted 1996–1998, *R. sibiricus* was assigned the decline category D (apparent low level of decline), with the first evidence of declines recorded in 1996. The following population data was given: “1996 - 1998, not found in Semipalatinsk (type locality) or Tashkent (Uzbekistan) and these records are probably errors. Also not found in the Kilja region (Xinjiang) although anecdotal evidence suggests that the species may be present, from the area around Alma-Ata, or from Kapal Town. In Kazakhstan, currently known only from 27 sites (no new locations) in the western, central and southern peripheries of the Junggarian Alatau and from four sites (one introduced population) in China (Xinjiang). Thus there has been considerable loss of historical range.”

R. sibiricus was listed in Kuzmin (1996) as a species of threatened and uncertain status in the Republics of the former Soviet Union, where it was recorded as Vulnerable in Kazakhstan. It was also reported to be the only Red Data Book species that did not occur in a protected area.

Simplification of regulations governing the Kazakhstan-Chinese border and opening up of formerly closed frontier areas of the Junggarian Alatau were reported to pose a potential threat, due to the traditional use of *R. sibiricus* in Chinese medicine (Kuzmin, 1996).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: PLETHODONTIDAE

SPECIES:	<i>Plethodon petraeus</i>
SYNONYMS:	-
COMMON NAMES:	Pigeon Mountain Salamander (English)
RANGE STATES:	United States of America
IUCN RED LIST:	Vulnerable (→)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Plethodon petraeus* was used at subsistence level, nationally and internationally for pets/display animals and for collection of specimens. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown.

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- On the American forum <http://forum.kingsnake.com> several hobbyists reported seeing the species in the wild, but none reported taking any specimens.

In the EU, no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

Plethodon petraeus was classified as Vulnerable in the IUCN Red List of Threatened Species because it is known from only a single location (Hammerson, 2004).

UNITED STATES OF AMERICA: *P. petraeus* was reported to be limited to the Cumberland Plateau of extreme north-western Georgia, USA (IUCN *et al.*, 2006). All known populations were reported to occur on the eastern slope of Pigeon Mountain in Walker and Chattooga counties (Wynn *et al.*, 1988; Jensen, 1999; Buhlmann, 2001; Jensen *et al.*, 2002; in: IUCN *et al.*, 2006) at altitudes ranging from 220-570 m above sea level (Wynn *et al.*, 1988; in: IUCN *et al.*, 2006).

Jensen (2002) reported that *P. petraeus* was “known only from an approximately 15 km length of the eastern flank of Pigeon Mountain in Walker and Chattooga counties, Georgia (Jensen, 1999)... and is protected as a ‘Rare’ species by the state of Georgia (Jensen, 1999).”

Wynn *et al.* (1988) reported that *P. petraeus*' range was limited but that it was very common locally.

Recent surveys at two of the known sites reportedly indicated no detectable change in their abundance (J.B. Jensen pers. obs. in: IUCN *et al.*, 2006). However, they were reported to have become uncommon at one locality, possibly due to disturbance created by increased cave visitation and/or scientific over-collecting (Jensen 1999)" (Jensen, 1999 in: IUCN *et al.*, 2006).

A study by Jensen (2002) concluded that *P. petraeus* was a potentially abundant, albeit patchily distributed species, found in greatest numbers in areas where extensive rocky outcrops were associated with cave entrances/vents.

The Global Amphibian Assessment (IUCN *et al.*, 2006) noted that the restricted distribution of Pigeon Mountain Salamanders made them especially vulnerable, but that, at present the species appeared to be stable. They reported that mineral rights are leased to a mining company in part of the range and that overcollection for scientific study and possibly the illegal pet trade, as well as disturbance from recreational cavers, might threaten populations. Timber removal on private lands and the resultant loss/reduction of moisture-trapping canopy cover was also listed as a potential future threat (IUCN *et al.*, 2006).

Regarding conservation measures for *P. petraeus*, IUCN *et al.* (2006) reported that most of the species' potential habitat was in the Crockford-Pigeon Mountain Wildlife Management Area, but that private land within the species' range should be considered for acquisition or the establishment of conservation easements. They also stressed the need for continued close monitoring of its population status.

In their State Wildlife Acton Plan, the State of Georgia, USA considered *P. petraeus* to be a species of Greatest Conservation Need (Georgia Department of Natural Resources, 2005).

P. petraeus was reported to be protected under the Georgia Endangered Species Act as a 'State Rare' species, which protects them from collection, possession, harassment or harm (PARC, 2004).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Cynops ensicauda</i>
SYNONYMS:	-
COMMON NAMES:	Sword-tailed Newt (English)
RANGE STATES:	Japan
IUCN RED LIST:	Endangered (I)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Cynops ensicauda* was used both at subsistence level and nationally for medicine (human and veterinary) and nationally and internationally for pets/display animals. They estimated that 0-25% of specimens in commercial trade were wild-sourced, and indicated that trade in this species needs to be closely monitored and regulated (IUCN *et al.*, 2006).

AmphibiaWeb (2008) reported that tens of thousands of *C. ensicauda* had been collected for the pet trade. Most of these animals were reported to perish because they were sold and treated as aquatic animals, whereas in actuality they are partially terrestrial.

Reinhartz (2004) noted that *C. ensicauda* was reported to still occur in the Japanese pet trade but, although exported regularly from Japan in the past, it was seldom seen in international trade today.

C. ensicauda popei was reported to have acquired economic importance and become the target of massive collection efforts for the pet trade, whereas the less attractive *C. e. ensicauda* was reported to be rarely found offered for sale (Johnson, 2004). Johnson (2004) reported that: "One herpetile shop in Tokyo processed over 1,000 *C. e. popei* from Yambaru in a recent two-month period, retailing the newts for 500 yen (US \$4.50) to 3,800 yen (US \$35), depending on their degree of attractiveness..... *C. ensicauda* are also shipped in the thousands via Hong Kong to pet markets overseas, especially to Europe. "

Both subspecies (*C. e. ensicauda* and *C. ensicauda popei*) were reported to be bred in captivity, although *C. ensicauda popei* was reported to be found more commonly (Reinhartz, 2004).

Reinhartz (2004) recommended to hobbyists that: "because of the threatened status of wild populations, it is strongly advised not to buy any wild caught animals through the commercial pet-trade, but rather to acquire captive bred eggs, larvae, or juveniles from fellow enthusiasts."

The website www.salamanderseiten.de promoted the creation of a newt registry for *Cynops* spp. and the facilitation of captive breeding programmes. It was reported that:

“whereas *C. e. popei* is bred regularly, only a few reproductive groups of *C.e.ensicauda* exist in Europe. The main goal for this subspecies must therefore be the establishment of additional breeding groups. Since either of the subspecies are no longer exported from Japan, captive breeding attains an even greater importance nowadays.”

