

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



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

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of the African pygmy chameleons of the genera *Rhampholeon spp.* and *Rieppeleon spp.* in Appendix II. This proposed inclusion is in accordance with Article II paragraph 2(a) of the Convention, satisfying Criterion B, Annex 2(a) of Res. Conf. 9.24 (Rev. CoP16).

*A species should be included in Appendix II when, on the basis of available trade data and information on the status and trends of the wild population(s), at least one of the following criteria is met:...*

- B. *It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.*

<i>Rhampholeon (Rhampholeon) spectrum</i>	(Buchholz, 1874)
<i>Rhampholeon (Rhampholeon) temporalis</i>	(Matschie, 1892)
<i>Rhampholeon (Rhampholeon) viridis</i>	(Mariaux and Tilbury, 2006)
<i>Rhampholeon (Rhinodigitum) acuminatus</i>	(Mariaux and Tilbury, 2006)
<i>Rhampholeon (Rhinodigitum) uluguruensis</i>	(Tilbury and Emmrich, 1996)
<i>Rieppeleon brevicaudatus</i>	(Matschie, 1892)
<i>Rieppeleon kerstenii</i>	(Peters, 1868)

and in accordance with Article II paragraph 2(b) of the Convention, satisfying Criterion A, Annex 2 (b) of Res. Conf. 9.24 (Rev. CoP16).

*Species may be included in Appendix II in accordance with Article II, paragraph 2 (b), if either one of the following criteria is met:*

- A. *The specimens of the species in the form in which they are traded resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2 (a), or in Appendix I, so that enforcement officers who encounter specimens of CITES-listed species are unlikely to be able to distinguish between them;...*

<i>Rhampholeon (Bicuspis) gorongosae</i>	(Broadley, 1971)
<i>Rhampholeon (Bicuspis) marshalli</i>	(Boulenger, 1906)
<i>Rhampholeon (Rhinodigitum) beraduccii</i>	(Mariaux and Tilbury 2006)
<i>Rhampholeon (Rhinodigitum) boulengeri</i>	(Steindachner 1911)
<i>Rhampholeon (Rhinodigitum) chapmanorum</i>	(Tilbury 1992)
<i>Rhampholeon (Rhinodigitum) moyeri</i>	(Menegon et al., 2002)
<i>Rhampholeon (Rhinodigitum) platyceps</i>	(Günther, 1892)
<i>Rhampholeon (Rhinodigitum) nchisiensis</i>	(Loveridge, 1953)
<i>Rhampholeon (Rhinodigitum) nebulauctor</i>	(Branch et al., 2014)
<i>Rhampholeon (Rhinodigitum) maspictus</i>	(Branch et al., 2014)
<i>Rhampholeon (Rhinodigitum) bruessoworum</i>	(Branch et al., 2014)
<i>Rhampholeon (Rhinodigitum) tilburyi</i>	(Branch et al., 2014)

*Rhampholeon hattinghi*  
*Rieppeleon brachyurus*

(Tilbury & Tolley, 2015)  
(Günther, 1892)

*Rhampholeon spinosus* is already listed in CITES Appendix II under its old name *Bradypodion spinosum*.

B. Proponent

Central African Republic, Chad, Gabon, Kenya, Nigeria and the United States of America\*:

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Squamata

1.3 Family: Chamaeleonidae, subfamily: Brookesiinae

1.4 Genus, species or subspecies affected by this Proposal: These taxa have undergone frequent taxonomic changes and were originally all included in the genus *Rhampholeon*. Recent taxonomic revisions divide African pygmy chameleons into two genera, *Rhampholeon* and *Rieppeleon* and three sub-genera, *Bicuspis*, *Rhampholeon* and *Rhinodigitum* (Matthee *et al.*, 2004; Tilbury, 2010); the old taxonomy is still dominant in the trade market. There are currently 22 species of African pygmy chameleons (with the recent addition of *Rh. hattinghi*); this proposal seeks to include 21 species in Appendix II (Table 1).

1.7 Code numbers: N/A

2. Overview

African pygmy chameleons are the only chameleon species not yet covered by CITES; all other chameleons are listed in CITES Appendix II (except *Brookesia perarmata* listed in Appendix I). Originally classified as one genus, *Rhampholeon*, African pygmy chameleons were separated in 2004 into two genera and three species were assigned to the new genus of *Rieppeleon* (Matthee *et al.*, 2004) with the other species still included in the genus *Rhampholeon*. Four species were described as recently as 2014: *Rhampholeon (Rhinodigitum) bruessoworum*, *Rhampholeon (Rhinodigitum) tilburyi*, *Rhampholeon (Rhinodigitum) nebulauctor* and *Rhampholeon (Rhinodigitum) maspictus* (Branch *et al.*, 2014)

International trade in *Rhampholeon* spp. and *Rieppeleon* spp. is neither monitored nor regulated. The only exception is *Rhampholeon spinosus*, which is already listed in CITES Appendix II under its former name *Bradypodion spinosum*, and is classified as Endangered in the IUCN Red List 2011 (Mariaux, 2010b). The name change to *Rhampholeon* is thought to have created the misconception that its original CITES listing was concurrently dropped (Anderson, 2011). Within the international trade community *Rhampholeon* is still offered for sale and recorded under the old taxonomy.

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

Compared to the large bodied and more colourful genera, African pygmy chameleons have long been spared from large scale exploitation for the international pet trade. However, possibly as a consequence of trade restrictions for other chameleon taxa, pygmy chameleons are now commonly offered in the international pet trade, most notably in Europe and the USA. The main export country is Tanzania, followed by Equatorial Guinea, Cameroon, Guinea; and the Congo has also exported small numbers of pygmy chameleons to other countries (US Fish and Wildlife Service, LEMIS Database 2015).

From 1999-2014, the USA imported 175,841 African pygmy chameleons under the taxonomy *Rhampholeon* spp. and *Rieppeleon* spp.; all the species were taken from the wild and collected for commercial trade. Of these, 7,281 known *Rhampholeon* spp. and 156,949 *Rieppeleon* spp. were imported and brought into the United States. Trade data also shows that 11,349 *Rhampholeon* chameleons, not identified to the species level, were imported from 1999-2014, and 262 unidentified *Rieppeleon* spp. were imported from 1999-2006 (US Fish and Wildlife Service, LEMIS Database 2015).

There is much confusion about the identification of species because of their similarity. Shipments labeled "assorted pygmy chameleons" containing *Rhampholeon* spp. have included *Rh. spinosus* of varying quantities and often, specimens that have been wild caught. The "assorted pygmy chameleon" labeling impairs the ability to monitor trade of the *Rhampholeon spinosus* and is speculated to result in negative impacts to the wild population (Anderson, 2011) due to the similarity in external morphologies and the inability of exporters to distinguish between species (Mariaux and Tilbury, 2006). In the IUCN Red List ([www.iucnredlist.org](http://www.iucnredlist.org)) it is stressed that trade management is required for *Rh. spinosus* (Mariaux, 2010b), as well as updating CITES lists and national export quotas to reflect nomenclature changes (Tolley and Menegon, 2014c).

The IUCN Red List ([www.iucnredlist.org](http://www.iucnredlist.org)) lists four *Rhampholeon* spp. as Critically Endangered, four as Endangered, three as Vulnerable, six as Least Concern, and one as Near Threatened; the three *Rieppeleon* spp. are all listed as Least Concern. Several of the *Rhampholeon* spp. are locally restricted, including nine species that have a small distribution range and are endemic to biodiversity hotspots, such as the Eastern Ark Mountains of Tanzania and Kenya (Burgess *et al.*, 2007; Mariaux and LeBreton, 2010; Tilbury, 2010; Makda *et al.*, 2013; Branch *et al.*, 2014). This is concerning given that rare and more specialized species, such as African pygmy chameleons, tend to disappear with habitat loss and degradation (Gray, 1989; Akani *et al.*, 2001).

African pygmy chameleons are oviparous and have a low reproduction rate (Akani *et al.*, 2001; Coevoet, 2007; Hildenhagen, 2007); however, reproductive biology information is limited. Detailed studies are scarce, including data on population abundance; habitat loss and commercial trade are assumed to decimate the populations of African pygmy chameleons if conservation measures are not implemented (Tilbury, 2010; Patrick *et al.*, 2011). Captive breeding is limited and mortality in many cases is high (Gostner, 2009).

Ongoing confusion regarding the nomenclature of species in international trade and similarity in appearance and numerous unspecified/incorrect trade records (i.e., *Rhampholeon* spp.) are strong arguments for a listing of both genera. An Appendix II listing of this family will ensure legal and sustainable international trade in African pygmy chameleons. The threats from extensive and continual habitat alteration and destruction provide additional reasons for listing African pygmy chameleons.

### 3. Species characteristics

#### 3.1 Distribution

African pygmy chameleons occur only within continental African counties including Mozambique, Zimbabwe, Zambia, Tanzania, Cameroon, Equatorial Guinea, Gabon, Nigeria, Burundi, Democratic Republic of the Congo, Rwanda, Uganda, Malawi, Central African Republic, Kenya, Somalia and Ethiopia. The largest number of species is from Tanzania, where 12 pygmy chameleons are deemed native to this country. The range distributions of many *Rhampholeon* spp. are very limited due to specific habitat needs. Additional information on country range of each species is included in Appendix A.

#### 3.2 Habitat

In general, the majority of pygmy chameleons are restricted to wet indigenous forests in central and eastern Africa and equatorial forests of the Congo River basin and West Africa. At least seven

species are restricted to isolated hills and mountain massifs (Tilbury, 2010). *Rhampholeon* spp. tend to be confined to relict montane forests, while *Rieppeleon* spp. are less restricted in habitat requirements and are widely distributed in lowland forests and non-forest habitats (Anderson, 2005; Hildenhagen, 2007). Those pygmy chameleons living in montane forests generally exist in fragmented habitats and do not tolerate degraded or transformed habitats ([www.iucnredlist.org](http://www.iucnredlist.org); Tilbury, 2010). *Rieppeleon* spp. occur in a greater diversity of habitats including bushland and grassland, both moist and dry savannah (semi-desert), and coastal and dense woodland and thickets (Largen and Spawls, 2010). The ground cover of many of these consist of damp soils and considerable leaf litter in which eggs or juveniles can be hidden during the reproductive season (e.g., see Branch, 1988). All pygmy chameleons are diurnal and mainly terrestrial or in heights of about 0.5 meters (m). Some species, however, have been documented up to 6 m or higher off the ground. At night, pygmy chameleons climb up to a few feet off the ground into the lower undergrowth and shrubs to escape terrestrial nocturnal predators (Tilbury, 2010, Akani *et al.*, 2001). Additional information on the specific habitat of each species is in Appendix A.

### 3.3 Biological characteristics

Sexually mature males engage in an aggressive combat display towards rival males by assuming a species specific pattern and brighter colours. In many species an intermittent buzzing vibration has been noticed. This buzzing may be elicited from either sex when they are picked up, touched on their backs, or when males are confronting an opponent. It has been suggested that this behaviour is likely a mechanism to signal “keep away” (Tilbury, 2010).

