

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

To list the species *Paroedura masobe* in Appendix II, under the provisions of Article II, paragraph 2 (a) of the Convention, in satisfaction of criterion B in Annex 2 a of Resolution Conf. 9.24 (Rev. CoP16).

B. Proponent

The European Union and Madagascar*.

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Squamata

1.3 Family: Gekkonidae

1.4 Genus, species or subspecies, including author and year: *Paroedura masobe* Nussbaum and Raxworthy, 1994

1.5 Scientific synonyms:

1.6 Common names: French : gecko de Madagascar à gros yeux
English: Masobe gecko

1.7 Code numbers:

2. Overview

The *Paroedura masobe* gecko is endemic to low- and mid-elevation forests in central eastern Madagascar. It is known from two areas protected prior to 2011 (Bora *et al.*, 2011). However, since the creation of new protected areas in Madagascar and the development of the Biodiversity Action Plan by the Ambatovy mining enterprise in 2007, the species' area of distribution has been expanded (cf. PAG Ambohidray, 2015; Razafimahatratra personal communication, 2015; Andriantsimanarilafy pers. comm., 2015).

The species is collected in the wild to supply the international pet trade. It has been captured within the new protected area of the Ankeniheny-Zahamena Corridor (CAZ) and even in the Betampona and Zahamena National Park Strict Reserve (*Réserve Intégrale*), where collection and hunting are illegal (Rosa *et al.*, 2011; Golden *et al.*, 2015). Since 2011 it has been classified as "Endangered" on the IUCN Red List

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of Threatened Species, based on its restricted extent of occurrence (no more than 410 km²), the limited range of its habitat (close to 100 km²), the ongoing decline in the quality of its habitat, and the severe fragmentation of its population (Bora *et al.*, 2011).

This species is affected by trade, and wild population trends indicate that regulation of trade in the species is necessary in order to ensure that the harvest of specimens from the wild does not reduce the wild population to a level at which its survival might be threatened by continued harvesting or other influences.

3. Species characteristics

3.1 Distribution

Paroedura masobe is endemic to Madagascar (Glaw and Vences, 2007), where its presence has been observed in only two protected areas in the central eastern part of the country, in the province of Toamasina (Bora *et al.*, 2011). The type locality is the Zahamena Strict Natural Reserve (*Réserve Intégrale de Zahamena*) (Nussbaum and Raxworthy, 1994). The species is also found in the northern part of the Zahamena-Ankeniheny Corridor (CAZ) (Glaw and Vences 2007), the Betampona Strict Natural Reserve (*Réserve Naturelle Intégrale*, or RNI), and Zahamena National Park (Rosa, 2008; Rosa *et al.*, 2011), although there is little information concerning its distribution in these three areas (Bora *et al.*, 2011). The extent of occurrence is estimated at 410 km²; however, its true distributional extent within this area is likelier to be close to 100 km², due to the scarcity of suitable habitat between these sites (Bora *et al.*, 2011). Current knowledge indicates a severely fragmented population. However, recent studies conducted during the creation of the new protected area of Madagascar (NPA) identified new distributions, including in the new protected areas in Ambohidray (ACCE, 2015); Ankarana Park, as part of the Ambatovy Project Business and Biodiversity Offsets Programme (BBOP) (Razafimahatratra pers. comm., 2015); and, recently, the Betainkankana forest, east of the CAZ (Andriantsimanarilafy pers. comm., 2015).

3.2 Habitat

Paroedura masobe is found in primary and secondary lowland (Nussbaum and Raxworthy, 1994; Rosa *et al.*, 2011) and mid-altitude forests (ACCE, 2015) at elevations varying between 300 and 900 m above sea level. It is found at night perched on leaves and branches at heights of one to four metres above the forest floor (Glaw and Vences, 2007), and primarily in the open formations of mountain ridges rather than valleys and mountainsides, as in Betampona along the mountain ridges of Rendrirendry (Rabibisoa pers. comm., 2015). It is found during the day in the hollow cavities of dead tree branches near Ambohidray (Rabibisoa pers. comm., 2015). It is reported that this species is unable to survive on agricultural land (Bora *et al.*, 2011).