The following information was derived from the web survey (as outlined in the section on methodology):

- Advertised on the Spanish website www.terribilis.net for €35.
- *Cynops ensicauda popei* advertised on two British websites: www.zoologic.co.uk/amphibiansinstock.html for £9.99 and www.reptileforums.co.uk for £9.95.
- Captive-bred juvenile *Cynops e. ensicauda* advertised on the British website www.dartfrog.co.uk for £25 each. They were reported to be rarely available in Britain and to have come from a breeder in Sweden.
- Advertised on two German websites: www.reptilien-zierfische.de for €12 and www.animal-paradies.de for €15-25 (but currently not available).
- The Italian website www.dendrobatesitalia.it offered a report on the 2003 ‘Terraristika’ Hamm show (Germany), including an overview of price ranges for several species. *Cynops ensicauda* specimens were reportedly offered for €17 - €50.
- Website of a German hobbyist (www.salamanderseiten.de) contained information on care and stated that they sometimes had captive-bred juveniles available. Commented that a large number of “bad quality specimens” were still imported.
- Discussions about where to obtain specimens and private offers of captive-bred specimens were found on the German forum www.feuersalamander.com.
- Several websites provided information on captive care of this species, for example: www.caudata.org (international), <http://www.pollywog.co.uk> (British), <http://science.naturalis.nl> (Dutch), terrarium-ostfriesland.de (German) and www.amiciinsoliti.it (Italian).
- Hobbyists discussed the captive care of the species on the Italian website www.sanguelfreddo.net and the German forum www.zfv-forum.de
- On the Dutch website www.podarcis.nl, the species was described as easy to keep and as an “ideal inhabitant for a living room aquarium”.
- On the website www.caudata.org, the forum’s section on this species states: “Fire-belly & sword-tail newts (*Cynops*): perhaps the most famous and frequently bred newts in captivity, the fire-bellied newts and sword-tail newts are well known throughout the world as being excellent, gregarious captives”. On this forum, various hobbyists mentioned owning specimens of the species and one hobbyist from the USA stated “This is one of my top 5 favorite species. I have had this species on and off for almost 25 years. They are not easy to acquire these days. This is one reason I tracked them down to breed them.” Another hobbyist reported that *C. ensicauda* (reportedly bought in Hong Kong) was replacing *C. orientalis* in pet shops in Sweden.
- Several hobbyists claimed to own this species on the Portuguese forum www.amphibio.org, the French forum <http://dragonsdassgard.actifforum.com> and the Spanish forum www.faunaexotica.net.

CONSERVATION STATUS in range states

Cynops ensicauda was classified as Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 5,000 km², its distribution is severely fragmented, and there is continuing decline in the extent and quality of its habitat, and in the number of mature individuals, in the Amami-Okinawa group (Kaneko & Matsui, 2004).

JAPAN: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *C. ensicauda* was restricted to twelve islands in the Amami and Okinawa island groups, in the Ryukyus, Japan. Frost (2008) also reported that *C. ensicauda* occurred in the Amami and Okinawa Archipelagos, Ryukyu Islands, Japan.

Reinhartz (2004) stated that “the nominate form inhabits different islands in the so-called Amami-group, specifically the islands of Amami-Ooshima, Kakeroma, Tokuno, Uke, and Yoro, which are all part of Kagoshima Prefecture. *Cynops ensicauda popei* can be found on the islands of Okinawa, Sesoko, Hamahiga, Tonaki, Tokashiki, Zamami, Geruma, and Aka, which are all administratively part of Okinawa Prefecture... The status of *Cynops ensicauda ensicauda* on Tokuno is unclear at the moment, as it may have never lived there or has become extinct.”

C. ensicauda populations were reported to be decreasing (IUCN *et al.*, 2006). AmphibiaWeb (2008) reported that “the once teeming populations of *C. ensicauda* have declined alarmingly in recent years” and Reinhartz (2004) stated that “observations on southern Okinawa have shown that breeding sites are frequented nowadays by just one fourth of the original breeding population compared to 15 years ago.”

The major threat to *C. ensicauda* was reported to be habitat degradation and loss (Johnson, 2004; Reinhartz, 2004; IUCN *et al.*, 2006; AmphibiaWeb, 2008), due mainly to clear-cutting and human settlement (IUCN *et al.*, 2006). Other reported threats were reclamation of ponds (IUCN *et al.*, 2006), desiccation in roadside ditches (Johnson, 2004; Reinhartz, 2004; IUCN *et al.*, 2006; AmphibiaWeb, 2008), the introduction of invasive fish species (IUCN *et al.*, 2006; AmphibiaWeb, 2008) and overcollection for the pet trade and traditional Chinese medicines (Johnson, 2004; Reinhartz, 2004; IUCN *et al.*, 2006; AmphibiaWeb, 2008). Johnson (2004) also reported that *C. ensicauda popei* were threatened by capture in large numbers for use by laboratories in medical experiments and that roadway mortalities killed large numbers of *C. ensicauda popei* in Yambaru, especially during and after rain.

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *C. ensicauda* “probably occurs in some protected areas, but this requires confirmation.” *C. ensicauda* was not listed in the 1991 version of the Red List of Japan but was classified as Near Threatened on the 2000 version (Ota, 2000).

Johnson (2004) reported that “to date, no comprehensive surveys have been carried out to ascertain the species’ conservation status and none are known to be currently underway,” and that *C. ensicauda* was not protected by any national or local laws on wildlife protection in Japan, but a few important habitats in Yambaru were protected incidentally.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES: *Echinotriton andersoni*

SYNONYMS: *Tylotriton andersoni*

COMMON NAMES: Anderson's Newt (English)

RANGE STATES: Japan, Taiwan, Province of China

IUCN RED LIST: Endangered (↓)

PREVIOUS EC OPINIONS: n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Echinotriton andersoni* was used nationally and internationally for pets/display animals. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown.

It was reported in AmphibiaWeb (2008) that *E. andersoni* was captive-bred on a small scale (Nussbaum & Brodie, 1982; Utsunomiya, 1982; Snider & Zippel, 2000 in: AmphibiaWeb, 2008) and Bogaerts (2007) listed *E. andersoni* as a species for which captive breeding had had good results. Detroit Zoological Institute (DZI, 2008) claimed to be the first US zoo to successfully breed *E. andersoni* in captivity - breeding was reported to have been successful each year between 1999 and 2005.

On the website www.tylotriton.org it was reported that "The presence of *E. andersoni* in collections and pet-trade is luckily almost completely captive bred, mainly originating from Japan and Germany. Collecting for the pet-trade is not considered a threat for *E. andersoni*."

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Listed on the German pet shop website www.animal-paradies.de, but currently not available.
- On the forum www.eurofauna.com a Polish hobbyist expressed interest in obtaining this species.
- Discussion among hobbyists on the international forum www.caudata.org indicated interest in these species but that they were expensive and hard to come by. One British hobbyist stated that he had five captive-bred specimens obtained from an Austrian breeder in Germany. The same hobbyist estimated adult/subadult captive-bred *E. andersoni* to start at £200 each.
- Information on care was found on the German website www.tierdoku.com.

- Discussion on the international forum www.caudata.org indicated the occurrence of multiple shipments of wild-caught specimens to Europe and the United States, which quickly sold out, with poor survival rates. For example, one hobbyist reported seeing specimens sold as '*Tylostrotion andersoni*' at Kingsnake, United States in July 2004. Another commented "What disturbs me most is that *Echinotriton andersoni* are finding their way into the pet trade still - as far as I'm aware, this species was given full protection from collection recently and so it shouldn't be showing up on wholesaler lists."

CONSERVATION STATUS in range states

E. andersoni was classified as Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 800 km², its distribution is severely fragmented, and there is a continuing decline in the extent and quality of its habitat (Kaneko & Matsui, 2004).

JAPAN: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *E. andersoni* occurred on six Japanese islands: Amamioshima, Tokunoshima, Yorojima, Okinawajima, Sesokojima and Tokasikijima.

It was reported in AmphibiaWeb (2008) that "the species is distributed on five islands of the Ryukyu archipelago, including Amami-o-shima and Tokunoshima of the Amami group, and Okinawajima, Sesokojima, and Tokashikijima of the Okinawa group (Hayashi *et al.*, 1992)... On Okinawa, the species is rare and occurs in isolated patches of forest (Hayashi *et al.*, 1992; Kato & Ota, 1993). On Tokunoshima the species occurs in and near sugar cane fields, at altitudes of 100 to 200 m, which until the mid sixties of the 20th century were covered by forest. Their occurrence in the remaining patches of forest on that island is doubtful (Utsunomiya *et al.*, 1978)."