All pygmy chameleons are oviparous and paired adults are quite commonly found in the wild. Although they have a low reproduction rate, several clutches of eggs may be laid per year in holes consisting of leaf litter and soil, often under logs and stone (Tilbury, 2010). Breeding occurs throughout the year and clutch size varies among species, ranging from 1-12 eggs (Akani *et al.*, 2001; Coevoet, 2007; Hildenhagen, 2007; Gostner, 2009; Tilbury, 2010). Hatching in the wild has been observed after 35 days for *Rh. marshalli* (Tilbury, 2010), while in captivity hatching time is prolonged between 60-113 days, depending on the species (Coevoet 2007; Gostner, 2009). It is assumed that two clutches of eggs may be laid per year (Tilbury, 2010). Sexual maturity varies among species; data suggests as early as three months and as late as 12 months (Hildenhagen, 2007; Tilbury, 2010).

### 3.4 Morphological characteristics

African pygmy chameleons are essentially dwarfed lizards, considered similar in appearance (Tilbury, 2010). The smallest species, *Rh. beraducci*, can reach a total length of 35-40 millimeters (mm), while the largest species, *Rh. marshalli*, can measure over 110 mm (Tilbury, 2010). Although the majority species have short, weak to non-prehensile tails, some species have relatively longer tails with significant prehensile function. Coloration consists mainly of shades of grey or brown, often resembling dead leaves; color pattern is not a consistent characteristic to distinguish the species. Some African pygmy chameleons are colorful; however, the hues and diversity of color are limited compared to that of the sub-family Chamaeleoninae. *Rhampholeon* spp. have two or three diagonal stripes along the flanks running in the anterodorsal to posteroventral direction (Mariaux and Tilbury 2006; Hildenhagen, 2007; Tilbury 2010). *Rieppeleon* spp. are typically brown, have horizontal stripes across their flanks running horizontal from the head to the tail. Coloration changes, such as becoming darker, have been observed when under stress, and they can often mimic dry leaves. Rostro-nasal processes are not present. Additional information on the morphological characteristics of each species is included in Appendix A.

### 3.5 Role of the species in its ecosystem

Pygmy chameleons have a role in the ecosystem, serving as both a predator and prey in the larger food web. They begin hunting early in the morning, with insect availability and consumption increasing as the sun rises until midday when prey availability lessens and thus, hunting subsides (Akani *et al.*, 2001). At dusk hunting is continued to a lesser degree as higher branches are sought for the evening. Pygmy chameleons feed mainly on insects, including beetles, juvenile cockroaches, moths, caterpillars, grasshoppers, woodlouse, spiders, termites and flies (Tilbury, 2010). Females have been found to exhibit a wider food niche than males (Akani *et al.*, 2001). Some suggest pygmy chameleons may be in competition with forest toads, *Bufo camerunensis*, which are believed to have a similar dietary spectrum (Akani *et al.*, 2001). Snakes are known predators of pygmy chameleons

(Akani *et al.*, 2001), while many birds, small mammals, toads, frogs and even the larger ground living spiders are also thought to hunt these chameleons (Tilbury, 2010).

#### 4. Status and trends

##### 4.1 Habitat trends

Due to their specialized habitat requirements, African pygmy chameleons are considered highly vulnerable to deforestation, resulting in loss of habitat (Tilbury, 2010). Tanzania and Nigeria are among the 10 countries with the largest annual forest net loss of 1.9% and 3.67% respectively, during the last decade. In Cameroon, annual loss of forest habitat is 1.07%, in Malawi 0.99%, and Equatorial Guinea 0.71% (FAO 2010). Eroding edges of the forest in many range states have suffered extensively due to expanding cultivation, fire, timber extraction for planks and conversion to charcoal, livestock grazing, and illegal logging (Critical Ecosystem Partnership Fund, 2005; Carrere, 2010; FAO, 2010). This habitat degradation has serious impacts on *Rhampholeon* populations because they are mostly dependent upon the forest biome, do not appear to adapt to degraded forest habitats, and most of the taxa are restricted to isolated forest patches (Matthee *et al.*, 2004; Tilbury, 2010). Subsistence agriculture such as maize and yams, as well as commercial-scale products like teak, coffee (at low and mid-elevation) and tea plantations (at high elevations) have altered habitats in many regions. Several range states, including Tanzania, Cameroon, and Republic of Congo, have palm oil plantations that are quickly expanding or are currently in preparation (Carrere, 2010). Other threats include unsustainable hunting, bauxite extraction and artisanal mining (Bayliss *et al.*, 2007; Tolley, 2014). The vegetation and fauna in many areas are also threatened by subsistence farming, uncontrolled firewood collection, cutting of stream bank trees and wild fires. Exotic plants are impacting habitats such as those in Mt. Mulanje and Mt. Mchese where invasive pines, originally planted for utilization, have now become a dominant species of the plateau (Bayliss *et al.*, 2007). The ecological integrity of forests also continues to be compromised through illegal extraction of the endemic species, such as Mulanje Cedar (*Widdringtonia whytei*) in Mt. Mulanje.

Many forests are under protection resulting in a slower rate of habitat loss; however, threats are still active in these areas. For example, in many areas where the forest patch is protected the forest floor is still being utilized for the clearing of crops. This transformed environment is detrimental to pygmy chameleons that utilize the forest floor as primary habitat, impacting both the quality and quantity of available habitat. Low abundance of some chameleon species in degraded areas may also result in a locally threatened/declining status due to habitat destruction (Wild, 1994). This is likely compounded by the fact that many of the existing forests have undergone extensive shrinkage over the years. For example, the Chisangole forest has experienced a reduction from 38 square kilometres (km<sup>2</sup>) to 25 km<sup>2</sup> within the period 1974-1984 (Tilbury, 2010), while Usambara Mountains has lost over 71% of its original forest cover (Newmark, 1998). Additional information on habitat trends specific for each species is in Appendix A.

##### 4.2 Population size

Data on population size and demography of pygmy chameleon species are scarce. Nineteen of the species within these two genera have no information regarding abundance according to IUCN ([www.iucnredlist.org](http://www.iucnredlist.org)). Most *Rhampholeon* spp. are limited to microhabitat with fragmented populations and 13 are locally restricted, including nine endemic species. *Rh. spectrum* has been reported as common in parts of southern Nigeria and in montane areas of Cameroon; however, it is thought to be rarer in the lowlands and low abundance has been observed in degraded habitat (Akani *et al.*, 2001; Mariaux and LeBreton, 2010). Patrick *et al.* (2011) report transects on local abundance of *Rh. temporalis* in forests of the East Usambara Mountains to be 0.60/100 m, while *Ri. brevicaudatus* was found at densities of 0.026/100 m along edge habitats of the mountains. All *Rieppeleon* spp. are thought to be widespread in areas where they are known to occur ([www.iucnredlist.org](http://www.iucnredlist.org)). Additional information on the population size of each species is included in Appendix A.

##### 4.3 Population structure

African pygmy chameleons live solitarily, resulting in limited information on population structure for the taxon. A survey in the Amani Nature Reserve, Tanzania, found that the number of adult specimens of *Rh. temporalis* was six-fold to that of juveniles (Patrick *et al.*, 2011). Sex ratios of males and females appear near equal, as described for *Rh. temporalis* and *Rh. spectrum* (Akani *et al.*, 2001; Patrick *et al.*, 2011). Pygmy chameleons may be found throughout the year, but in some species marked population swings have been observed, with decreases coinciding with the dry

season and peaking with wet times of year. Within this seasonal fluctuation, population density may also reflect changes in predation intensity (Tilbury, 2010).

#### 4.4 Population trends

Presently, eight pygmy chameleon species are classified in the IUCN Red List as Critically Endangered or Endangered ([www.iucnredlist.org](http://www.iucnredlist.org)). Of these, seven species are determined to have a decreasing population trend (*Rh. spinosus*, *Rh. temporalis*, *Rh. viridis*, *Rh. chapmanorum*, *Rh. platypus*, *Rh. bruessoworum*, and *Rh. tilburyi*), while *Rh. acuminatus* has an unknown trend. *Rh. maspictus* is listed as Near Threatened; however, the population trend has been determined to be stable. Three species are classified as Vulnerable, of which *Rh. beraduccii* and *Rh. nebulauctor* have an unknown population trend and *Rh. marshalli* is decreasing. Nine pygmy chameleons are listed as species of Least Concern. *Rh. gorongosae*, *Rh. uluguruensis*, *Rh. nchisiensis* and *Rh. moyeri* have a stable trend and *Rh. boulengeri* is decreasing; *Rh. spectrum*, *Ri. brachyurus*, *Ri. kerstenii* and *Ri. brevicaudatus* have an unknown population trend.

Although few surveys on population trends exist, several publications report local disappearance (see also 4.5). According to Tilbury (2010) extinction should be considered imminent for *Rh. chapmanorum* and *Rh. platyceps* based on where they currently exist. Surveys conducted in Tanzania found *Ri. brevicaudatus* was the least counted chameleon at the Amani Nature reserve (Patrick *et al.*, 2011), while in Cameroon, *Rh. spectrum* was in lower abundance than the CITES listed *Chamaeleo montium* (Gonwouo *et al.*, 2007).

Extensive habitat alteration and degradation in many range areas have resulted in small, fragmented populations. For example, *Rh. spinosus* has a total range of 3,250 km<sup>2</sup> and only occurs in two locations with ongoing habitat loss (Mariaux, 2010b). *Rh. marshalli* also has a limited range of 7,000 km<sup>2</sup>, occurring in less than 10 locations and in fragmented patches of habitat (Mariaux, 2010a). In southern Nigeria, populations of *Rh. spectrum* have dropped by 95% from habitat lost due to logging (Akani *et al.*, 2001). Ongoing, unregulated collection (except for *Rh. spinosus*) of pygmy chameleons has likely impacted these fragmented regional populations.

#### 4.5 Geographic trends

All *Rhampholeon* spp. are dependent upon intact forest strata. Therefore, populations declines have been observed and are expected to continue in the future where pressure from deforestation, logging and/or agricultural use occur (Tilbury, 2010). In some regions a decline and/or disappearance in specific species has already been observed. For example, the endemic *Rh. spinosus* has not been recorded in survey sites in the Amani Nature Reserve, Tanzania, where it previously occurred, possibly as a consequence of collection for the pet trade (Patrick *et al.*, 2011). In Nigeria, *Rh. spectrum* has disappeared from known study sites within mature secondary forest due to logging (Akani *et al.*, 2001). Additional information on the geographic trends for each species is included in Appendix A.

### 5. Threats

Research has suggested that specialized species tend to disappear with habitat loss, as compared to those deemed habitat generalists (Gray, 1989; Akani *et al.*, 2001). Because of their specialized habitat requirements, African pygmy chameleons are highly susceptible to human impacts resulting in the alteration, reduction and loss of overall habitat quality and extent (Akani *et al.*, 2001; Burgess *et al.*, 2007; Mariaux and LeBreton, 2010; Tilbury, 2010). In some regions deforestation has been so extensive that only fragments remain, that are further stressed due to surrounding transformed landscapes ([www.iucnredlist.org](http://www.iucnredlist.org)).