3.3 Biological characteristics

Paroedura masobe is a nocturnal gecko (Glaw and Vences, 2007). In captivity, females lay one to two eggs per reproductive season, which they deposit in or on the ground (Ivanuna and Krivosheeva, 2014). Glaw and Vences reported (2007) that during observation in captivity, a female laid two very large, hard-shelled, quasi-spherical eggs, approximately 18 x 17 mm, that hatched six months after they were laid. The two hatchlings weighed approximately 2.4 grams and moulted less than six hours after hatching. It is also reported that specimens reach sexual maturity at between one and a half and two years (Ivanuna and Krivosheeva, 2014).

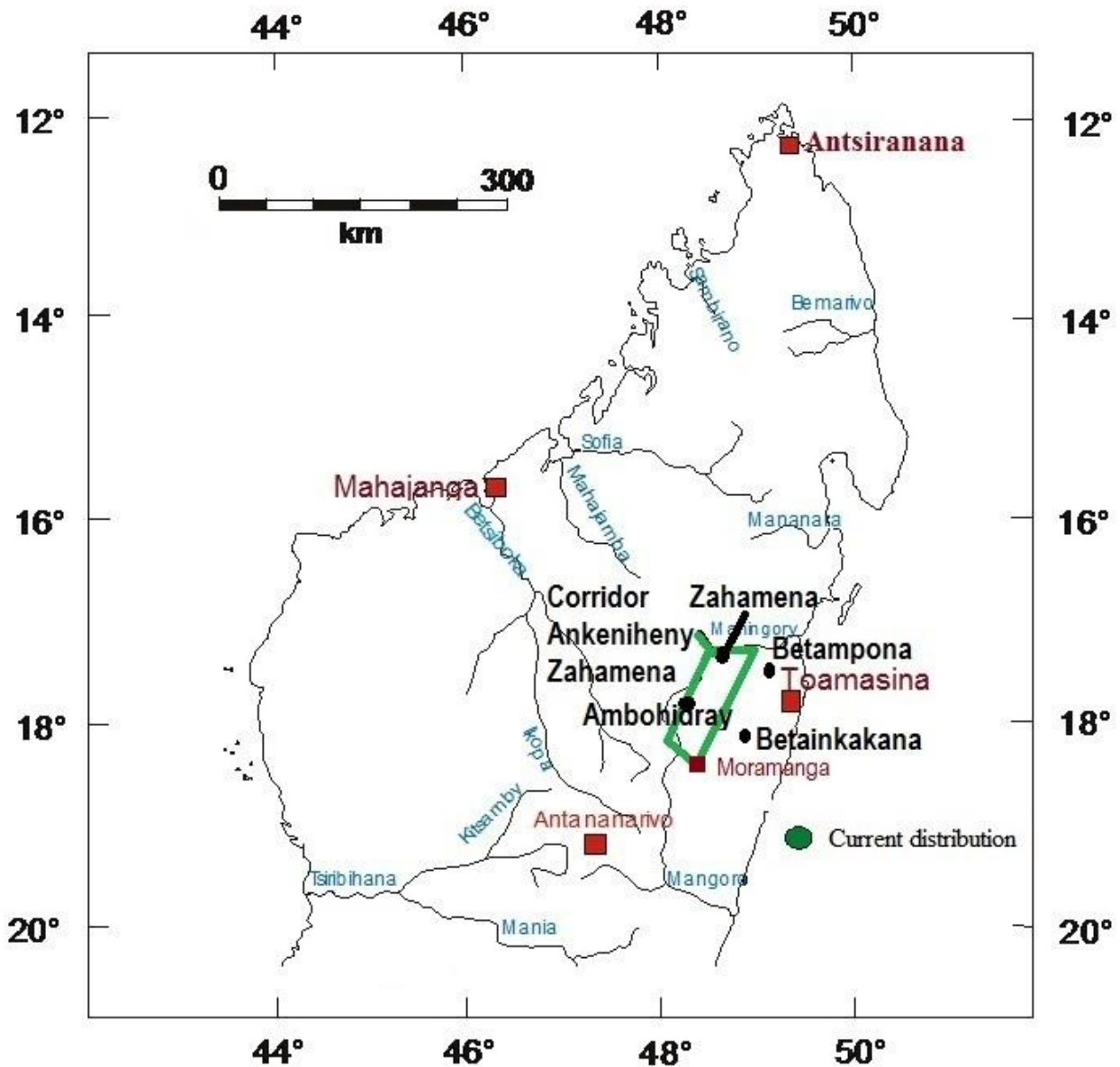


Figure 1. Extent of distribution (in green) of the *Paroedura masobe* gecko (Source: Rabibisoa Nirhy)