Hayashi *et al.* (1992) reported that "*Tylostrotion andersoni* is generally regarded as a very rare species (Sato, 1943, personal observation), and Chigira (1989) observed a total of only 13 *T. andersoni* against 1586 *C. ensicauda* trapped in gutters along mountain roads in the northern part of Okinawajima during one year." However, from studying the within-island genetic variation of *T. andersoni*, Hayashi *et al.* (1992) suggested that the effective population size was not extremely small and that the number of individuals may have been underestimated due to its secretive and relatively inactive nature.

Recent deforestation and other forms of land development, as well as road and drainage ditch construction were reported to be major threats to *E. andersoni*, causing population declines on each island (IUCN *et al.*, 2006). Illegal collection for the pet trade was also reported to be a threat (IUCN *et al.*, 2006).

It was reported in AmphibiaWeb (2008) that "due to its secretive habits, it is difficult to detect trends in the development of populations" but that *E. andersoni* was not common and few populations had been followed systematically. Habitat fragmentation due to road construction and deforestation were reported to be a threat to the species (Japan Agency of Environment, 2000 in: AmphibiaWeb, 2008) and suitable habitats were reported to be becoming rare. The replacement of original forest by sugar cane plantations was also reported to possibly have a detrimental effect on populations (Utsunomiya *et al.*, 1978; in: AmphibiaWeb, 2008). Many specimens were found in sugar cane plantations but ponds, puddles and streams (used as breeding sites) were reported to be largely absent for this habitat (Utsunomiya *et al.*, 1978).

Ota (2000) noted an increase in the number of amphibians listed in the Red List of Japan between 1991 and 2000, from 18 to 22 species, with 'threatened' amphibians increasing from 6 to 14. *E. andersoni* was classified as Rare in the 1991 version of the Red List but moved to Vulnerable in the 2000 version. A higher ratio of threatened taxa was found on the Ryukyu Archipelago than in other parts of Japan and the major threat to the eight threatened amphibians of the Ryukyu Islands (including *E. andersoni*) was reported to be deforestation.

With regards to conservation measures, IUCN *et al.* (2006) reported that *E. andersoni* was designated as a natural monument by Okinawa and Kagoshima Prefectures.

TAIWAN, PROVINCE OF CHINA: The occurrence of *E. andersoni* in Taiwan is on the basis of three museum specimens from Mount Kuanyinshan, just north of Taipei, Taiwan, Province of China (Zhao & Adler, 1993). However, this species is presently considered extinct in Taiwan (Zhao, 1998; in: IUCN *et al.*, 2006). Feng *et al.* (2007) also reported *E. andersoni* to be extinct in Taiwan, Province of China.

The Chinese Species Information Service (CSIS, 2008) listed the occurrence of *E. andersoni* in Taiwan.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

INTRODUCTION TO THE GENUS *LYCIASALAMANDRA*:

TAXANOMIC NOTE: Morphological, behavioural and molecular evidence has recently called into question the existing taxonomy of the ‘true’ salamanders (genera *Chioglossa*, *Mertensiella* and *Salamandra*), particularly the monophylogeny (shared ancestry) of the two *Mertensiella* species (*M. caucasica* and *M. luschani*), prompting a number of studies investigating the molecular phylogeny of the salamanders (eg. Veith *et al.*, 1998; Weisrock *et al.*, 2001; Veith *et al.*, 2001; Veith & Steinfartz, 2004). Consequently, the taxonomy of the salamanders has been adjusted to reflect their phylogeny and a new genus (*Lyciasalamandra*) was described by Veith and Steinfartz (2004). The former *Mertensiella luschani* was placed in this genus (renamed *Lyciasalamandra luschani*), and its six subspecies were elevated to the rank of species (Veith & Steinfartz, 2004):

Former name	Current name
<i>Mertensiella luschani</i>	<i>Lyciasalamandra luschani</i> ³
<i>Mertensiella luschani helverseni</i>	<i>Lyciasalamandra helverseni</i>
<i>Mertensiella luschani atifi</i>	<i>Lyciasalamandra atifi</i>
<i>Mertensiella luschani fazilae</i>	<i>Lyciasalamandra fazilae</i>
<i>Mertensiella luschani antalyana</i>	<i>Lyciasalamandra antalyana</i>
<i>Mertensiella luschani billae</i>	<i>Lyciasalamandra billae</i>
<i>Mertensiella luschani flavimembris</i>	<i>Lyciasalamandra flavimembris</i>

Of the seven *Lyciasalamandra* spp. (all of which occur in south-western Turkey or the adjacent islands in the Aegean Sea), all but *Lyciasalamandra helverseni* were reviewed in this report. However, as five of them have only recently been recognised as species (*Lyciasalamandra atifi*, *L. fazilae*, *L. antalyana*, *L. billae* and *L. flavimembris*), there was limited information on their individual conservation status.

Web surveys for the species reviewed in this report (using both their current and former names) found little evidence of demand within the EU, but given that all species in the genus *Lyciasalamandra* are globally threatened, even low levels of trade might imperil their survival.

Sofiandou (1997) reported that *Mertensiella luschani* (of which *L. helverseni*, *L. atifi*, *L. fazilae*, *L. antalyana*, *L. billae* and *L. flavimembris* were then considered subspecies) was under threat from compulsive collectors.

L. luschani is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention are obliged to implement national legislation for the protection of species listed in the Appendices. Turkey has been a Party to the Berne Convention since 1979.

As the Berne Convention only specifically names *L. luschani*, it is not clear whether the listing recognises and/or affords protection to all seven species now considered to be in the genus. However, as these taxa were intended to be protected through the original listing of *L. luschani*, it is presumed that the new taxa are also protected.

Article 6 of the Bern Convention states:

“Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II. The following will in particular be prohibited for these species:

³ Includes three subspecies: *Lyciasalamandra luschani luschani*, *Lyciasalamandra luschani finikensis* and *Lyciasalamandra luschani basoglui*

- a. all forms of deliberate capture and keeping and deliberate killing;
- b. the deliberate damage to or destruction of breeding or resting sites;
- c. the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;
- d. the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;
- e. the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article."

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AMPHIBIA: SALAMANDRIDAE

SPECIES: *Lyciasalamandra antalyana*

SYNONYMS: *Mertensiella luschani antalyana*

COMMON NAMES: -

RANGE STATES: Turkey

IUCN RED LIST: Endangered (↓)

PREVIOUS EC OPINIONS: n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Lyciasalamandra antalyana* was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- On the forum www.eurofauna.com a Polish hobbyist expressed interest in obtaining this species.

CONSERVATION STATUS in range states

Lyciasalamandra antalyana was classified as Endangered in the IUCN Red List of Threatened Species because “its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is a suspected continuing decline in the extent and quality of its habitat” (Tok *et al.*, 2006).

L. luschani (and presumably *L. antalyana*, given recent taxonomic changes) is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Turkey are obliged to implement national legislation for the protection of species listed on the Appendices. (See introduction to the genus for further details).

TURKEY: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *L. antalyana* was endemic to Turkey, where it is restricted to a small area in south-western Anatolia. It was described as locally abundant, with a total of eight adjacent populations (IUCN *et al.*, 2006).

Frost (2008) reported that *L. antalyana* was “known from isolated populations: in the vicinity of the type locality near Kedetler (about 17 km southwest of Antalya); north of Antalya in the mountains north to Thermessos; and around the village of Yaga Köyü, all in southwestern Turkey.”

The major potential threats to *L. antalyana* within its restricted range, were reported to be habitat loss, caused by forest fires, and overcollection for scientific purposes (IUCN *et al.*, 2006). IUCN *et al.* (2006) stated that “currently, there is only limited habitat loss taking place, since the human population in its range is generally low, and there is little

tourism in the area where it is found, but with ongoing development in the region habitat loss could become more severe”.

Regarding conservation measures of the species, it was reported to be found within Termessos National Park (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES: *Lyciasalamandra atifi*

SYNONYMS: *Mertensiella luschani atifi*

COMMON NAMES: -

RANGE STATES: Turkey

IUCN RED LIST: Endangered (↓)

PREVIOUS EC OPINIONS: n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Lyciasalamandra atifi* was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown.