While habitat destruction and degradation is the most serious risk for pygmy chameleons, collection for the international pet trade is a factor, which further complicates and impacts protection and conservation efforts of this taxon (Gonwouo *et al.*, 2007; Patrick *et al.*, 2011). USA import data (see section 6) on pygmy chameleons has shown an increase in recent years, possibly as a consequence of pet trade restrictions for other chameleons (US Fish and Wildlife Service, LEMIS Database 2015). Further, reptile keepers report that international demand for pygmy chameleons has increased since the mid-1990s (Lutzmann *et al.*, 2004; Hildenhagen 2007) and the interest continues to rise. For example, pygmy chameleon species recently discovered within the last few years (e.g. *Rh. acuminatus* and *Rh. viridis*) are now readily available for the international pet trade (Müller and Walbröl, 2008).

It is currently unknown if traditional medicinal purposes in Africa are a threat to pygmy chameleons.

## 6. Utilization and trade

### 6.1 National utilization

Chameleon species in East Africa are collected for medicinal use or “juju” practice (Akani *et al.*, 2001); however, it is unclear whether African pygmy chameleons are also used and if so, what potential impacts this may have on regional populations. From 2001 to 2011 O.S.G. Pauwels (pers. comm.) regularly surveyed markets in Libreville, Gabon, and recorded hundreds of *Chamaeleo* sold for magic practices, but not a single *Rhampholeon*. There is no additional known use for the national utilization of African pygmy chameleons within range states.

### 6.2 Legal trade

There is an increasing market for African pygmy chameleons in the international pet trade that is likely the result of trade restrictions of other CITES listed small chameleons (i.e. *Brookesia* spp. in 2002, *Rh. spinosus* in 2011). To date, Tanzania has been the leading exporter of African pygmy chameleons to the USA, followed by Equatorial Guinea, Cameroon, Guinea and a small number from the Congo (US Fish and Wildlife Service, LEMIS Database 2015).

The USA imported 7,281 known *Rhampholeon* spp. from 1999 through 2014 (US Fish and Wildlife Service, LEMIS Database 2015). These data contain imports of *Rh. acuminatus*, *Rh. spectrum*, *Rh. uluguruensis*, *Rh. viridis*, and the CITES Appendix II listed *Rh. spinosus* (listed under its old name *Bradypodion spinosum*). *Rh. spectrum* has had the largest number of imports into the USA, while *Rh. spinosus* has had the fewest number due to CITES trade restrictions. From 1999-2014 there were an additional 11,349 *Rhampholeon* chameleons imported into the USA that were not identified to the species level, yet reported to be caught from the wild for commercial trade (US Fish and Wildlife Service, LEMIS Database 2015). The dominant exporter for *Rhampholeon* spp. has been Tanzania, followed by Cameroon, Equatorial Guinea, the Congo and Guinea, which is not a range-state for pygmy chameleons.

*Rieppeleon* spp. have been exported in greater numbers than those *Rhampholeon* spp. From 1999 through 2014 the USA has imported 156,949 *Rieppeleon* spp., while an additional 337 unidentified *Rieppeleon* spp. were brought into the USA from 1999-2006 (US Fish and Wildlife Service, LEMIS Database 2015). *Ri. kerstenii* had the highest recorded amount of imports and *Ri. brachyura* had the least.

*Rh. spinosus* annual CITES export quotas from 1999-2011 ranged from 16-50 captive born individuals per year from Tanzania (CITES, 2015), however, from 2012-2013 no annual quotas was issued (CITES, 2015). Archived data from 1977-2011 shows 149 live individuals were exported from Tanzania for the pet trade (total of all personal and commercial exports), of which only 23 individuals were reported with source information (18 wild collected and 5 from unknown sources) (UNEP-WCMC, 2015). All exports of *Rh. spinosus* have occurred from 1993-2011, where 93% (with all but 11) of the individuals were exported between 2001 and 2011 (UNEP-WCMC, 2015). Trade data indicates 79 individuals have been imported to the USA from 2002-2011 (US Fish and Wildlife Service, LEMIS Database 2015).

Because *Rh. spinosus* is already listed in CITES Appendix II under its old name *Bradypodion spinosum*, a loop-hole for non-regulated export has been created, complicating the evaluation of its trade status (Tolley and Menegon, 2014). Only specimens incorrectly exported under the outdated name *Bradypodion spinosum* are subject to CITES regulation, suggesting illegal trade and/or harvest may be occurring at significant levels. This ambiguity has also allowed for this species to be illegally imported in multiple “assorted pygmy chameleon” shipments without CITES documents. The taxonomic confusion surrounding *Rh. spinosus*, in addition to its illegal trade, has resulted in the inability to assess the true status of the species (C. Anderson pers. obs. 2013). This species has experienced a surge in the pet trade in recent years (Anderson, 2014).

*Rh. acuminatus* is imported into the pet trade in limited quantities, two to three times every few years. Data show 169 individuals imported into the USA from 2010-2014, all of which were wild-caught in Tanzania (US Fish and Wildlife Service, LEMIS Database 2015). Müller and Walbröl (2008) suggest shipments to Germany may be carrying *Rh. acuminatus* as the dominant species. Because the true

extent of its collection is uncertain, it is speculated that trade could be detrimental to this species because the population is likely small (Tolley *et al.*, 2014d). Internet traders offer wild-caught *Rh. acuminatus* in Germany (120 €/pair), United Kingdom and Belgium (45-90€), ([www.exotic-pets.co.uk](http://www.exotic-pets.co.uk); [www.dhd24.com](http://www.dhd24.com); <http://stconnection.de>; [www.reptilienserver.de](http://www.reptilienserver.de); [www.scales-reptiles.com](http://www.scales-reptiles.com)), while in the USA, prices are 150-250 USD (e.g. [www.generalexotics.com](http://www.generalexotics.com)).

*Rh. nchisiensis* is considered a fairly new species in the pet trade industry, yet it is readily available and sold in limited quantities. It sells in several European countries for approximately 60 € and in the USA for 20 USD ([www.exotic-pets.co.uk](http://www.exotic-pets.co.uk)). *Rh. moyeri* is imported into the pet trade in limited quantities every few years in Europe (e.g. Short's Tropical Connection 2012). In Tanzania, traders report that *Rh. moyeri* are wild-caught (Busch and Graeber, 2005). Although both *Rh. nchisiensis* and *Rh. moyeri* do not have large markets in the pet trade, the true extent of their collection is unknown (Tolley and Menegon, 2014b,e).

No data currently exists for *Rh. gorongosa*, *Rh. marshalli*, *Rh. beraduccii*, *Rh. boulengeri*; *Rh. chapmanorum*, *Rh. playyiceps*, *Rh. bruessoworum*; *Rh. nebulauctor*. *Rh. maspictus* and *Rh. tilburyi*; however, these species are not known to be present in captive markets (Tolley, 2014c,d; Tolley, et al., 2014b,c,e; Tolley and Plumtre, 2014; Tolley and Bayliss, 2014a,b,c,d).

*Rh. temporalis*, *Rh. viridis*, *Rh. nchisiensis*, and *Rh. uluguruensis* are regularly traded within the pet market. European traders have been documented selling these species from Belgium, the Czech Republic, Germany, Slovakia, and United Kingdom (Auliya, 2003; UNEP-WCMC, 2009; offers at [www.terrarium.com](http://www.terrarium.com); [www.exotic-pets.co.uk](http://www.exotic-pets.co.uk); [www.the-livingrainforest.co.uk](http://www.the-livingrainforest.co.uk); [www.reptilienserver.de](http://www.reptilienserver.de); [www.scales-reptiles.com](http://www.scales-reptiles.com); [www.animal-paradies.de](http://www.animal-paradies.de); [www.animalfarm.cz](http://www.animalfarm.cz); [www.terrariumladen.de](http://www.terrariumladen.de); [www.dhd24.com](http://www.dhd24.com)). *Rh. temporalis* is often misidentified for sales as either *Ri. brevicaudatus* or *Ri. kerstenii*, however trade data on this species is limited (Tolley and Menegon, 2014d). The cost for *Rh. temporalis* range from 30-45 €. *Rh. viridis* is imported into the pet trade in limited quantities, one to two times every few years (Tolley *et al.*, 2014a). Because it is not subject to trade regulations, the degree of harvest is unknown. The USA has imported 2,441 *Rh. viridis* individuals from 2013-2014 (US Fish and Wildlife Service, LEMIS Database 2015).

*Rh. uluguruensis* are imported for the pet trade in limited quantities every few years, however, the true extent of collection is uncertain. It is not known whether the source populations for many exports are in fact *Rh. uluguruensis* or *Rh. moyeri* or one of the still-undescribed species within this complex (Tolley and Menegon, 2014f). This chameleon is available in European markets for approximately 45 € and in the USA for \$249 for a pair (<http://www.chameleonforums.com/uluguru-dwarf-chameleons-pygmy-leafs-veileds-stock-96354/>). The USA has imported 398 individuals from 2012-2014 (US Fish and Wildlife Service, LEMIS Database 2015).

*Rh. spectrum* is a species that has been targeted for the international pet trade (Mariaux and LeBreton, 2010). In the Mt. Cameroon region it is the most frequently collected chameleon species after *Ch. montium*; approximately 20 individuals are caught on average per collector, per month for the pet trade industry (Gonwouo, 2002). The USA imported 6,393 individuals from 1999-2014. All animals were wild-caught for commercial trade, with more than half coming from Equatorial Guinea, followed by Cameroon, Guinea and Tanzania (US Fish and Wildlife Service, LEMIS Database 2015). *Rh. spectrum* is sold widely throughout Europe (Mariaux and LeBreton, 2010). In Germany, the Czech Republic and the United Kingdom, several traders offer wild-caught specimens at reptile fairs and in the internet; prices vary from 30-85 € (UNEP-WCMC, 2009; on sale at [www.terrarium.com](http://www.terrarium.com); [www.animalfarm.cz](http://www.animalfarm.cz); [www.animal-paradies.de](http://www.animal-paradies.de); [www.terrariumladen.de](http://www.terrariumladen.de); [www.tarantulaspiders.com](http://www.tarantulaspiders.com); [www.cardiffreptilecentre.co.uk](http://www.cardiffreptilecentre.co.uk) and many more).

*Ri. brachyurus* has on occasion been known to be traded in the captive market in very limited numbers (Tolley, 2014a). Although it can sometimes be found on sale on the internet ([www.terrarium.com](http://www.terrarium.com)), it is believed to not be threatened by the captive pet trade at any significant extent. The USA has imported 393 *Ri. brachyurus* individuals from 2013-2014 (US FWS LEMIS Database 2015).

*Ri. kerstenii* is the most frequently imported African pygmy chameleon into the USA with approximately 98,941 wild-caught specimens being recorded from 1999-2014 (US FWS LEMIS Database 2015). All imports were recorded as being originated in Tanzania. Specimens are offered by traders from Austria, Czech Republic, United Kingdom and Germany, often under the old name *Rh. kerstenii* (Auliya, 2003; UNEP-WCMC, 2009; [www.exotic-pets.co.uk](http://www.exotic-pets.co.uk); [www.zooaustria.com](http://www.zooaustria.com); [www.faunaimportuk.com](http://www.faunaimportuk.com); [www.terrarium.com](http://www.terrarium.com); [www.zoofachgeschaef.at](http://www.zoofachgeschaef.at);



[www.cardiffreptilecentre.co.uk](http://www.cardiffreptilecentre.co.uk); [www.reptilica.de](http://www.reptilica.de)). Prices vary from 29-60 € within Europe and 25 USD (<http://www.faunaclassifieds.com/forums/showthread.php?p=1816158>). While shipments of pygmy chameleons labeled as *R. kerstenii* are frequent, these shipments typically contain *R. breviceaudatus* and *Rh. temporalis*, not *Ri. kerstenii*. Due to this species' wide range, it is not subject to major threats of overexploitation (Spawls *et al.*, 2002; Tilbury, 2010).