3.4 Morphological characteristics



Figure 2. Adult *Paroedura masobe* (Source: Raphali Andriantsimanarilafy)

Paroedura masobe is the largest species of the genus *Paroedura* in Madagascar (Rosa *et al.*, 2011), growing up to 107 mm (SVL), with a tail that can reach 170 mm in length (Glaw and Vences, 2007). The tail is laterally compressed with a double row of dorsal spines. The back of the head and body are dark-grey to brown, with three to four light transversal bands between neck and pelvis. The tail

has three to four white bands (Glaw and Vences, 2007). White spots are densely distributed over the head, body, and limbs. The gecko has very large eyes with black irises, directly strongly forward (Glaw and Vences, 2007).

In other species of this genus, juveniles have a specific colouration; this is not the case in *P. masobe* (Glaw and Vences, 2007). Newly hatched *P. masobe* strongly resemble adults in terms of both colour and pattern (Jackman *et al.*, 2008).

3.5 Role of the species in its ecosystem

No specific studies have been conducted concerning the role of *P. masobe* in its ecosystem. The species feeds on insects and snails in captivity (Ivanuna and Krivosheeva, 2014).

4. Status and trends

4.1 Habitat trends

The species' original habitat is probably the canopies of intact primary forests. With the ongoing deforestation of Madagascar, the species has been observed in open environments, generally along the forest edge on mountain ridges (case of Betampona). Destruction of the species' habitat is due to the illegal practice of slash and burn agriculture in and around the reserve, as in Betampona (Madagascar Fauna and Flora Group, or MFFG, 2014). In the past, this reserve was contiguous with the CAZ; however, due to deforestation, it is now an isolated forest fragment surrounded by degraded agricultural lands (MFG, 2014).

Prior to 2015, the CAZ was unprotected, and the land in and around the corridor was subject to traditional clearing practices involving slash and burn agriculture, known as *tavy* (The Nature Conservancy, 2010). *Consequently*, the above-mentioned endemic anthropic pressures, past and present, are determining the species' current habitat, which consists of severely fragmented, isolated secondary open formations.

4.2 Population size

No information has been gathered concerning the size of the *P. Masobe* population. An adult male was spotted in 2007 in Betampona Reserve (Rosa, 2008 in Rosa *et al.*, 2011), and a young adult male was observed during later surveys of the Betampona reserve in 2010 (Rosa *et al.*, 2011). The species is reported to be rarely encountered and difficult to find (Bora *et al.*, 2011). Studies are needed to determine the population size and trends of this species in the wild.

4.3 Population structure

No information is available concerning the species' population structure.

4.4 Population trends

The species is categorized as "Endangered" in the IUCN Red List (Bora *et al.*, 2011), based on the severe fragmentation of its population and the continuing decline in the quality and extent of its habitat. The population of the species is presumed to be declining, due to the pressures on and patchy distribution of the remaining low-elevation forests (Bora *et al.*, 2011). More research is needed into population trends in this species, especially with the appearance of new distributions in the mid-elevation forest (Bora *et al.*, 2011).

4.5 Geographic trends

The limited and fragmented distribution of the species is due to habitat transformation (Bora *et al.*, 2011). It has been reported that mid-elevation forests are currently being subjected to the same pressures as low-elevation forests. Further research into the current extent of occurrence of this species could offer additional information concerning geographical trends.

5. Threats

Paroedura masobe is considered a very attractive (Glaw and Vences, 2007) and iconic species, and is captured for this reason (Nussbaum and Raxworthy, 1994 in: Rosa *et al.*, 2011), to supply the international pet trade. Rosa *et al.* (2011) and Bora *et al.* (2011) have concluded that the species may be threatened due to its capture for the international pet trade. The lack of regulation of the trade in this species due to its current status (non-CITES) constitutes a potential threat, given the current high demand for it. In addition, conversion of low- and mid-elevation humid forests into farmland through the practice of *tavy*, and the degradation of forest habitat from the extraction of honey, timber, and other biological resources have also resulted in loss of habitat and are considered to be major threats to *P. masobe* (Bora *et al.*, 2011).

Currently, the massive entry of artisanal mining activities into the Ankeniheny Zahamena Corridor and Zahamena Park also constitutes a major threat (Rabibisoa, pers. comm.).

6. Utilization and trade

6.1 National utilization

No utilization has been reported at the national level.