No national trade statistics were identified for *L. atifi* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

L. atifi was classified as Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is a suspected continuing decline in the extent and quality of its habitat (Tok *et al.*, 2006).

L. luschani (and presumably *L. atifi*, given recent taxonomic changes) is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Turkey are obliged to implement national legislation for the protection of species listed on the Appendices (See introduction to the genus for further details).

TURKEY: The Global Amphibian Assessment (IUCN *et al.*, 2006) reported this species to be endemic to southern Anatolia, Turkey, "where it has been recorded from Serik, Turbelinaz, Fersin, Dikmen, Manavgat, Gayi, Gollepe and Selge". Likewise, Frost (2008) reported that *L. atifi* was distributed "from the region of Alanya in the East to Selge in the West, southern Anatolia, Turkey." It was reported to be common within its limited range (IUCN *et al.*, 2006).

Within its naturally restricted range, the major potential threats to *L. atifi* were reported to be habitat loss (caused by forest fires) and overcollection for scientific purposes (IUCN *et al.*, 2006). It was reported that currently, only limited habitat loss was taking place

(as there is a low human population and little tourism within *L. atifi's* range), but with ongoing development in the region habitat loss could become more severe (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Lyciasalamandra billae</i>
SYNONYMS:	<i>Mertensiella luschani billae</i>
COMMON NAMES:	-
RANGE STATES:	Turkey
IUCN RED LIST:	Critically Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that this species was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for *L. billae* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

L. billae was classified as Critically Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 100 km², all individuals are in only one location, and there is a suspected continuing decline in the extent and quality of its habitat (Tok *et al.*, 2006).

L. luschani (and presumably *L. billae*, given recent taxonomic changes) is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Turkey are obliged to implement national legislation for the protection of species listed on the Appendices (See introduction to the genus for further details).

TURKEY: *L. billae* was reported to be restricted to the east slope of the Saricinar Daglari, south-west of Antalya, Turkey, where it was described as common within its restricted range (IUCN *et al.*, 2006).

Frost (2008) reported that *L. billae* was “known only from the National Park of Olympos-Beydaglari, southwestern Turkey.”

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that “there is generally a low human population density and little tourism in the area where it is found, and limited habitat

loss is taking place. However, a potential future threat is the loss of habitat due to ongoing development in the region and forest fires, as well as overcollection for scientific purposes." EDGE (2008) reported that due to its naturally restricted range, *L. billae* was also vulnerable to factors such as ecological disasters and climate change.

Regarding conservation measures, *L. billae* was reported to have been recorded in the Catlicak Protected Area (IUCN *et al.*, 2006). EDGE (2008) listed protection by national legislation and establishment of a captive breeding programme as urgent conservation actions needed for this species.

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES: *Lyciasalamandra fazilae*

SYNONYMS: *Mertensiella luschani fazilae*

COMMON NAMES: -

RANGE STATES: Turkey

IUCN RED LIST: Endangered (I)

PREVIOUS EC OPINIONS: n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Lyciasalamandra fazilae* was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for *L. fazilae* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

L. fazilae was classified as Endangered in the IUCN Red List of Threatened Species because its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is a suspected continuing decline in the extent and quality of its habitat (Tok *et al.*, 2006).

L. luschani (and presumably *L. fazilae*, given recent taxonomic changes) is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Turkey are obliged to implement national legislation for the protection of species listed on the Appendices (See introduction to the genus for further details).

TURKEY: *L. fazilae* was reported to be restricted to the southern Anatolian coast, Turkey, found from north-east of Fethiye to the western shore of Koycegiz Golu (IUCN *et al.*, 2006). It was reported to be “not very common” (IUCN *et al.*, 2006).

Frost (2008) reported that *L. fazilae* was “known from the region between Gökçeovacik and Üzümlü, southwestern Anatolia, Turkey; also known from the adjacent islands including Tersabe and Domuz.”

Within its naturally restricted range, the major potential threats to *L. fazilae* were reported to be habitat loss (caused by forest fires) and overcollection for scientific purposes

(IUCN *et al.*, 2006). IUCN *et al.*,(2006) reported that only limited habitat loss was taking place (as there is a low human population and little tourism within *L. fazilae's* range), but with ongoing development in the region habitat loss could become more severe.

Regarding conservation measures, it was reported that *L. fazilae* was present in some protected forests, although these are not national parks (IUCN *et al.*, 2006).

REFERENCES:

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Lyciasalamandra flavimembris</i>
SYNONYMS:	<i>Mertensiella luschani flavimembris</i>
COMMON NAMES:	-
RANGE STATES:	Turkey
IUCN RED LIST:	Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Lyciasalamandra flavimembris* was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for *L. flavimembris* and no offers for sale, discussion indicating interest in keeping this species as a pet or care sheets for captive specimens were found during the web survey.

CONSERVATION STATUS in range states

Lyciasalamandra flavimembris was classified as Endangered in the IUCN Red List of Threatened Species because "its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is a suspected continuing decline in the extent and quality of its habitat" (Tok *et al.*, 2006).

L. luschani (and presumably *L. flavimembris*, given recent taxonomic changes) is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Turkey are obliged to implement national legislation for the protection of species listed on the Appendices (See introduction to the genus for further details).

TURKEY: IUCN *et al.* (2006) reported that "this species ranges between Marmaris and Ula along the south-west Anatolian coast, Turkey, from sea level up to 600m a.s.l." and that it "appears to be a rare species". Frost (2008) reported that *L. flavimembris* was "restricted to the region of Marmaris, southwestern Turkey."

Within its naturally restricted range, the major potential threats to *L. flavimembris* were reported to be habitat loss (caused by forest fires) and overcollection for scientific purposes (IUCN *et al.*, 2006). It was reported that currently, only limited habitat loss was taking place,

since the human population in its range is generally low, and there is little tourism in the area where it is found (IUCN *et al.*, 2006).

With regards to conservation measures for the species, it was reported that "it is present in some protected forests, although these are not national parks" (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Lyciasalamandra luschani</i>
SYNONYMS:	<i>Mertensiella luschani</i> , <i>Salamandra luschani</i>
COMMON NAMES:	Luschan's Salamander (English), Lycian Salamander (English), Salamandre de Lycie (French), Lykischer Salamander (German)
RANGE STATES:	Greece, Turkey
IUCN RED LIST:	Endangered (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Lyciasalamandra luschani* was used nationally and internationally for specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- There was much discussion and confusion among hobbyists on forums including www.caudata.org regarding recent amendments to the EU Habitats and Species Directive and the legality of keeping *L. luschani* and other species listed on Annex IV(a). Discussion indicated that some hobbyists may have this species in their possession.
- A hobbyist expressed interest in obtaining *Lyciasalamandra l. luschani* on the Dutch forum www.caudata.nl.

CONSERVATION STATUS in range states

Lyciasalamandra luschani was classified as Endangered in the IUCN Red List of Threatened Species because "its extent of occurrence is less than 5,000 km², all individuals are in fewer than five locations, and there is a suspected continuing decline in the extent and quality of its habitat" (Papenfuss *et al.*, 2004).

L. luschani is listed in Appendix II of the Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) (as *Mertensiella luschani* /*Salamandra luschani*). Parties to this convention including Greece and Turkey are obliged to implement national legislation for the protection of species listed on the Appendices (See introduction to the genus for further details).

GREECE: An endemic subspecies, *Lyciasalamandra luschani basoglui*, was reported to be found on the Greek island of Kastellorizo (= Megisti), just off the Turkish coast (IUCN *et al.*, 2006).