*Ri. breviceaudatus* has been popular in the pet trade industry since the 1990's, sold commonly throughout Europe and the USA. It is considered the second-most common pygmy chameleon coming into USA with approximately 57,615 individuals being imported from 1999-2014; trade numbers for this species have been on the rise over the last decade (US Fish and Wildlife Service, LEMIS Database 2015). The majority of *Ri. breviceaudatus* are exported from Tanzania, with small numbers also coming from Cameroon, although it is not a range state for this species. In Europe, traders from Belgium, Czech Republic, Germany, and United Kingdom are regularly offering this species where it is often sold as *Rh. breviceaudata* or under the old name of *Rh. breviceaudatus* (e.g. [www.exotic-pets.co.uk](http://www.exotic-pets.co.uk); [www.animalfarm.cz](http://www.animalfarm.cz); [www.terrarium.com](http://www.terrarium.com); [www.reptilica.de](http://www.reptilica.de); [www.scales-reptiles.com](http://www.scales-reptiles.com); [www.chameleons-vl.be](http://www.chameleons-vl.be)). It is also frequently imported via the label *Ri. kerstenii* (Tolley and Menegon, 2014a). Animals cost 25-69 € within Europe (UNEP-WCMC, 2009) and 35 USD in the USA (<http://www.backwaterreptiles.com/chameleons/pygmy-chameleon-for-sale.html>).

### 6.3 Parts and derivatives in trade

Only live animals are known to be in trade.

### 6.4 Illegal trade

In Cameroon, collection of reptiles is only permitted by license, but this rule is often ignored by local people (Gonwouo, 2002). Confusion regarding the name of *Rh. spinosus* has allowed for this species to be illegally imported in multiple "assorted pygmy chameleon" shipments without CITES documents enabling illegal trade of the species (C. Anderson pers. obs. 2013). In March of 2015, border officials in the United Kingdom seized 136 *Ri. breviceaudatus* in the London Heathrow Airport (TRAFFIC, 2015). To the best of our knowledge additional illegal trade of African pygmy chameleons is not occurring.

### 6.5 Actual or potential trade impacts

Contrary to other chameleons which have an arboreal lifestyle, *Rhampholeon* and *Rieppeleon* spp. are generally terrestrial (Akani *et al.*, 2001), a characteristic that often facilitates collection. While habitat destruction and degradation are the major threats for African pygmy chameleons, trade is an additional and increasing threat. According to US import data from 2000-2001, a total of 12,049 *Rhampholeon* spp. were imported, however, trade sharply increased to 22,527 by 2007 (US FWS LEMIS Database 2015) after other pygmy chameleons (*Bradypodion* spp.) were listed in CITES App. II in 2002. Reptile magazines confirm an increased interest in trading both *Rhampholeon* and *Rieppeleon* spp. (Anon, 2005; Coevoet, 2007). Species such as *Rh. acuminatus* and *Rh. viridis* were only described a few years ago, have a very restricted range, and are listed as critically endangered and classified as endangered under IUCN Red List (Tolley *et al.*, 2014a,d). Unfortunately, both species are now offered in international pet trade in considerable numbers (Müller and Walbröl, 2008). To ensure that levels of trade are monitored, conservation recommendations for *Rh. viridis* and *Rh. acuminatus* suggest listing under CITES as soon as possible. Tracking impacts from trade on *Rh. viridis* is critical considering it is already vulnerable due to severe fragmentation of the population and multiple tangible threats that have degraded existing habitat (Tolley *et al.*, 2014a). Regarding *Rh. acuminatus*, non-detriment findings need to be determined since it is believed that the pet trade is one factor threatening its survival (Tolley *et al.*, 2014d).

Scientists warn that African pygmy chameleons, especially those in diminished forest patches, are prone to over-collection and may possibly become extinct. For example villagers in the Usambaras have identified chameleons as the most collected vertebrates (Patrick *et al.*, 2011), which is likely impacting species such as *Rh. temporalis* and *Rh. viridis*. Akani *et al.* (2001) attributed one of the reasons for the rarity of chameleons in the forest zone of southern Nigeria is because of illegal trade resulting from the great demand for chameleons following increased market values. In Southwest Cameroon, villagers are intensely collecting *Rh. spectrum* to satisfy the demand of international reptile traders (Gonwouo, 2002). The unregulated trade in *Rhampholeon* and *Rieppeleon* spp. further compromises wild populations of *Rh. spinosus*, which are increasingly found in shipments of wild

caught “assorted pygmy chameleons” (Anderson, 2011) and are very difficult to distinguish from other pygmy chameleons.

## 7. Legal instruments

### 7.1 National

In August 2011 the country of Tanzania established a temporary export ban on all wildlife shipments (Liganga, 2011), which resulted in an interim pause of exports. To the best of our knowledge no other legal instruments have been established at this time.

### 7.2 International

None, with the exception of *Rh. spinosus*, which is listed in CITES Appendix II under its former name *Bradypodion spinosum*.

## 8. Species management

### 8.1 Management measures

For *Rh. spinosus* (listed as *Bradypodion spinosum* in CITES Appendix II) Tanzania has had varying quotas of 16-50 individuals over the last decade. The following are the set export quotas from 1999-2011: 16 (1999), 16 (200), 8 (2001), 39 (2002), 50 (2003), 38 (2004), 28 (2005), 19 (2006), 26 (2007), 24 (2008), and 18 (2009-2011). These quotas are for F1-specimens (CITES national export quotas for Tanzania 2001-2011). Export quotas for this species were not issued for 2012, 2013 or 2014.

### 8.2 Population monitoring

To the best of our knowledge there is no specific population monitoring currently underway for African pygmy chameleons. Assessments have been completed on several regional populations; however, long-term population monitoring is not being implemented.

### 8.3 Control measures

#### 8.3.1 International

None known, except for CITES which controls trade for *Rh. spinosus*.

#### 8.3.2 Domestic

Some species are protected at the range State and provincial level (see Section 7.1 Legal Instruments, National). However, domestic protection appears to be inadequate to control the harvest pressure caused by international trade. Additional regional information for each species, as applicable, is in Appendix A.

### 8.4 Captive breeding and artificial propagation

Hobbyists occasionally report captive breeding of different *Rhampholeon* and *Rieppeleon* spp. (e.g., Lutzmann *et al.*, 2004; Anon, 2007; Coevoet, 2007; Gostner, 2009); however, it appears mortality is high as a result from being egg-bound, inappropriate temperatures and/or humidity (Busch and Graeber, 2005; Deckers, 2006; Stemper, 2006; Gostner, 2009). Because pygmy chameleons are easily misidentified by traders and buyers, survival is often reduced in captive environments due to improper care/habitat requirements necessary for individual species (Hildenhagen, 2007). Captive breeding of African pygmy chameleons on a commercial scale remains economically unprofitable and hence the vast majority are still collected in the wild (Auliya 2003, see also US Fish and Wildlife Service, LEMIS Database 2015).

### 8.5 Habitat conservation

*Rh. marshalli* is only protected in the Chimanimani and Nyanga National Parks and the Bunga Forest Botanical Reserve in the Vumba Mountains. Currently most of the remaining habitat of *Rh. temporalis* is protected within the East Usambara Forest Conservation Project (Amani Forest Reserve) and

related forest conservancies in the East Usambara. At present *Rh. moyeri* is protected within the Udzungwa National Park, the first and only area in the “Eastern Arc” to be protected for its biodiversity and given realistic long-term conservation. Only the Malawian Nyika Plateau is protected as a National Park where *Rh. nchisiensis* is known to inhabit. Additional populations of African pygmy chameleons occur in unprotected areas or in nature reserves, however, in practice, protection is not afforded for species living in these locations (Pauwels *et al.*, 2008; Mariaux, 2010a,b; Mariaux and LeBreton, 2010; Tilbury, 2010).

#### 9. Information on similar species

*Brookesia* are also dwarf chameleons like *Rhampholeon* and *Rieppeleon* spp. Endemic to Madagascar, they range from 25-105 mm in total length. Although considered smaller than most African pygmy chameleons, *Brookesia* can often be very similar in size (e.g., *Rh. beraduccii* has a maximum length of 36 mm) and coloration. Generally, African pygmy chameleons are referred to as the “ground chameleons”, while *Brookesia* are referred to as the “leaf chameleons” (Glaw *et al.*, 2012). *Rhampholeon* and *Rieppeleon* spp. superficially resemble *Brookesia*; however, they can be differentiated by hemipenis characters. The hemipenis apex has crests in *Brookesia* and horns in *Rhampholeon* (Raxworthy and Nussbaum, 1995). All *Brookesia* are listed under Appendix II for CITES, with the only exception being *B. perarmata* under Appendix I. Trade is regulated for all *Brookesia*, except *B. perarmata*, which is not permitted, yet has been recorded to be illegally traded (Jenkins, *et al.*, 2011).

#### 10. Consultations

Consultation letters have been sent to all 16 range countries with the following responses regarding *Rhampholeon* and *Rieppeleon* spp (with respect to species found in that country):

Gabon: Gabon, home to one of the species discussed herein (*Rh. spectrum*), tentatively supports the inclusion of the African pygmy chameleons of the genera *Rhampholeon* spp. and *Rieppeleon* spp. in Appendix II.

Nigeria: Though the population size of African Pygmy Chameleon is not documented for now and the conservation trend is unknown, it is pertinent to start regulating trade on it before it is too late.

After consultation with Scientific Authority, (National Park Service) Nigeria concluded and supports the suggestion to list all species of the African Pygmy Chameleon in Appendix II of CITES.

In addition to the letters, a CITES CoP 17 Coordination Workshop between West and Central African countries was held in Senegal March 15-17, 2016. Two range states, Gabon and DRC, spoke in support of the proposal. All countries present at the workshop (Burkina Faso, Côte d’Ivoire, Ghana, Guinee-Bissau, Mali, Niger, Nigeria, Senegal, Togo, Liberia, Tchad, Central African Republic, Congo, Sierra Leone, Mauritania, and Gabon) agreed by consensus to support the proposal at CoP17.