6.2 Legal trade

Paroedura masobe is classified as non-CITES. Bora *et al.* (2011) report an annual quota of ten individuals for legal export. According to the Law Enforcement Management Information System (LEMIS) database, managed by the United States Fish and Wildlife Service, between 2011 and 2015, 293 specimens were collected in the wild and imported from Madagascar, and 53 specimens are being raised in captivity, imported by Canada, Germany, and the United Arab Emirates. Available data concerning exports from Madagascar are incomplete, but exist for two of Madagascar's 22 regions (Raharimalala *et al.*, in prep.). The regional governments of Analamanga and Antsinanana reported the export of 2,458 specimens of *P. masobe* between 2000 and 2005, prior to the implementation of Decree 2006-400 prohibiting the species' capture; the export of 100 specimens was also reported between 2006 and 2012 (Raharimalala *et al.*, in prep.).

Exports from Madagascar between 2010 and 2015 show a variation of between 2 and 505 individuals per year, based on external demand, with Fiherenana (in the CAZ) as the favoured collection area (source: database of the Management Authority of Madagascar). However, the CITES Management Authority and Scientific Authority of Madagascar placed a moratorium on exports in June 2015, ahead of new national and international controls (new legislation), including the proposal to list the species in CITES Appendix II in order to provide better monitoring and control.

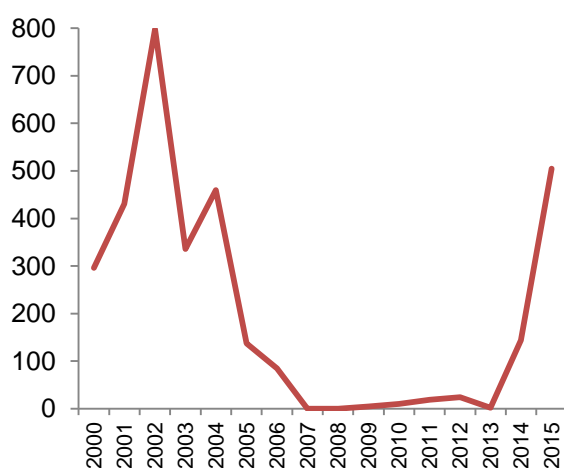


Figure 3. Trend in the number of *Paroedura masobe* exported between 2000 and 2015 based on demand from international trade.

6.3 Parts and derivatives in trade

Paroedura masobe are marketed as live specimens.

6.4 Illegal trade

Illegal captures have been reported in the Betampona Reserve and Zahamena National Park (Rosa *et al.*, 2011). Glaw and Vences (2007) found that large numbers of specimens were being imported into Europe, with poor survival in captivity. During a survey taken by the commune of Fiherenana, district of Moramanga, region of Alaotra Mangoro, in eastern Madagascar, that included local dialogue, collectors stated that *P. masobe* was considered one of the most profitable species to capture (Razafimahatratra *et al.*, 2009). Between 2012 and 2015, live specimens of *P. masobe* (including specimens of wild origin) were being sold on the Internet¹ by retailers from five different EU countries; in 2015, three different vendors were selling the species on the same website, including a pair (bred in captivity) being offered for €600.

6.5 Actual or potential trade impacts

Bora *et al.* (2011) reported that, if uncontrolled, the international pet trade may represent a major threat to *P. masobe*, for the reasons stated above. Consequently, the Management Authority of Madagascar and the Scientific Authority of Madagascar placed a moratorium on exports of the species in effect since June 2015. Information concerning capture and trade volumes is incomplete due to the species' non-CITES status, which allows the regional forestry department to issue export permits; data concerning these permits has been difficult to obtain and interpret, exacerbated by the lack of a reliable database. However, data from the Forest Resource Management Service (*Direction de la Valorisation des Ressources Forestières*) is presented in the table below.

Table 1. Number of *P. masobe* individuals imported from Madagascar in 2014, reported in 2015.

Germany	Canada	Hong Kong	Japan	The Netherlands	USA	Combined total
		10	20		40	70
			4		55	59
	20			25	76	121
		36			12	48
			45			45
					10	10
			6			6
					100	100
30	10		6			46
30	30	46	81	25	293	505

7. Legal instruments

7.1 National

Betampona Reserve and Zahamena National Park together form a strict natural reserve (*Réserve Naturelle Intégrale*) that is not open to the public (Golden *et al.*, 2015), and is considered a no-take zone (IUCN and UNEP-WCMC, 2015).