L. luschani is listed on Annex II(a) and Annex IV(a) of the European Union Habitat and Species Directive (1992) (as *Mertensiella luschani* and *Salamandra luschani* respectively). The following information was taken from Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora:

“Article 12

1. Member States shall take the requisite measures to establish a system of strict protection for the animal species listed in Annex IV (a) in their natural range, prohibiting:

- (a) all forms of deliberate capture or killing of specimens of these species in the wild;
- (b) deliberate disturbance of these species, particularly during the period of breeding, rearing, hibernation and migration;
- (c) deliberate destruction or taking of eggs from the wild;
- (d) deterioration or destruction of breeding sites or resting places.

2. For these species, Member States shall prohibit the keeping, transport and sale or exchange, and offering for sale or exchange, of specimens taken from the wild, except for those taken legally before this Directive is implemented.

3. The prohibition referred to in paragraph 1 (a) and (b) and paragraph 2 shall apply to all stages of life of the animals to which this Article applies.”

TURKEY: IUCN *et al.* (2006) reported that *L. luschani* “ranges from Fethiye to Finiki, in south-western Anatolia, Turkey, where it apparently has a fragmented distribution,” and that it is “common to fairly abundant.”

Frost (2008) reported that *L. luschani* was “known only from the vicinity of the type locality (Dodurga) at elevation of 200-400 m and from Letoon, southwestern Anatolia.”

IUCN *et al.* (2006) reported that “within its naturally restricted range, the major potential threat to this species is habitat loss caused by forest fires, and overcollection for scientific purposes. Currently, there is only limited habitat loss taking place, since the human population in its range is generally low, and there is little tourism in the area where it is found, but with ongoing development in the region habitat loss could become more severe.”

AmphibiaWeb (2008) discussed threats to *L. luschani*, reporting that “species with such narrow ecological demands are easily threatened by small changes in their environment”, and that “increasing popularity of the Turkish Mediterranean coast as a tourist destination can pose a serious threat for this species (Boehme *et al.*, 1999).”

IUCN *et al.* (2006) reported that *L. luschani* was found in some protected forests in Turkey.

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Lyciasalamandra luschani

Papenfuss, T., Sparreboom, M., Ugurtas, I. H., Kuzmin, S., Anderson, S., Denoël, M., Eken, G., Kiliç, T., and Gem, E. 2004. *Lyciasalamandra luschani*. In: IUCN 2007. 2007 IUCN Red List of Threatened Species URL: www.iucnredlist.org Accessed: 9-9-2008.

REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

INTRODUCTION TO THE GENUS *PARAMESOTRITON*:

According to the Global Amphibian Assessment (IUCN *et al.*, 2006), the genus *Paramesotriton* consists of seven species (Table 2), two of which are reviewed in this report (*P. deloustali* and *P. fuzhongensis*) and one of which was reviewed for SRG 42 (*P. hongkongensis*).

However, Miller (2004) reported that there is considerable taxonomic confusion surrounding this genus:

“Warty Newts are a rather understudied group, at present time, and require some work in the future in terms of classification. In general, there are seven recognized species, *P. caudopunctatus*, *P. chinensis*, *P. deloustali*, *P. fuzhongensis*, *P. guangxiensis*, *P. hongkongensis*, and *P. laoensis*. This set is widely accepted, however, some would argue the validity of this arrangement. *P. hongkongensis*, *P. guangxiensis*, and *P. fuzhongensis* are sometimes treated as synonyms or subspecies of *P. chinensis*, despite some notable physical differences. Many do not adhere to the validity of *P. fuzhongensis* at the species level, and instead consider it a synonym of *P. guangxiensis*. To further complicate matters, *P. guangxiensis* is often treated as a synonym of *P. deloustali*, a theory that sends *P. fuzhongensis* further into obscurity. Some have argued that *Paramesotriton* populations in northern Vietnam and southern Guangxi Province, China, consist of *P. guangxiensis*, while the rare *P. deloustali* are confined only to the Tam Dao region of Vietnam. On the other hand, many propose that *P. deloustali* are found outside the Tam Dao region, and even extend as far as southern China.... Recent molecular data (Lu, *et al.*, 2004) have shown that *P. fuzhongensis* is indeed a legitimate species, distinct from *P. guangxiensis*. Further studies based on morphological and molecular studies are needed to properly define or differentiate *P. deloustali* and *P. guangxiensis*.”

Problems identifying *Paramesotriton* spp. have reportedly been highlighted in the pet trade, where unidentifiable species have shown up and been designated either *P. fuzhongensis* or *P. guangxiensis* (Miller, 2004). Sparreboom (2008) reported that “Before *P. fuzhongensis* was described, Chinese newts obtained via the pet trade were often labelled *P. chinensis*, being the species most similar to the animal at hand.” Miller (2004) stated that “in reality, there are probably some undecided species or subspecies that are simply placed in the most similar appearing species, for lack of better knowledge.”

Web surveys conducted on *P. deloustali* and *P. fuzhongensis* for this report also found evidence to suggest that *Paramesotriton* spp. were being sold under various names, and that hobbyists and specialists were finding it difficult to identify them correctly.

Following SRG 42 it was recommended that *P. hongkongensis* be placed in Annex D of Council Regulation 338/97. However, given the taxonomic confusion surrounding *Paramesotriton* spp., the indication that all seven species appear, at least to some extent, to be in the international pet trade, that international trade is considered by IUCN a threat to four of the species (Table 2), and that specimens in the pet trade are often incorrectly identified and traded under a different name, the entire genus may warrant listing on Annex D.

Table 2. Overview of species in the genus *Paramesotriton*, with information on utilisation taken from the Global Amphibian Assessment (IUCN *et al.*, 2006).

Taxon	IUCN Red List Status 2008	Range State	Type of Trade	Purpose	Time of international trade as a threat	Comment
<i>Paramesotriton caudopunctatus</i>	NT	China	Subsistence	Medicine		This species is affected by habitat destruction and degradation for dam construction and subsistence wood collecting, and also by harvesting for use in traditional Chinese medicine. Small numbers are exported for the international pet trade, though probably not at a level to constitute a threat to the species.
<i>Paramesotriton chinensis</i>	LC	China				It is susceptible to habitat destruction and degradation. Small numbers of this species are exported for the international pet trade, but probably not at a level to constitute a threat to the species.
<i>Paramesotriton deloustali</i>	VU	Viet Nam	Subsistence (food); Subsistence and National (Medicine); National and International (Pets)	Food, Medicine and Pets	Past	Habitat loss, due to agriculture and human settlement, pollution, and harvesting for food, medicine and the pet trade, are threats to this species.
<i>Paramesotriton fuzhongensis</i>	VU	China	Subsistence, National and International	Pets	Present and Future	The major threats to this species include habitat loss due to subsistence wood collection, and over-harvesting for the pet trade.
<i>Paramesotriton guanxiensis</i>	EN	China				The major threat to this species is habitat loss and degradation due to agriculture.
<i>Paramesotriton hongkongensis</i>	NT	China, Hong Kong	Subsistence, National and International	Pets	Past, Present and Future	A particular threat to this species is the collection of significant numbers for the pet trade.
<i>Paramesotriton laoensis</i>	DD	Laos	Subsistence and National (Medicine); International (Pets)	Medicine and Pets	Future	The main threat is local harvesting of it for medicine and food. It will potentially be collected for the pet trade in the future.

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Newts URL:
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list/paramesotriton/deloustali](http://science.naturalis.nl/hosted-sites/salamanders/salamanders-of-the-old-world/species-list/paramesotriton/deloustali) Accessed: 25-9-2008.

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Paramesotriton deloustali</i>
SYNONYMS:	<i>Mesotriton deloustali</i>
COMMON NAMES:	Vietnamese Salamander (English), Vietnamese Warty Newt (English)
RANGE STATES:	Viet Nam
IUCN RED LIST:	Vulnerable (↓)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Paramesotriton deloustali* was used at subsistence level for food (human), at subsistence level and nationally for medicine (human and veterinary) and nationally and internationally for pets/display animals. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be increasing (IUCN *et al.*, 2006).