#### 11. Additional remarks

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## Appendix A. African Pygmy chameleons



Rhampholeon	Genus, species	Status and Trend	Native Counties and Range Description/habitat (Tilbury, 2010; www.iucnredlist.org)	Morphology (Tilbury, 2010; Hildenhagen, 2007; Mariaux and Tilbury, 2006)	Population Information (Tilbury, 2010; www.iucnredlist.org)	Use and Trade (www.iucnredlist.org; US Fish and Wildlife Service, LEMIS Database, 2015)	Threats (Tilbury, 2010, www.iucnredlist.org)
	<b><i>Rhampholeon (Bicuspis) gorongosa</i></b>  Mount Gorongosa Pygmy Chameleon	<b>IUCN:</b> Least Concern (2014);  <b>Trend:</b> Stable	Mozambique (Endemic to Gorongosa Mountain)  Montane forest on Gorongosa Mountain 1,000-1800 m above sea level.	Total length max. 105 mm (females: body 71 mm, tail 31 mm; males: body only 30 mm, tail 16 mm); Rostral process present, may be vestigial in females, top of head flat with no supra-optic peaks; inter-orbital ridge well defined; dorsal keel with low clumps of tubercles. A row of enlarged tubercles extends along the lower jaw and lower flank; no axillary or inguinal pits; claws bicuspid; soles smooth; males with relatively long rostral process; accessory plantar spines prominent.	No abundance information for this species. Population does not appear to be declining at present, as much of the natural forest is preserved	No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is not known to be present in the captive market.	The montane forest is reasonably well preserved, under minimal disturbance and not under any immediate threats.
	<b><i>Rhampholeon (Bicuspis) marshalli</i></b>  Marshall's African Leaf Chameleon;  Marshall's Pygmy Chameleon;  Marshall's Stump-tail Chameleon	<b>IUCN:</b> Vulnerable (2014);  <b>Trend:</b> Decreasing	Mozambique and Zimbabwe  Restricted to sub-montane and montane forests 1,000-1800 m above sea level. Only in the forest fragments in the Eastern Highlands of Zimbabwe and Snuta Mountain in Mozambique (ca. 540 km <sup>2</sup> of forest remain)	Largest pygmy chameleon: total length up to 118mm (females: body 73 mm, tail 45 mm; males: body 60 mm, tail 40 mm); short dermal rostral appendage; no supra-optic peaks; inter-orbital ridge indistinct; sub-mental row of tubercles extends along the lower jaw and side of abdomen; axillary pits usually present; no inguinal pits; soles and palmes smooth; low blunt accessory plantar tubercles; claws strongly bicuspid.	No abundance information for this species; occurs in the remaining forest patches in the Chimanimani and Vumba Mountains in the Eastern Highlands of Zimbabwe and in adjacent Mozambique. This area is heavily transformed. Confined to montane forest therefore, habitat is under ongoing pressure, it is presumed both to occur as a severely fragmented population and to be undergoing declines.	No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species, is not known to be present in the captive market.	Substantial impacts on the individual forest patches from encroachment and transformation, resulting in heavy impacts across its entire range. Only part of its range falls within protected areas, namely Chimanimani and Nyanga National Parks, Bunga Forest Botanical Reserve in the Vumba Mountains, whereas other areas are under pressure from habitat transformation due to timber extraction and agriculture. It is unlikely that any movement between fragments is possible because this species is a forestspecialist and does not tolerate transformed landscapes



	<p><b><i>Rhampholeon (Rhampholeon) spectrum</i></b></p> <p>Cameroon Stumptail Chameleon;</p> <p>Western Pygmy Chameleon;</p> <p>Spectral Pygmy Chameleon</p>	<p><b>IUCN:</b> Least Concern (2014);</p> <p><b>Trend:</b> Unknown</p>	<p>Cameroon, Equatorial Guinea and Bioko Island, Central African Republic, Congo Gabon, Nigeria, Democratic Republic of the Congo</p> <hr/> <p>In western and central Africa, distributed from Nigeria, south to Gabon. Also found on Bioko Island. Found from sea level up to an elevation of 1,900 m, preference for montane, receiving &gt;1,600 mm of rain per year.</p>	<p>Total length up to 90 mm (females: body 57 mm, tail 33 mm; males: body 61 mm, tail 29 mm); soft rostral appendage, crenulated dorsal keel, prominent supra-optic peak present, distinct inter-orbital ridge, axillary pit present, no inguinal pits, palms and soles clad with sub-conical to smooth tubercles, accessory spines, claw markedly bis-cupid, prominent.</p>	<p>Very common in parts of southern Nigeria and in montane areas of Cameroon, however, it is thought to be rarer in the lowlands.</p>	<p>Species targeted for international pet trade. In SW Cameroon, second most frequently collected chameleon species; widely sold in Europe. Prices vary from 30-85 €.</p> <p>USA Trade data: 6,393 imports from 1999-2014.</p>	<p>Habitat loss and fragmentation of environment. Logging has been blamed for its disappearance from one location in Nigeria. It is suggested that the low abundance of this species in degraded areas indicates it is locally threatened by habitat destruction.</p>
	<p><b><i>Rhampholeon (Rhampholeon) spinosus</i></b></p> <p>Rosette-nosed Pygmy Chameleon;</p> <p>Usambara Spiny Pygmy Chameleon</p> <p>Formerly covered by the genus <i>Bradypodion</i></p>	<p><b>IUCN:</b> Endangered (2014);</p> <p><b>Trend:</b> Decreasing</p>	<p>Tanzania (Endemic to East and West Usambara Mountains)</p> <hr/> <p>In Usambara Mountains above 700 m. Extent of occurrence little over half this, at 1,797 km<sup>2</sup>. Within this range, the combined area of forest fragments where the species is known to occur is 567 km<sup>2</sup>.</p>	<p>Total length up to 87 mm; no parietal crest. Rostral process prominent, laterally compressed to ovo-globular soft and spinous. Spinous tubercles scattered on flanks, tail, legs and gular regions; gular spines in two diverging rows. Simple claws and plantar surfaces smooth. Scapulation finely heterogeneous with interstitial web; no inguinal pits.</p>	<p>No information on abundance exists for this species, although it is considered to be "rare". The forest fragments in which this species occurs are highly fragmented and under ongoing threats, likely having a negative impact on population size. This species does not tolerate habitat modification, therefore the population is considered to be severely fragmented.</p>	<p>Annual CITES export quotas 2000- 2011 ranged from 8-50 (25 average) captive born individuals per year from TZ (CITES 2013a). In 2012- 2013 no annual quota was issued (CITES 2013a). Most of the 149 live exports occurred between 1993- 2011, with all but 11 individuals having been exported between 2001 and 2011 (UNEP-WCMC 2013). No other legal trade is reported, this species is known to be among shipments of "assorted pygmy chameleons" without documents, suggesting illegal trade and/or harvest may be occurring at significant levels.</p> <p>Trade status ambiguous due to taxonomic status with CITES, allowing a loop-hole for non-regulated export; illegally imported in multiple "assorted pygmy chameleon" shipments without CITES, enabling illegal trade. Only specimens incorrectly exported under the outdated name <i>Bradypodion spinosum</i> would be subject to CITES regulation.</p> <p>USA Trade data: 79 imports from 2002-2011.</p>	<p>Distribution lies partially within protected areas (Amani, Monga, Kwamkoro, Mazumbai, Mkusa), substantial habitat loss (Spawls <i>et al.</i> 2002) still occurs from deforestation. By 1998 the Usambara Mountains had lost 71% of its original forest cover. Expanding cultivation, fire, livestock grazing, and illegal logging have all been cited as the causes of high rates of deforestation (The Critical Ecosystem Partnership Fund 2005). Increase in regional tea plantations contribute to habitat change. The region is becoming highly fragmented, with the remaining natural forest in the region split into 25 different fragments.</p> <p>Species is impacted by illegal trade and the ambiguity of its CITES status due to a lack of current nomenclature having been adopted.</p>




	<p><b>Rhampholeon (Rhampholeon) temporalis</b></p> <p>East Usambara Pygmy Chameleon;</p> <p>East Usambara Pitted Pygmy Chameleon;</p> <p>Usambara stump-tail Chameleon</p>	<p><b>IUCN:</b> Endangered (2014);</p> <p><b>Trend:</b> Decreasing</p>	<p>Tanzania (East Usambara Mountains and Magrotto Hills)</p> <hr/> <p>Found only in the evergreen sug-montane rain forests 900-1,500 m above sea level of the East Usambara Mountains and on Magrotto Hill, Tanzania, in deep in forest and on forest edge, does not utilize transformed landscape. Occurs in eight forest fragments totalling &lt; 300 km<sup>2</sup>, only half of this is pristine primary forest.</p>	<p>Total length up to 80 mm, with tail more than 33% (females: body 46 mm, tail 18 mm; males: body 50 mm, tail 25 mm). Dermal rostral process short, may be indistinct. Supra-orbital peaks low to indistinct, dorsal keel weakly crenulated, distinct inter-orbital ridge of 16-18 tubercles, plantar surfaces usually smooth, occasionally sub-spinous, claws simple, accessory plantar spines prominent, scalation finely hetero/homogeneous.</p>	<p>No population information, although it is described as being locally abundant, it appears to be sporadic in distribution. Habitat is highly fragmented and impacted by human activities; presumed both to be declining and to occur as a severely fragmented population.</p>	<p>On sale all over Europe and in USA (wild-caught: 30-45 €)</p> <p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is traded with some regularity in the captive market and is often sold misidentified as either <i>Ri. brevicaudatus</i> or <i>Ri. kerstenii</i>.</p>	<p>Some of this species' remaining habitat is within the protected area of the Amani Forest Reserve and collaborative conservancies. Large parts of the primary forest have already been given over to subsistence agriculture, timber extraction, and commercial-scale teak, coffee and tea plantations, Species does not occur in transformed habitat.</p>
	<p><b>Rhampholeon (Rhampholeon) viridis</b></p> <p>Rare (Green) Pygmy Chameleon</p> <p>Recently described in 2006</p>	<p><b>IUCN:</b> Endangered (2014);</p> <p><b>Trend:</b> Decreasing</p>	<p>Tanzania (Endemic to North- and South Pare Mountains)</p> <hr/> <p>Likely not in West Usambara Mountains. Occurrence in a remaining and available forest is ca. 152 km<sup>2</sup> (40 km<sup>2</sup> in the North Pares-three forest patches, the remainder in the South Pares), of which 145 km<sup>2</sup> is primary forest. Confined to Afro-montane evergreen rain forest 1,400-2,070 m above sea level. Found in deep forest and at forest edges, not in transformed habitats. Presumably occurred in sub-montane forest when this habitat existed in the North and South Pares; this forest type has been totally transformed.</p>	<p>Total length up to 89 mm (females: body 45 mm, tail 22 mm; males: body 44 mm, tail 29 mm). No supra-optic peaks, temporal crest prominent, no enlarged conical tubercle above the shoulder, rostral process small, occasionally indistinguishable, claws simple, hemipenis calyculate with dual apical horns, Inguinal and axillary pits present.</p>	<p>Locally common in some healthy forest fragments. No quantitative information on abundance overall, yet considered severely fragmented. Population declines are inferred in cases where forests have been lost through transformation. The South and North Pare ranges lost 100% of their submontane forest in the last 50 years, only montane forest remains. Of the historical extent of combined montane and sub-montane forest, 87% has been lost, suggesting the species' numbers could have been reduced by about the same levels since historical times.</p>	<p>On sale all over Europe (65-120 €).</p> <p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is imported into the pet trade in limited quantities, one to two times every few years. Not subject to trade regulations, so the degree of harvest is unknown.</p> <p>USA Trade data: 242 imports from 2013-2014.</p>	<p>The remaining fragmented forest is entirely surrounded by transformed landscapes (agricultural lands). The forest fragments are impacted directly by human disturbance and small scale resource extraction. In the South Pare range, the remaining forest is heavily logged, and the forest is extremely degraded. May be impacted by pet trade, but the species is not listed by CITES</p>
	<p><b>Rhampholeon (Rhinodigitum) acuminatus</b></p> <p>Nguru Spiny Pygmy Chameleon</p> <p>Recently described in 2006 Formerly traded</p>	<p><b>IUCN:</b> Critically Endangered (2014);</p> <p><b>Trend:</b> Unknown</p>	<p>Tanzania (Morogoro region, Endemic to Nguru Mountains)</p> <hr/> <p>In remaining fragmented montane forest; the most complete remaining forest patch where the species occurs is a 28 km<sup>2</sup> fragment within the newly-established Mkingu Nature Reserve, giving the Nguru forest the</p>	<p>Total length up to 82 mm (females: body 49 mm, tail 19 mm; males: body 57 mm, tail 25 mm), casque elevated posteriorly, prominent acuminate spines along the lateral edges of the casque, prominent vertically flattened soft oval granulated rostral process in both sexes, temporal crest prominent: fin-like, dorsal crest prominent, an</p>	<p>No information on population abundance exists but the population is likely to be small, due to extremely restricted-range. Inhabits forest within the Mkingu Nature Reserve yet the remaining patch may not be safe due to the pet trade.</p>	<p>Wild-caught specimens offered in DE (120 €/pair), USA (150-250 USD), BE (45-90€), UK (exotic-pets.co.uk); in some shipments to Germany this the dominant pygmy chameleon species</p> <p>Imports from Tanzania to the USA of this species are ongoing.</p>	<p>Despite the forest being officially protected, the remaining forest floor is cleared for cultivation of shade crops in some areas. Although the size of the forest patch should not change in the future due to its protected status, the forest is still utilized and this may be detrimental to this chameleon as the</p>