P. masobe is governed by national species protection laws under Category I, Class I (Decree 2006-400 of June 13, 2006, classifying species of fauna). The species is fully protected throughout the Republic of Madagascar and cannot be hunted, captured, or possessed, except in those cases provided under Article 20 of Ordinance no 60-126 of October 3, 1960.

7.2 International

P. masobe is covered by the United States Lacey Act, which prohibits importation into the United States of wild specimens imported in violation of Malagasy law.

¹ <http://www.terroristik.com>

8. Species management

8.1 Management measures

Collection is prohibited in the Betampona Reserve, which is co-managed by Madagascar National Parks (MNP) and the Madagascar Fauna & Flora Group (MFFG) (Rosa *et al.*, 2011), and is not open to the public (Golden *et al.*, 2015). Management of certain parts of the Ankeniheny-Zahamena Corridor has been transferred to local communities (The Nature Conservancy, 2010), supported by Conservation International, an NGO. Zahamena National Park is managed by Madagascar National Parks. Ambohidray is a new protected area placed under the management of the Ministry of Environment, Ecology, and Forests in 2015.

There are no known measures specific to the management of *P. masobe*.

Given the status of the population, the level of collection of this species, and the need to improve controls on its collection and international trade, Madagascar is proposing that *Paroedura masobe* be listed in CITES Appendix II. The establishment of good experimental management structures is necessary to ensure the species' sustainable conservation, as in the case of the *Mantella aurantiaca* frog, since, moreover, placing a species under strict conservation (listing in Appendix I) increases the demand for it, and encourages illicit wildlife trafficking and illegal trade (case of the land tortoises of Madagascar) where poor governance structures (corruption) and weak border controls exist.

8.2 Population monitoring

No information concerning population monitoring has been established.

8.3 Control measures

8.3.1 International

No specific control measures have been reported.

8.3.2 Domestic

Commercial trade in this species has been suspended since June 2015, pending new legislation.

8.4 Captive breeding and artificial propagation

Glaw and Vences, 2007, report that, contrary to other species of this genus, *P. masobe* must be placed in a cold, humid environment in order to survive in vivarium. The viable reproduction of *P. masobe* in captivity has been observed since 2012 in Ukraine (Ivanuna and Krivosheeva, 2014), and 53 individuals imported from Madagascar in 2015 are captive-bred.

8.5 Habitat conservation

Zahamena National Park is part of a UNESCO World Heritage Site. Efforts to improve the connectivity of World Heritage forest sites in Madagascar have been reported (Entenmann and Schmitt, 2011), in particular through the creation of a protected area south of Zahamena National Park in order to make it contiguous with Mantadia National Park (Entenmann and Schmitt, 2011). The REDD+ initiative has been implemented to create the Ankeniheny-Zahamena Corridor as a protected area with portions placed under strict protection and other areas zoned for sustainable management (Harvey *et al.*, 2010 in Entenmann and Schmitt, 2011), and to promote the replanting of native species to restore forest landscapes and reconnect existing forest fragments (The Nature Conservancy, 2010).

8.6 Safeguards

In Madagascar, national legislation has been in place since 2006 to protect this species (cf. Legal Instruments section). Internationally, the captive breeding program of the BION Terrarium Center, open to the public, provides pertinent biological data that can be used to develop measures to safeguard species viability (cf. <http://www.bion.com.ua/>).

9. Information on similar species

There are currently 15 species of the genus *Paroedura* (Uetz and Hošek, 2015). *P. masobe* is distinguished from other species of the genus by its colouration and tail morphology (cf. figure 2), while *P. gracilis*, another species present in the eastern tropical forests, is much smaller (Glaw and Vences, 2007).

10. Consultations

Madagascar has indicated that it will take steps to propose the listing of *P. masobe* in Appendix II of the CITES, with the European Union as Co-Author.

11. Additional remarks

A new national law is being drafted concerning the classification of Malagasy wild fauna, in which *P. masobe* will be taken into account. Recent studies conducted during the establishment of the new protected area in Madagascar have identified new distributions of the species.

It has been reported that, in Madagascar, listing a species in Appendix I encourages illicit trafficking of all genera (case of land tortoises), as well as hunting (primates and tortoises). For this reason, strict prohibition and restriction are not the most effective solutions for improving the efficient management of this species.

12. References

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