Van Sang *et al.* (2003) reported that in northern Viet Nam, *P. deloustali* was sold at local markets and in villages for pets; that the dry-form was used as a traditional medicine to cure diseases such as asthma and rickets; and that the species was rarely eaten by local people, apparently because of its bad smell and strange body form. The local pet trade was thought to be the main reason for the decreasing population at Tam Dao National Park (Van Sang *et al.*, 2003).

A study of illegal wildlife trade in Ba Be National Park, Viet Nam (Dang *et al.*, 2003), found evidence that *P. deloustali* was traded in the region (a dried specimen was reported in a village), although occurrence of the species in trade was thought to be rare.

Miller (2004) reported that "*P. deloustali* are one of the rarest amphibian species, and have been seldom bred in captivity" and that "Despite *P. deloustali*'s government and international protection, individuals inevitably show up in the pet trade, especially in local shops in Vietnam and surrounding countries."

Sparreboom (2008) reported that: "the Tam Dao Warty Newt has been bred in captivity on several occasions (Rehák, 1984; Henry Janssen, in Thorn & Raffaelli, 2001) and is subject of research and breeding attempts in Vietnam (Nguyen, 2000)."

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- On the international forum www.caudata.org, a Slovakian hobbyist posted photographs of a subadult *P. deloustali* reported to have been obtained from Germany, a British hobbyist expressed interest in obtaining a specimen of this species and several

hobbyists reported keeping this species. One German hobbyist reported that “*P. deloustali* are a very aggressive species.”

- On the international forum www.caudata.org a hobbyist commented “My local petshop now offers ‘Warty Newts’ or ‘Giant Firebellies’... visually they are (99% confidence) *Paramesotriton guanxiensis*”, whereas another hobbyist commented “from what I’ve seen on the net, if a *Paramesotriton* is clearly not *hongkongensis*, *chinensis*, *caudopunctatus*, or *fuzhongensis*, it gets labeled *guangxiensis* online for lack of any better information... It sounds to me from your description (real giants, living dinosaurs) that they may be a form of *Paramesotriton* that I think is either *P. deloustali* or a new species.” Other hobbyists also reported having brought *Paramesotriton* spp. sold under various different names, for which they were unable to identify correctly.
- A German hobbyist reported that he had been breeding *P. deloustali* for many years (www.caudata.org/forum).
- Listed on the German pet shop website www.animal-paradies.de, but currently not available.
- A care sheet and photos of specimens owned by a hobbyist were posted on the German website www.salamanderseiten.de, and care information was also found on the Austrian website www.salamanderland.at.

CONSERVATION STATUS in range states

P. deloustali was classified as Vulnerable in the IUCN Red List of Threatened Species in view of its area of occupancy of less than 2,000 km², with all individuals in fewer than ten locations, and a continuing decline in the extent and quality of its habitat, and in the number of mature individuals (van Dijk & Truong, 2004).

VIET NAM: IUCN *et al.* (2006) reported that *P. deloustali* was originally known only from the Tam Dao mountain ridge in northern Viet Nam. However, it has since been recorded in more than ten localities in Bac Kan, Ha Giang, Yen Bai, Tuyen Quang, Tay Nguyen, and Lao Cai Provinces, all in Viet Nam. They reported that its population was apparently relatively stable and that it was not particularly rare locally.

Frost (2008) reported that *P. deloustali* occurred in montane regions of northern Viet Nam in the provinces of Ha Giang, Vinh Phu, Lao Cai, Bac Thai, and southern Cao Bang, and was expected to occur in adjacent Yunnan, China.

Tordoff *et al.* (2002) collected specimens of a salamander believed to be *P. deloustali* during a rapid field survey of Van Ban District, Lao Cai Province, Viet Nam. If its identification is confirmed as *P. deloustali*, this was reported to be “the first record of the genus *Paramesotriton* from the Hoang Lien mountains, despite extensive survey effort in other parts of the mountain range”. One of the major threats to amphibians in Van Ban district was reported to be habitat loss. Hunting for the wildlife trade was reported to be a threat in the area, but this was targeted primarily at snakes and turtles (Tordoff *et al.*, 2002).

A population of *P. deloustali* was recorded during a rapid field survey of Xin Man district, Ha Giang province, extending the distribution of the species (Hung *et al.*, 2002).

The Global Amphibian Assessment reported that habitat loss (due to agriculture and human settlement), pollution, and harvesting for food, medicine and the pet trade were threats to this species (IUCN *et al.*, 2006).

In a recent feasibility study for a *P. deloustali* conservation program in Ba Be and Cho Don Districts, Bac Kan Province (Van Sang *et al.*, 2003), the salamander was recorded in 19 streams in evergreen forest and secondary forest, with 156 individuals collected from the area (and subsequently released). Habitat loss and incidental poisoning from fishing in the streams were identified as the main current threats to the species in the area, with hunting activities and pollution posing a less significant threat. The species was reported not to be hunted for food or medicine within the survey area. Proposed conservation measures included a Community-based Conservation and Awareness Programme which would involve creation

of a Species Conservation Area managed by local villages, and include an education and awareness-raising program among local communities.

P. deloustali's habitat in Tam Dao was reported to have radically changed as a result of political and economical changes, with logging, construction, industrialisation and development for tourism identified as major threats, leading to habitat loss and degradation (Miller, 2004). It was reported that "In 1997, *P. deloustali* were considered extinct in the wild, after chemical runoff from a nearby hotel construction site polluted the salamanders' only known habitat, an artificial water basin in the Tam Dao mountain Range. Recently, the Tam Dao mountain range has been proclaimed a Natural Reserve, which has halted logging of the surrounding forests, and decreased nearby construction" (Miller, 2004).

Trai *et al.* (2004) reported that *P. deloustali* was exploited by local communities for traditional medicine and as ornaments in the Ba Be/Na Hang Conservation Complex.

Sparreboom (2008) reported that *P. deloustali* was "kept as an ornament in some Hanoi homes and its habitat, at least in Tam Dao, is under pressure (McRae, 1999; Martens, 2003)."

P. deloustali was reported to occur in several protected areas: Ba Be National Park and Tam Dao, which is an undefined National Park (IUCN *et al.*, 2006). It was also reported to occur in two locations in a region proposed for a National Park (Lao Cay and Yen Bai) and to be included under Viet Nam protective legislation (IUCN *et al.*, 2006).

It was reported in Hung *et al.* (2002) that *P. deloustali* was listed as Endangered in the Red Databook of Viet Nam (Tran *et al.*, 1992) and that exploitation and utilisation of this species was strictly prohibited. Van and Tap (2008) reported that Viet Nam's management of threatened and endangered species was governed by Decree 32/2006/ND-CP. This decree divides the species into two groups - those for which trade and commercial exploitation are forbidden (I) and those for which trade is restricted (II). *P. deloustali* was listed on Group II, meaning that trade is restricted and requires ministerial approval.

Van Sang *et al.* (2003) reported that "presently, there is no particular programme for salamander conservation in Vietnam."

IUCN *et al.* (2006) recommended that managed *ex-situ* assurance colonies among zoos and competent hobbyists should be set up to aid conservation of this species (IUCN *et al.*, 2006).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES: *Paramesotriton fuzhongensis*

SYNONYMS: -

COMMON NAMES: Wanggao Warty Newt (English)

RANGE STATES: China

IUCN RED LIST: Vulnerable (L)

PREVIOUS EC OPINIONS: n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Paramesotriton fuzhongensis* was used for pets/display animals at a subsistence level, nationally and internationally. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be decreasing (IUCN *et al.*, 2006).

Sparreboom (2008) described the species as "difficult to keep and appears sensitive to stress, such as disturbances in the aquarium or exposure to other newts."