	as <i>Rh. montanus</i>		highest protection level in Tanzania. Only occurs in Afro-montane rain forest on the lower valley slopes between 1,500-1,600 m; yet most of this submontane belt is already cleared and destroyed.	enlarged conical tubercle above the shoulder, dermal pits absent from the groins and axillae, claws bicuspid.		No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed in CITES, annual CITES export quotas and CITES trade data for this species are lacking. Because this species is not CITES listed, the wild harvest is unregulated by international conventions. Imports for pet trade are limited quantities, however, the true extent of this collection is uncertain and could be detrimental because the population is probably small.  USA Trade data: 169 imports from 2010-2014.	species utilizes the forest floor as primary habitat. Conversion of forest floor will impact the quality and quantity of its microhabitat. This species is suffering declines in the quality of its habitat, and potentially also in its area of occupancy and harvest from the wild for pet trade. Due to importing and habitat loss, it is likely to have a small population, the removals from the wild could be detrimental.
	<b><i>Rhampholeon (Rhinodigitum) beraduccii</i></b>  Mahenge Pygmy Chameleon;  Beraducci's Pygmy Chameleon  Recently described in 2006	<b>IUCN:</b> Vulnerable (2014);  <b>Trend:</b> Unknown	Tanzania (Endemic to Mahenge Mountain) Reserve.  Found around 1,000 m in elevation in small, isolated forest fragments, within Sali Forest. Known from a single forest patch of 17 km <sup>2</sup> in extent; the mountain is completely surrounded by agriculture, and thought to be genuinely confined to this small area (satellite imagery suggests as little as 14 km <sup>2</sup> of suitable forest habitat remains). There are 5 small patches (covering a combined area of ca. 40 km <sup>2</sup> ) of forest on Mahenge where the species occurs. It is possible that this species is reliant on more humid microhabitats, as forest in Sali is more moist than the other three patches.	Smallest pygmy: max 36 mm (females: body 28 mm, tail 8 mm; males: body 23 mm, tail 6 mm), casque flat, cranial crests all weakly developed, rostral process prominent, deep axillary and inguinal dermal pits, claws bicuspid, plantar surfaces smooth.	No information on population abundance. Occurs in a small, isolated forest fragments. The steep terrain makes utilization of remaining forest difficult, but there are footpaths throughout the forest and disturbance was more substantial in the past with some timber and pole extraction in the past, and ongoing. At present, the forest does not seem to be undergoing a reduction in size, original forest size is unknown. The Eastern Arc forests have been reduced in size by 12% in the last 40 years.	No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is not known to be present in the captive market.	At present, it is doubtful that the remaining forest patch is substantially threatened, but the threat of land transformation exists in the surrounding areas and could affect this forest in the future. The forest in which it occurs is currently not protected as a National Park.
	<b><i>Rhampholeon (Rhinodigitum) boulengeri</i></b>  Boulenger's Pygmy Chameleon	<b>IUCN:</b> Least Concern (2014);  <b>Trend:</b> Decreasing	Burundi, DRC, Kenya, Rwanda, Tanzania, Uganda  Found in deep Afro-temperate forest, may also occur in lowland forest. In Burundi, DRC (North and South Kivu districts, Ituri Forest in Orientale District,	Total length up to 80 mm (both females and males: body 60 mm, tail 17 mm), Short rostral dermal appendage, crenulated dorsal keel, distinct inter-orbital ridge, axillary pits present, no inguinal pits, smooth to sub-spinous palms and soles, low accessory plantar spines, tail	May be subject to population declines as primary habitat is lost, but currently no abundance estimates exist. Fairly widespread, but with numerous disjunctions in its distribution, resulting in multiple isolated subpopulations.	Known to sell for 40 € and 10 USD.  No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is not known to be present in the captive market.	The main threats are due to habitat conversion as a result of agriculture, artisanal mining, and pit-sawing for timber, on a small scale.

			Idjwi Island in Lake Kivu, and in montane forests on the western rim of Lake Tanganyika), Kenya (Kakamega forest, north Nandi escarpment forest, Cherangeni Hills), Rwanda, Tanzania (Minziro forest) and Uganda (Rwenzori Massif, Kibale forest, Bwindi Impenetrable National Park).	17-25% of total length.			
	<b><i>Rhampholeon (Rhinodigitum) chapmanorum</i></b>  Chapman's Pygmy Chameleon	<b>IUCN:</b> Critically Endangered (2014);  <b>Trend:</b> Decreasing	Malawi (Malawi Hills, Natundu Hills)  Only found at Malawi Hill near Nsanje. Described from a tiny remnant of lowland seasonal rainforest on the upper south east facing slope within the Matandwe Forest Reserve. The indigenous forest of the Malawi Hill has essentially been destroyed due to human encroachment. Satellite imagery shows two degraded and fragmented forest patches (0.37 km <sup>2</sup> and 0.22 km <sup>2</sup> ) separated by highly transformed habitat. (Two patches 3 km north, likely forested until recently, have an open canopy and probably lack any forest floor (total 0.4 km <sup>2</sup> ); these patches are not considered viable for the population and are not included in an estimate of its distribution.	Total length up to 63 mm (females: body 51 mm, tail 12 mm; males: body 46 mm, tail 16 mm). A short but prominent dermal rostral appendage is present. Dorsal keel crenulated, homogenous granular scalation, distinct inter-orbital ridge, deep axillary and inguinal dermal pits present, palms and soles smooth, accessory plantar tubercles present, claws strongly bispupid,	No quantitative information on abundance exists; an <i>ad hoc</i> survey in 1998 produced some observations of this species. The tiny size of the forest patches, is heavily degraded, and intense pressure from human population in the area suggests that the population is extremely small, and possibly extinct at its only known natural locality. It is unknown which, if any, remaining patches are currently inhabited by this species. Two additional patches are so heavily transformed (open canopy) it is presumed to not have any viable populations of chameleons. The forests are separated by unsuitable habitat, resulting in a severely fragmented population.	No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is not known to be present in the captive market.	Only known from a single location, in the remnant of rainforest on Malawi Hill, within the Matandwe Forest Reserve, part of the Natundu Hills range. Given the population fragmentation, wholesale conversion of the area for agriculture (maize, yams and other crops), as well as timber extraction for timber planks and conversion to charcoal, it is possible all the fragments are too small to support populations.
	<b><i>Rhampholeon (Rhinodigitum) moyeri</i></b>  Udzungwa Pygmy Chameleon	<b>IUCN:</b> Least Concern (2014);  <b>Trend:</b> Stable	Tanzania (Endemic eastern scarp of the Udzungwa Mountains)  This species inhabits montane forest 1,000-2,000 m in elevation. It has not been found in degraded or transformed habitats with high rainfall.	Total length up to 65 mm (females: body 51 mm, tail 12 mm; males: body 43 mm, tail 14 mm). Soft, dermal rostral process present, supra-optic peaks present, average of 15-19 scales between the bases of the peaks, sexes isomorphic, claws strongly bispupid, plantar surfaces smooth, low plantar accessory tubercles, axillary pits	There is no information on the abundance of this species, but given that it occurs in multiple forest patches that are reasonably well protected, it is unlikely to be undergoing significant population decline.  Presently only known from two localities in the	Occasionally available in European pet shops.  No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is imported into the pet trade in limited quantities every few years, however the true extent of this collection is	Although there is a general decline in quality of habitat due to small scale subsistence agriculture and timber extraction, this species is probably not threatened with population declines because the majority of the forest area where this species occurs is reasonably well protected.