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Advertised for sale on the French website www.lafermetropicale.com for €19.
- Advertised for sale on the German website www.reptilica.de for €19.50.
- Listed on the German pet shop website www.zoo-scalar.de, but currently not in stock.
- Hobbyists claimed to own *P. fuzhongensis* on the German forums leopardgecko-forum.forumieren.com and www.ter-ex-talk.com and the French forum <http://urodeles.forumpro.fr>.
- Several hobbyists reported buying/owning what they believed to be *P. fuzhongensis* on the international forum www.caudata.org. A hobbyist in Canada reported buying one from a local pet shop for \$10 Canadian and commented "I wonder if this is a species that has become more common in the pet trade? I don't ever remember seeing them before. At least not in my part of Canada." A European hobbyist reported paying €14 each. It was also highlighted that it is difficult to distinguish *P. fuzhongensis* from lookalike species and noted that pet shops commonly mislabelled these species.
- On the forum www.repticzone.com/forums a hobbyist posted photographs of a newt he'd recently bought, asking members to help with identification. The discussion concluded that the specimen was probably *P. fuzhongensis*.

- Information on captive care of *P. fuzhongensis* was found on the French website www.batraciens.net, the German website www.zoo-reschke.de and the Austrian website www.salamanderland.at.

CONSERVATION STATUS in range states

P. fuzhongensis was classified as Vulnerable in the IUCN Red List of Threatened Species in view of its extent of occurrence of less than 20,000 km², with all individuals in fewer than ten locations, and a continuing decline in the extent and quality of its habitat and in the number of mature individuals (Ermi & Zhigang, 2004).

CHINA: The Global Amphibian Assessment (IUCN *et al.*, 2006) described *P. fuzhongensis* as “a rare species...only known from north-eastern Guangxi Province (Zhongshan, Fuchuan and Gongchen Counties) in China, from 400-1,200m a.s.l.” (IUCN *et al.*, 2006). Likewise, Frost (2008) reported that *P. fuzhongensis* occurred in northeastern Guangxi, China.

The major threats to *P. fuzhongensis* were reported to include habitat loss due to subsistence wood collection and over-harvesting for the pet trade (IUCN *et al.*, 2006).

Feng *et al.* (2007) reported that the disease chytridiomycosis (a major threat to amphibian populations in some countries) had not yet become a problem in China.

The Chinese Species Information Service (CSIS, 2008) described *P. fuzhongensis* as “not threatened” and no threats were listed for this species.

Regarding conservation measures, IUCN *et al.* (2006) reported that: “A few protected areas are present within the range of this species. Some European herpetologists have successfully bred the species in captivity.”

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Salamandra algira</i>
SYNONYMS:	-
COMMON NAMES:	-
RANGE STATES:	Algeria, Morocco, Tunisia ?, Ceuta (Spain)
IUCN RED LIST:	Vulnerable (L)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Salamandra algira* was used internationally for pets/display animals and specimen collecting. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be unknown (IUCN *et al.*, 2006).

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Advertised on the British websites www.reptilica.co.uk for £105 (but were currently unavailable) and www.pets-classifieds.co.uk (prices available on request).
- Captive bred adult *S. a. algira* seen advertised on the British website www.dartfrog.co.uk for £85 a pair. Reported to have been acquired from a breeder in Germany.
- Advertised on the German website www.reptilica.de for €105, currently not in stock.
- Adults advertised for sale on the French website www.lafermetropicale.com for €79.
- The Italian website www.dendrobatesitalia.it offered a report on the 2003 'Terraristika' Hamm show (Germany), including an overview of price ranges for several species. *Salamandra algira* specimens were reportedly offered for €65.
- Information on captive care of *Salamandra* spp., including *Salamandra algira*, found on the German website www.ag-urodela.de.
- Care sheets for *S. algira* found on the Dutch website www.salamanders.nl and the German website <http://home.hetnet.nl>.
- Some discussion between hobbyists in the web forum 'www.caudata.org/forum/' about keeping and breeding of fire salamanders including *S. algira*. Several hobbyists in Europe and the United States reported keeping this species, particularly the subspecies *S. algira tingitana*.
- On the international forum www.caudata.org an American hobbyist reported seeing *S. algira* advertised on <http://market.kingsnake.com>. A Dutch hobbyist reported "A German firm has imported several hundreds over the past year from Morocco so the

area must be drained... The good thing is that these animals seem to do pretty well in captivity and offspring is regularly offered.”

- It was reported that: “In the beginning of 2003 there were rumours that Terraristik Grosshändler Thorsten Holtmann in Oberhausen, Germany, had received a number of North African fire salamanders. ...The animals have been caught probable near of Taza, High Atlas, Morocco (S. Bogaerts)” (Beukema, 2004).

CONSERVATION STATUS in range states

TAXONOMIC NOTE: IUCN *et al.* (2006) reported that “Recent morphological, ecological and genetic studies on *Salamandra algira* indicate that there are at least three differentiated phenotypes and genotypes with parapatric distribution. *Salamandra algira* must be considered a complex of more than one species. A taxonomic revision of this complex is needed (Bogaerts & Donaire-Barroso, 2003)”.

S. algira was classified as Vulnerable in the IUCN Red List of Threatened Species because its extent of occurrence is less than 20,000 km² and its area of occupancy is less than 2,000 km², its distribution is severely fragmented, and there is a continuing decline in the extent and quality of its forest habitat in Morocco and Algeria (Donaire-Barroso *et al.*, 2004).

IUCN *et al.* (2006) reported that *S. algira* occurred in small relict populations that were heavily threatened by deforestation, overgrazing by domestic livestock and channelization of water sources for irrigation. The species was reported to be locally threatened by mortality on roads. Collection in small numbers for the international pet trade was also reported to be a potential threat, although further investigation was recommended to determine the impact of trade on populations.

On AmphibiaWeb (2008), possible reasons for the decline in *S. algira* were reported to be habitat modification from deforestation, or logging related activities, intensified agriculture or grazing and local pesticides, fertilizers, and pollutants.

Escoriza *et al.* (2006) reported that the fragmented and restricted distribution of *Salamandra algira* made them very sensitive to any alterations of their habitat, especially those linked to human activities that directly or indirectly produce aridification.

Regarding conservation measures, *S. algira* was reported to be listed in Appendix III of the Bern Convention and is protected by national legislation in Spain (IUCN *et al.*, 2006). It is not known if this species occurs in any protected areas (IUCN *et al.*, 2006).

ALGERIA: Frost (2008) reported the presence of *S. algira* in northern Algeria. IUCN *et al.* (2006) reported that *S. algira* was generally a very rare species, especially in Algeria, restricted to coastal mountain ranges in the north.

S. algira was reported to have been found in three isolated regions in northeast Algeria (Blida Atlas, Great and Small Kabylia and Edough peninsula) and one region in northwest Algeria (Rarh el Maden) (Escoriza *et al.*, 2006).

MOROCCO: Escoriza *et al.* (2006) reported that *S. algira* had been found in five regions of Morocco: Tangitanian district, Western Rif mountains, Central Rif mountains, Middle Atlas and Beni Snassen massif. IUCN *et al.* (2006) reported that *S. algira* was locally common in the central and western Rif Mountains in Morocco. However, it was reported to be possibly extinct on Beni Snassen Mountain in north-eastern Morocco (IUCN *et al.*, 2006). Frost (2008) also reported the presence of *S. algira* in northern Morocco.

The presence of *S. algira* on the Beni Snassen massif was reported to have been based on observations of larvae in the 1980's (Melhaoui & Chavanon, 1989 in: Escoriza *et al.*, 2006) with no further records for 16 years (Escoriza *et al.*, 2006). However, Escoriza *et al.* (2006) rediscovered the species in 2004, finding six larvae and a dead adult male near a man-made fountain at 1300 m above sea level. Phylogenetic studies revealed that *S. a. algira* from the Beni Snassen was genetically distinct from the other two North African samples of *Salamandra* analyzed to date. The conservation status of this population was reported to be unknown at

present, but the area was reported to have suffered increased desertification over recent years, linked to canalisation of water sources (Escoriza *et al.*, 2006).

A possible subspecies of *S. algira* was also described in Morocco, west from Ceuta (Donaire-Barroso & Bogaerts, 2001; in: AmphibiaWeb, 2008).

TUNISIA: IUCN *et al.* (2006) reported that: "There is an uncertain record (based on a museum voucher specimen) of this species from northern Tunisia; the presence of *Salamandra algira* in Tunisia requires further verification". On AmphibiaWeb (2008) it was reported that *S. algira* may be extinct in Tunisia.

SPAIN: Several sources reported the presence of *S. algira* in Ceuta, an autonomous city of Spain (Martinez *et al.*, 1997; IUCN *et al.*, 2006; Frost, 2008) which is located south of the Strait of Gibraltar, bordering Morocco. Classified as 'Endangered' in the Spanish Red Data Book of amphibians and reptiles (Pleguezuelos *et al.*, 2002).

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REVIEW OF NON-CITES AMPHIBIA SPECIES THAT ARE KNOWN OR LIKELY TO BE IN
INTERNATIONAL TRADE

AMPHIBIA: SALAMANDRIDAE

SPECIES:	<i>Tylotriton kweichowensis</i>
SYNONYMS:	-
COMMON NAMES:	Kweichow Crocodile Newt (English)
RANGE STATES:	China
IUCN RED LIST:	Vulnerable (L)
PREVIOUS EC OPINIONS:	n/a

TRADE PATTERNS:

The Global Amphibian Assessment (IUCN *et al.*, 2006) reported that *Tylotriton kweichowensis* was used at subsistence level for medicine (human and veterinary) and internationally for pets/display animals. They estimated that 0-25% of specimens in commercial trade were wild-sourced. The trend in the level of wild offtake/harvest in relation to total wild population numbers over the last five years was reported to be increasing (IUCN *et al.*, 2006).

Carpenter *et al.* (2007) reported that within China, the threat of amphibian trade for the pet market was "not considered to be high, except for certain *Tylotriton* salamanders that have restricted distribution, low reproductive potential and are subject to other collecting pressure."

The Chinese Species Information Service (CSIS, 2008) reported that *T. kweichowensis* were called 'Tu Hajie' and on sale for medical usage.

In a study of the wildlife trade in China, Lau *et al.* (1996) reported that: "Rare species such as the Kweichow Newt (*Tylotriton kweichowensis*) and Tailang Newt (*T. tailangensis*), which are protected in China, are being exported through Hong Kong to European countries and Argentina."

Bakkers & Beukema (2008) reported that collecting of *Tylotriton* spp. had increased enormously over recent years, from small private exports to massive international imports to Europe, Japan, the United States and Argentina, and that the pet trade now posed a serious threat to these species. Large numbers of harvested *Tylotriton* spp. were also reported to die during transportation, with only a few individuals arriving healthy enough to survive.

A mass die-off of a shipment of 100 *T. kweichowensis* imported by a Belgian pet shop was reported to have occurred in 2004, due to infection with Ranavirus (Pasmans *et al.*, 2008).

Pasmans *et al.* (2008) reported that wild caught *T. kweichowensis* were still imported in fair numbers into Europe, the USA and Japan because of their attractive appearance, despite the fact that China did not officially allow the export of these animals.

T. kweichowensis was reported to be quite rare in captivity, with juveniles difficult to raise (Bakkers & Beukema, 2008).

Staniszewski (1998) noted that *Tylototriton shanjing* was the species within the *Tylototriton* genus that was most likely to appear in the hobby, once due to large scale imports, recently as a result of small-scale European captive breeding projects.

No national trade statistics were identified for this species. The following information was derived from the web survey (as outlined in the section on methodology):

- Advertised on the British forum www.reptileforums.co.uk for £82.50 each or £150 a pair.
- Juveniles bred in captivity were advertised on the German forum www.feuersalamander.com (prices on request) and adults were advertised on the website www.reptilien-zierfische.de for €80.
- Captive bred specimens advertised for sale on the French forum <http://urodeles.forumpro.fr> by a British hobbyist for £15 each.
- On a Portuguese forum (www.amphibio.org) one hobbyist mentioned owning *T. kweichowensis* juveniles.
- One hobbyist mentioned owning a specimen of the species on the Spanish forum www.faunaexotica.net.
- On the international forum www.caudata.org a British hobbyist reported purchasing five *T. kweichowensis* for £65 and another British hobbyist advertised captive-bred specimens for £15 each specimen, and £10 for 15 eggs. There was also discussion about poor survival of wild-caught specimens. One hobbyist commented "I heard from (experienced) Dutch keepers that their *T. kweichowensis* are all dead by now. I still have 9 out of 25 animals left ...but the remaining animals are not doing well, despite intensive treatment...I know that healthy *Tylototriton* are voracious and extremely hardy animals... BUT wildcaught animals invariably do not seem to thrive."
- On the Dutch forum <http://home.hetnet.nl> there were various discussions about the poor survival of imported *T. kweichowensis*. Several hobbyists reported that nearly all *T. kweichowensis* imported to Antwerp had died. Another commented "Again *Tylototriton kweichowensis* has shown up in trade, this time at reptilia in Den Haag and Utrecht. Hopefully it will go better with these animals. In the meanwhile they have again been sold off." One hobbyist reported that he would bring captive bred specimens for sale at a show in Hamm, Germany.
- Care sheets or advice on keeping/breeding this species were found on the following websites: www.tylototriton.org (Dutch), www.aquariumverein-rosenheim.de (German) and www.batraciens.net (French).

CONSERVATION STATUS in range states

T. kweichowensis was classified as Vulnerable in the IUCN Red List of Threatened Species because its area of occupancy is less than 2,000 km², its distribution is severely fragmented, and there is continuing decline in the extent and quality of its habitat, and in the number of mature individuals (Datong *et al.*, 2004).

CHINA: IUCN *et al.* (2006) and Frost (2008) reported that *T. kweichowensis* was found in western Guizhou and north-eastern Yunnan provinces, China, from 1,500-2,400m above sea level.

IUCN *et al.* (2006) commented that "There is little information on the population of this species, but it is probably common in its known localities. However, it is believed to be in decline."

Major threats to *T. kweichowensis* were reported to be habitat destruction and degradation caused by industry (brick factories) and mining (IUCN *et al.*, 2006). It was also reported to be collected for use in traditional Chinese medicine and a small number of individuals were reported to be traded in the international pet markets (IUCN *et al.*, 2006).

Feng (2007) found that stream breeding, high-elevation forest amphibians such as *Tylostotriton* spp. had a high likelihood of being seriously threatened in China, and that salamanders in general were more threatened than frogs and toads. The main threats to China's amphibians were reported to be habitat loss, pollution and overharvesting.

Pasmans *et al.* (2008) reported that collection of wild-caught adult *T. kweichowensis* during the breeding period might compromise the survival of local populations.

Regarding conservation measures, IUCN *et al.* (2006) reported that *T. kweichowensis* was a Class II State Major Protected Wildlife in China. This level of protection apparently prohibits the species being caught, sold or purchased without a license, which must be approved by the relevant department of wildlife administration (<http://www.china.org.cn/english/environment/34349.htm>).

The range of *T. kweichowensis* was reported to overlap with a few small protected areas in China and the species was reported to be bred in captivity in both China and Europe (IUCN *et al.*, 2006).

Bakkers & Beukema (2008) reported that the main actions necessary to conserve Crocodile salamanders were to i) conduct a complete phylogeographical analysis of the species, ii) assess the effect of different types of habitat destruction and iii) place them on CITES to stop the large mainly Chinese trade in currently all species.

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