				present, inguinal pits absent.	Udzungwa, but recent molecular phylogeny confirms that records from the Rubeho Mountains, Ukaguru, and Nguru Mountains are also attributable to this species	uncertain.	
	<p><b><i>Rhampholeon (Rhinodigitum) nchisiensis</i></b></p> <p>Nchisi Pygmy Chameleon;</p> <p>Blue-eyed Pygmy Chameleon;</p> <p>Pitless Pygmy Chameleon;</p> <p>South African Stumptail Chameleon</p>	<p><b>IUCN:</b> Least Concern (2014);</p> <p><b>Trend:</b> Stable</p>	<p>Malawi, Tanzania, Zambia</p> <hr/> <p>In naturally fragmented montane forest patches up to 2,400 above sea level. Inhabits southern highlands of Tanzania and the north of Malawi and Zambia. Forest patches are small (a few km<sup>2</sup>), others are moderately sized (ca. 100 km<sup>2</sup>); patches are not widely separated. The entire range covers 12,600 km<sup>2</sup>, the total area of forest is estimated at ca. 10% of this figure. It is not known to inhabit the naturally occurring grassland/savannah that separates forest patches. It does not tolerate transformed or degraded habitats.</p>	<p>Total length up to 85 mm (females: body 67 mm, tail 16 mm; males: body 43 mm, tail 13 mm). Rostral appendage present, crenulated vertebral keel, low supra-orbital peaks, distinct inter-orbital ridge. No axillary or inguinal pits, plantar surfaces smooth to sub-spinous, claws markedly bicuspid, accessory palmar/plantar spines present, but reduced, background scalation of homogenous granules.</p>	<p>No quantitative information on abundance, although it can be locally abundant in some forest patches. Likely not subject to notable population declines although it may experience local declines in areas where the forests are heavily impacted. Although it occurs in small forest patches, the sheer number of these patches across the grassland matrix, as well as the short distances between patches, suggests it should not be considered severely fragmented. Highly likely that many patches are connected by gene flow.</p>	<p>On sale in several European countries for approximately 60 € and sold in the USA for 20 USD.</p> <p>Although a new species in pet trade, it is regularly available.</p> <p>As no <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) are listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is imported into the pet trade in limited quantities every few years, however the true extent of this collection is uncertain.</p>	<p>Some of the forest patches that this species occupies are within the transformed landscape, and under pressure from encroachment of human activities for subsistence living. If threats intensify in the future, the smaller forest patches could be lost relatively rapidly. Other patches are within protected areas, where encroachment is assumed to be minimal and patches are not expected to be lost.</p>
	<p><b><i>Rhampholeon (Rhinodigitum) platyceps</i></b></p> <p>Mulanje Pygmy Chameleon;</p> <p>Malawi Stumptail Chameleon</p>	<p><b>IUCN:</b> Endangered (2014);</p> <p><b>Trend:</b> Decreasing</p>	<p>Malawi, (Endemic to Mount Mulanje and the adjacent Mchese Mountain</p> <hr/> <p>Found only cool sub-montane seasonal rain forest; in lower fringe to the riparian scrub to altitudes 1,000-1,800 m altitude. In fragments of southern and eastern-facing slopes where forest occurs in remnant fragmented patches, totaling ca. 61 km<sup>2</sup>. The original evergreen forest habitat has been substantially reduced in size and the remaining forest heavily impacted leaving the transformed habitat that remains unsuitable. Although the evergreen forest once extended down to 650 m eleva-</p>	<p>Total length up to 100 mm (females: body 66 mm, tail 22 mm; males: body 70 mm, tail 29 mm). Short, soft, flexible rostral process, crenulated dorsal keel, inter-orbital ridge present, axillary and inguinal pits present, plantar surfaces smooth, claws with prominent secondary cusp, low accessory plantar tubercles present, scalation heterogeneous.</p>	<p>No information on abundance. A restricted-range species with limited suitable habitat remaining, therefore, the overall population size is unlikely to be large. Likely undergone population declines due to the transformation of the habitat on Mt. Mulanje. The forest has been heavily impacted by resource utilisation (logging), invasive species, and conversion of landscape for subsistence and commercial agriculture. Rough estimates range from half to a third of original forest having been lost, particularly at low altitudes, suggesting</p>	<p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is not known to be present in the captive market.</p>	<p>Threats results from the pressure on natural resources, in this heavily-populated region has resulted in encroachment on the indigenous forest on Mt. Mulanje and Mt. Mchese. Burning practices, fuelwood collection, illegal logging, unsustainable hunting, the potential threat of bauxite extraction, and conversion of the landscape for subsistence and commercial agriculture are all threats. Other impacts include invasive pines, which were originally planted for utilization, have now taken over parts of the plateau The forest has been formally protected as a Forest Reserve since</p>



			tion, the area up to 900 m elevation is totally transformed by commercial and subsistence agriculture.		the past population decline was of a similar magnitude. Population decline at present should be somewhat mitigated as most of this habitat loss was prior to the 1990s. Altered habitats are not tolerated.		1927, limiting large-scale land clearance for agriculture, but encroachment, resource utilization and small scale commercial timber extraction is ongoing. The Reserve boundaries were modified several times up until 1971 to accommodate this encroachment. The forest on Mulanje is also threatened by illegal extraction of the endemic Mulanje Cedar ( <i>Widdringtonia whytei</i> ) and the use of fire to clear and kill the Mulanje Cedar trees. In 1988, forest extent totalled 61 km <sup>2</sup> and 10 km <sup>2</sup> on Mchese, ca. a third to half reduction in total forest size in the 1970s.
	<p><b><i>Rhampholeon (Rhinodigitum) uluguruensis</i></b></p> <p>Uluguru Pygmy Chameleon</p>	<p><b>IUCN:</b> Least Concern (2014);</p> <p><b>Trend:</b> Stable</p>	<p>Tanzania-Endemic to the Uluguru range</p> <hr/> <p>Confined to the Uluguru Mountains (and the small Mkungwe outcrop just 18 km east of this range) in Tanzania. In sub-montane to montane closed canopy evergreen forest 1,500-2,00 m above sea level. Molecular study of records from elsewhere in the Eastern Arc found that <i>Rh. uluguruensis</i> is genuinely endemic to the Uluguru range within this area, the forest patches where the species is known to occur cover an area of 278 km<sup>2</sup>.</p>	<p>Gender isomorphism, max. length 50 mm, tail 21-24.5% of total length. 11-13 inter-orbital tubercles, soft tuberculated dermal rostral process, axillary pits present, inguinal pits absent, strongly bicuspid claws, plantar surfaces smooth cobblestoned appearance, low accessory plantar spines, hemipenes with papillae on each apical horn.</p>	<p>No information on the abundance of this species. The population is assumed to be stable as the forests where it occurs are not heavily impacted. Records indicate extent of occurrence of little over 1,000 km<sup>2</sup>.</p>	<p>On sale in several European countries for 45 € and in the USA for 249 USD.</p> <p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. Dwarf chameleons are imported into the pet trade under the name <i>Rhampholeon uluguruensis</i> in limited quantities every few years, however, the true extent of this collection is uncertain, and it is also not known whether the source populations for these exports are true <i>Rh. uluguruensis</i>, or <i>Rh. moyeri</i> or one of the still-undescribed species within this complex.</p> <p>USA Trade data: 398 imports from 2012-2014.</p>	<p>There are no direct threats to this species, but the quality of the habitat is slowly declining locally due to small-scale resource extraction.</p>



***Rhampholeon (Rhiodigitum) bruessoworum***

Mount Inago  
Pygmy  
Chameleon

Recently described in 2014

**IUCN:**  
Critically Endangered (2014);

**Trend:**  
Decreasing

Mozambique- Mt. Inago  

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Found in three very small, remnant, heavily fragmented, patch of mid-altitude Afro-temperate forest on Mt. Inago, Mozambique; patches of total just over 5 km<sup>2</sup> (ca. 2.2 km<sup>2</sup>, 2.4 km<sup>2</sup>, 0.73 km<sup>2</sup>) with an estimated extent of forest on Mt. Inago as ca. 15 km<sup>2</sup>, which included extremely degraded forest with completely open canopy. Not in adjacent transformed areas on the mountain, nor in the low-lying savannah habitat that surrounds Mt. Inago. There are other small patches of forest at similar elevation that have not been surveyed, but are considered suitable habitat, and included in this species' distribution.. Only forest patches that appear to have intact canopy are included in the range estimate.

This is a very small bodied (40-50 mm) forest dependent species; distinguished by its small size. Unpigmented parietal peritoneum, claws that are strongly bicuspid, smooth plantar surfaces, and a rostral process. Distinguished by having deep inguinal and axillary pits relatively large rostral process in males, and weakly developed crenulations along the dorsal crest. Both sexes have a relatively longer tail.

No quantitative data on population trends, but past, ongoing and future population declines are inferred based on the loss of primary forest on the mountain to a few small, highly fragmented patches. It is only known from a single collecting locality on the mountain, but there are other small patches of forest at similar elevation that have not been surveyed. Assuming that there are individuals in the adjacent patches, the population is inferred to be fragmented; connectivity of subpopulations between the patches is not expected due to the fragmentation of the habitat.

No *Rhampholeon* species (with the exception of *R. spinosus*) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species, however, is not known to be present in the captive market.

It is a forest specialist and is not expected to tolerate either altered habitats or non-forest habitats. The mid-altitude forest on Mt. Inago is severely impacted by human activities, resulting in degradation and fragmentation due to small-holder agricultural activities and deforestation which began decades ago, and is ongoing. Most of the remaining forest is along water courses or below steep granite domes, and is broken into fragments between 1-10 ha. The entire areas of upland plateau are denuded of forest that once covered the area; this species is now excluded from those areas. Ongoing threats to the remaining forest on Mt. Inago, and this species are agricultural expansion, clearing of land for agriculture through frequent fires, and logging.



***Rhampholeon (Rhiodigitum) nebulauctor***

Mount Chipirone  
Pygmy  
Chameleon

Recently described in 2014

**IUCN:**  
Vulnerable (2014);

**Trend:**  
Unknown

Mozambique-Endemic to Mount Chipirone, Zambézia Province  

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Found in a small patch of moist Afro-temperate forest which dominates the southeast slopes, and extends slightly down the drier northern slopes, from a single site at ca. 1,000 m above sea level. Suitable forest for the species occurs between about 900-1,900 m. Additional sites on Mt. Chipirone have not been surveyed to date, but it is assumed the chameleon is found throughout the suitable forest area. As a forest specialist, it is presumed to be intolerant of the


Unpigmented parietal peritoneum, claws that are strongly bicuspid, smooth plantar surfaces, a rostral process, and short tail (<27% of total length in adult males). Distinguished from most other species by having deep inguinal and axillary pits, its smaller size (SVL <53 mm), relatively larger rostral process, and weakly developed dorsal crest crenulation. It is geographically closest to Rh. chapmanorum, but differs by its smaller size, the presence of a relatively large rostral process in males, and accessory planter spines very poorly developed in both sexes. It is morphologically closest to the Mt Namuli


No population information on abundance or trends The forest is being converted to small-scale agriculture along the edges of the southern slopes and because this species is not expected to tolerate altered environments, the population is most probably affected negatively. Due to the growing human population across the region, these impacts are not expected to be reduced, and most probably will intensify.

No *Rhampholeon* species (with the exception of *R. spinosus*) are listed on CITES. Therefore there are no annual CITES export quotas or trade data for this species. It is not known to be present in the captive market.



The majority of the forest on Mt. Chipirone is intact, although impacts on the edges due to conversion of forest to agriculture through clearing and burning exist Most of the forest is not under direct impact from anthropogenic effects at present although with the growing human population, future impacts are likely. At present, patch burning occurs inside the forest, which appears to be the beginning of clearance for agriculture. The forest is not formerly protected, but impacts from human activities are probably minimized because the local population believes that spirits inhabit the

			transformed landscape and fragmented forest habitats. It utilizes low bushes and the forest floor.	chameleon, but has a slightly narrower head and appears to lack the cranial flexure of the head present in male chameleons from Mt Namuli.			forest and they tend to avoid the forest if possible
	<p><b>Rhampholeon (<i>Rhinodigitum</i>) maspictus</b></p> <p>Mount Mabou Pygmy Chameleon</p> <p>Recently described in 2014</p>	<p><b>IUCN:</b> Near Threatened (2014);</p> <p><b>Trend:</b> Stable</p>	<p>Mozambique- Mount Mabou</p> <p>Restricted to an intact 79 km<sup>2</sup> patch of Afro-temperate forest on the slopes of Mt. Mabou, Mozambique. A forest specialist, that does not occur in the low lying savannah habitat that surrounds the mountain.</p>	<p>Possessing a short hemipenis that is almost bag-like, acalyculate and adorned with a pair of simple, curved apical “horns” with a variable number of thorn-like papillae arranged on the outer aspect of the horn; claws that are strongly bicuspid, smooth plantar surfaces, a rostral process, and short tail (&lt;25% of total length in adult males) Distinguished by having deep inguinal and by the bright green male breeding coloration, including blue flanks and side of head, and yellow throat, snout and eye ring. Large size (&gt;60 mm SVL) in both sexes, lack of male dwarfism, well-developed dorsal crenulations, and reduced rostral and supraocular processes.</p>	<p>No information on population abundance. Occurs in a single, isolated forest patch with a hard forest edge that is maintained by subsistence agriculture and frequent fires. The forest itself is relatively intact. Most of this species' distribution would not be impacted by these edge effects, so the population is likely stable.</p>	<p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) are listed on CITES. Therefore there are no annual CITES export quotas or trade data for this species. It is not known to be present in the captive market.</p>	<p>Impacts on the primary forest at Mabou are minimal, the current threats are negligible. Most of the encroachment and habitat alteration has occurred outside the forest in the woodlands, where this species does not occur. Forest edges are hard bounded, due to the activities outside the forest, including subsistence agriculture and frequent fires. Potential future threat from commercial logging, as northern Mozambique experiences uncontrollable commercial logging of its woodlands and forest. At present, the forest is not logged commercially and it is anticipated that registration as a conservation area could assist to curb uncontrolled activities.</p>
	<p><b>Rhampholeon (<i>Rhinodigitum</i>) tilburyi</b></p> <p>Mount Namuli Pygmy Chameleon</p> <p>Recently described in 2014</p>	<p><b>IUCN:</b> Critically Endangered (2014);</p> <p><b>Trend:</b> Decreasing</p>	<p>Mozambique-Endemic to the evergreen Afrotemperate forest patches of Mount Namuli, Zambezia Province</p> <p>Habitat includes largest surviving blocks of forest on Namuli include the Manho Forest (ca.1,000–1,100 ha) and the Ukalini Forest (ca.100 ha), the latter lodged against the base of the Namuli dome at the summit. A few other smaller forest patches along the southern slopes, ca.135 ha of dry forest at mid-altitude &lt; 1,600 m forest and 1,165 ha of montane forest up to ca. 2,200 m. Found in both</p>	<p>Short hemipenis, almost bag-like, acalyculate and adorned with a pair of simple apical “horns” with a variable number of thorn-like papillae arranged on the outer aspect of the horn; having an unpigmented parietal peritoneum, claws that are strongly bicuspid, smooth plantar surfaces, a rostral process, and short tail (&lt;27% of total length in adult males). Distinguished by having deep inguinal and axillary pits and smaller size (&lt;65mm total length), weak crenulations of dorsal crest and adult males retaining a prominent flexure (&gt;32°) of the snout in front of the orbit</p>	<p>No information on population abundance; occurs within a very small distribution, and impacts on the forest are tangible, in the form of habitat transformation for both agriculture, and commercial tea. Because much of the lower altitude forest has been converted, population declines are assumed to have occurred. Expanding and existing human population in the region, has/will likely further population declines. At present, population is considered severely fragmented,</p>	<p>No <i>Rhampholeon</i> species (with the exception of <i>R. spinosus</i>) are listed on CITES. Therefore there are no annual CITES export quotas or trade data for this species. It is not known to be present in the captive market.</p>	<p>Mt. Namuli forests are under heavy threat due to anthropogenic activities. Irish potato cultivation as a cash crop rural communities is seriously impacting the extent and quality of forest habitat. The lower slopes of Namuli have been converted to tea plantation, and agriculture is expanding significantly due to the growing human population on the plateau, along with unsustainable grazing by domestic animals and uncontrolled removal of timber from the remaining forest patches. There is also substantial attrition on the forest edge</p>

			forest types, down to about 840 m elevation.	and a narrower head (HW/HL% 49.4%).	because its forest habitat is highly reduced and fragmented is expected to disrupt gene flow.		due to fires set to burn the montane grasslands. There is strong pressure for expansion of the tea plantations and cattle grazing areas.
	<b>Rhampholeon hattinghi</b>	<b>IUCN:</b> Not Listed	Democratic Republic of the Congo  Found in closed canopy Afrotperate montane forest on low vegetation in the Albertine Rift of SE DRc at 1700 m. Perch heights varied from a few centimetres up to 50 cm from the ground.	Snout-vent 56mm, tail 11mm. Body habitus leaf like - typical of all other Rhampholeon (Rhinodigitum) species. Head short, casque flattened, top of head shallowly concave. The lateral crests are studded with several prominent tubercles. Parietal crest indistinct, indicated by a short row of 3 marginally enlarged tubercles. The supra-optic ridge gathers into a low cluster of tubercles anteriorly above each eye, but without forming a supra-optic horn. The two supra-orbital ridges are connected to each other by a series of 18 inter-orbital tubercles arranged in a shallow V across the top of the head.  Although it superficially resembles <i>Rh. boulengeri</i> , it is genetically distinct	No abundance information for this species.	No Rhampholeon species (with the exception of <i>R. spinosus</i> ) is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. Newly discovered therefore little known.	Habitat loss: there is currently no formal protection afforded to the montane forest on Nzawa DRC, and at the current rate of usage it is likely to be severely degraded or even vanish within the next decade or two.

Rieppeleon	Genus, species	Status and Trend	Native Counties and Range Description/habitat	Morphology	Population Information	Use and Trade	Threats
	<b>Rieppeleon brachyurus</b>  Zomba Pygmy Chameleon	<b>IUCN:</b> Least Concern (2014);  Trend: Unknown	Malawi, eastern Tanzania, northern Mozambique  Wide distribution in Tanzania and northern Mozambique from Lake Nyasa to the east coast. In Malawi, it is has been recorded from the Shire Highlands, the lower slopes of Zomba plateau, as well as the Thyolo Hills, close to Mt. Mulanje. Inhabits the understorey vegetation	Total length up to 58 mm (females: body length 50 mm, tail of 8 mm; males: body 46 mm, tail 7 mm); no gular crest or appendage, supra-optic peak firm non-pliable, inter-orbital ridge usually incomplete may be very indistinct, axillary dermal pit present, no inguinal dermal pit, fine homogeneous granular sculation, lateral flank ridge present, dorsal keel weakly crenulated to almost smooth, plantar surfaces covered with	There is no information on population abundance, however, widespread and probably common.	As no <i>Rieppeleon</i> species are listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is only known to be traded in the captive market extremely seldom and in very limited numbers.  USA Trade data: 393 imports from 2013-2014.	This species is widespread and there are no known major threats. Transformation of the natural vegetation may threaten the species locally, but it is widespread in miombo woodland, the typical savannah vegetation of this part of eastern Africa, and no specific threats have been identified.



			(grasses and bushes) in miombo woodland and in some places extends into riparian forests (e.g. Shire Highlands, Malawi; and Rondo Mountain, Tanzania).	acuminate tubercles, claws with a weak secondary cusp, no accessory plantar spines, males dwarfed compared to females.			
	<p><b>Rieppeleon brevicaudatus</b></p> <p>Bearded Pygmy Chameleon;</p> <p>Short-Tailed Pygmy Chameleon</p> <p>Often sold as <i>Rhampholeon brevicaudata</i></p>	<p><b>IUCN:</b> Least Concern (2014);</p> <p><b>Trend:</b> Unknown</p>	<p>Tanzania, Kenya</p> <hr/> <p>In eastern Tanzania and southeastern Kenya (not present in West Usambara Mountains), found in sub-montane, coastal and lowland forest, between sea level and 1,200 m. Extent of occurrence ca.163,800 km<sup>2</sup>, within this area, the available forest covers less than 10% of that area (ca.11,044 km<sup>2</sup>).</p>	<p>Total length up to 94 mm (females: body 75 mm, tail 17 mm; males: body 72 mm, tail 22 mm); a tuberculated mental lobe (tuft) is present under the chin, prominent bony supra-optic peak, inter-orbital ridge usually marked, axillary dermal pit present, inguinal dermal pit absent, fine homogenous granular scalation, dorsal keel weak to moderately crenulated, claws with a weak secondary cusp, sexual isomorphism.</p>	<p>No information on abundance. It appears to be widespread and common in the forests where it occurs, and is probably not undergoing any substantial population declines.</p>	<p>Since the 1990s in pet trade; second-most imported pygmy chameleon into USA, also often sold in Europe. Animals cost 25-69 € within Europe and 35 USD.</p> <p>As no <i>Rieppeleon</i> species are listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. This species is traded relatively widely in the pet trade, however, and frequently imported labelled as <i>R. kerstenii</i>.</p> <p>USA Trade data: 57,615 imports from 1999-2014.</p>	<p>This species is relatively widespread and much of its habitat is within protected areas; no substantial tangible threats at present.</p>
	<p><b>Rieppeleon kerstenii</b></p> <p>Pygmy Grass Chameleon;</p> <p>Bearded Pygmy Chameleon;</p> <p>Kenya Stumptail Chameleon;</p> <p>Kenya Pygmy Chameleon;</p> <p>Kersten's Dwarf Chameleon;</p> <p>Kenya Leaf Chameleon</p> <p>Often sold as <i>Rhampholeon kerstenii</i></p>	<p><b>IUCN:</b> Least Concern (2014)</p> <p><b>Trend:</b> Unknown</p>	<p>Tanzania, Somalia, Kenya, Ethiopia</p> <hr/> <p>Occurs in Somalia, southeastern Ethiopia, Kenya and northeastern Tanzania, from sea level to 1,500 m above sea level. Adapted to life outside of evergreen forests; in bushland and grassland, both moist and dry savannah (including semi-desert), and coastal and dense woodland and thickets.</p>	<p>Total length up to 100 mm (females: body 71 mm, tail 33 mm; males: body 67 mm, tail 30 mm); a thin lateral ridge is present along the flank, dorsal keel relatively smooth, prominent bony supra-optic peak in males, distinct inter-orbital ridge, no inguinal or axillary dermal pits, plantar surfaces covered in acuminate tubercles, no accessory plantar spines, claws variably bicuspid – weak to moderate, tail usually more than 30% of total length. <i>Ri. kerstenii robecchii</i> can be distinguished from the nominate form by a more developed supra-optic peak in males, which more appears like a horn, body is more slender, with longer limbs.</p>	<p>There is no information on the abundance of this species, but it is widespread and probably common.</p>	<p>The most frequently imported African pygmy chameleon in the USA. Prices vary from 29-60 € within Europe to 25 USD.</p> <p>As no <i>Rieppeleon</i> species is listed on CITES, annual CITES export quotas and CITES trade data for this species are lacking. While shipments of pygmy chameleons labeled as <i>R. kerstenii</i> are frequent, these shipments typically contain <i>R. brevicaudatus</i> and <i>R. temporalis</i>, not <i>R. kerstenii</i>. <i>Rieppeleon kerstenii</i> is known to be traded occasionally and in limited to moderate quantities.</p> <p>USA Trade data: 98,941 imports from 1999-2014.</p>	<p>Due to this species' wide range, it is not subject to major threats. It is not presently considered to be threatened by exploitation.</p>

**References:** Tilbury, C. (2010): Chameleons of Africa – An Atlas including the chameleons of Europe, the Middle East and Asia. Edition Chimaira, Frankfurt.  
US Fish and Wildlife Service, LEMIS Database (2015): US import data for *Rhampholeon* and *Rieppeleon* species.  
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