

Conservation status of Malagasy chameleons (*Furcifer* and *Calumma*) and compliance with CITES Article IV

A report to the CITES Scientific Authority for Animals in Madagascar

January 2010

By Madagasikara Voakajy and DICE



DICE
University of Kent

Durrell Institute of
Conservation and Ecology

The preparation of this report was funded by the Darwin Initiative through a project called '*Chameleon Trade and Conservation in Madagascar*' by the Durrell Institute of Conservation and Ecology, University of Kent and Madagasikara Voakajy



Report authors:

Jenkins, R. K. B.^{1,2}, Randrianantoandro, J. C.¹ and Elisoa, H. F.¹

¹Madagasikara Voakajy, B. P. 5181, Antananarivo, Madagascar

²DICE, University of Kent, Canterbury, United Kingdom

Please address all correspondence to:

R. K. B. Jenkins: jenkins@moov.mg

Introduction

Commercial export of chameleons from Madagascar has been limited to four *Furcifer* species since 1995 (Carpenter et al. 2005). Since then, results from numerous studies on population density and updated distribution assessments indicate that a number of chameleon species are widely distributed and that some are locally abundant (Andreone et al. 2005; Brady & Griffiths 1999; Glaw & Vences 2007; Karsten et al. 2009; Rabearivony et al. 2008; Randrianantoandro et al. 2008). Extrapolating local population densities and available habitat across the island has led to estimated national population sizes in the millions for some chameleon species (Brady & Griffiths 1999). It is therefore clear that some of Madagascar's 74 chameleon species occur in the wild in numbers that could support low or modest annual collection for the international pet trade. However, other chameleon species need to be prevented from entering the international trade because they are highly threatened, have unusual life histories or occur within strict protected areas. The challenge facing Madagascar is now to identify which species are the most appropriate for managed commercial collection and which species require concerted conservation attention.

The significant progress made by Madagascar in implementing its CITES Action Plan led the Standing Committee to recommend that the Animals Committee re-evaluate its recommendations concerning the export of *Calumma*, *Furcifer* and *Phelsuma* species (SC57 Doc. 9.2). The CITES Secretariat consequently commissioned a study to assess, on a species-by-species basis, the potential for international trade in these reptile genera in accordance with article IV.

The results of this study were submitted to the 24th meeting of the CITES Animals Committee (April 2009, Geneva) and classified each species into one of four tentative categories according to whether international trade should be permitted (AC24 Doc. 7.2). These categories were created strictly for the purposes of the commissioned review and are not standard nomenclature for CITES.

Table 1 Categories for Malagasy chameleons used to determine suitability for international commercial export (AC24 Doc. 7.2)

Category	Definition
C1	Species for which available information suggests that no collection of wild specimens for commercial export should be allowed at present
C2	Species for which there is insufficient information available at present to determine whether collection of wild specimens for commercial export should be allowed
C3	Species for which information indicates that limited collection of wild specimens for commercial export could be allowed
C4	Species for which information indicates that moderate collection of wild specimens for commercial export could be allowed

The Animals Committee then reviewed each species on a case-by-case basis in its 2009 meeting using AC24 Doc. 7.2., and a number of recommendations were adopted (E-AC24-Sum-Rec-Final).

NON-COMPLIANCE WITH ARTICLE IV

The Animals Committee concluded that the provisions of Article IV for 21 chameleon species was not being met and recommended that Parties to maintain the suspension of imports on these taxa (SC58 Doc 21.3). These species consisted of the 20 species considered C1 or C2 in the AC24 Doc. 7.2, in addition to *Calumma cucullatum* which was listed originally as C2/C3. It is worth noting that *Furcifer bifidus*, also considered C2/C3 in AC24 Doc was not included in this list.

CONDITIONAL COMPLIANCE WITH ARTICLE IV

The Animals Committee recommended that the export of 23 species (C3 and C4) could be in accordance with Article IV if certain conditions are met. The Animals Committee listed six conditions but considered it necessary for only the first three to be met:

1. Established conservative annual export quota for wild specimens intended for trade, based on estimates of sustainable off take and scientific information
2. Forwarded the quota details to the Secretariat (including zero quotas) and provide information and data used by the Scientific Authority to determine that the quantities would not be detrimental to the survival of the species in the wild
3. The Secretariat after consultation with the Animals Committee should publish the quota agreed by the Animals Committee (including any zero quotas). No export should occur until the agreed quotas have been published on the Secretariat's website
4. Ensured that specimens produced from captive-production systems were distinguished in trade from genuine wild-harvested specimens, that separate export quotas were established and notified to the Secretariat
5. Conducted a status assessment, including an evaluation of threats to the species; developed and implemented an internationally agreed standard population monitoring programme for the species; and advised the Secretariat of the details of the assessment and the programme
6. based any changes to the conservative annual export quota for wild-taken specimens on the results of the assessment and monitoring programme

The suspension of imports of Malagasy chameleons (except *Furcifer lateralis*, *F. oustaleti*, *F. pardalis* and *F. verrucosus*) will remain in place unless the above conditions are met.

The Standing Committee wrote a letter on 6th August 2009 to the Management Authority in Madagascar in which results of the commissioned study (AC24 Doc. 7.2) and the Animal Committee recommendations were presented (E-AC24-Sum-Rec-Final and SC58 Doc. 21.3 Rev. 1). The letter stated that conditions 1-3 were required for trade in C3 and C4 species to be in accordance with Article IV. The Standing Committee also encouraged Madagascar to provide additional information on the species listed as C1 and C2 before the 25th meeting of the Animals Committee.

A meeting was held in the Department of Animal Biology, University of Antananarivo on the 5th October 2009, and attended by representatives of the Madagascar Management and Scientific Authorities and other experts on Malagasy herpetofauna, to discuss the Animals Committee letter of 6th August 2009.

This report was commissioned during the 5th October 2009 meeting and is an input document for the next meeting, scheduled for January 2010.

This report has the following objectives:

1. Evaluate the CITES categorisation (C1-C4) of Malagasy chameleons (*Calumma* and *Furcifer*) based on new information
2. Describe progress of the CITES Scientific Authority in Madagascar towards achieving the conditions outlined by the Animals Committee (E-AC24-Sum-Rec-Final)
3. Identify next steps towards ensuring science-based, sustainable and equitable trade of Malagasy chameleons

Report structure and contents

In this report we present a brief summary of each *Calumma* and *Furcifer* species considered in AC24 Doc. 7.2, in addition to two other taxa that were not evaluated. Fuller descriptions of the each species are available in the literature (AC24 Doc. 7.2; Glaw and Vences 2007) and we present only the basic information to stimulate debate in the forthcoming meeting.

For each species we provide a summary of information available on its distribution (**Distr.**), population (**Popl.**), ecology (**Ecol.**), conservation (**Cons.**) and threats (**Thre.**). Each account is accompanied by a summary table in English and French that presents the (1) initial evaluation in AC24 Doc. 7.2, (2) the decision adopted by the Standing Committee, (3) our evaluation and (4) our recommendation to the CITES Authorities in Madagascar.

We use the following abbreviations for protected areas:

NP National Park
SR Special Reserve
RNI Intergrated Natural Reserve

We also summarize the available information on each chameleon species with respect to the IUCN Red List, Malagasy wildlife legislation and CITES Appendices. Using distributional records available in published literature we created distribution maps for each species. Databases of vegetation cover and protected areas were then used in ArcView to estimate the proportion of the extent of occurrence for each species within Madagascar National Parks (strict protected areas) and provisional protected areas (many with sustainable use options planned).

Contents

Species Accounts	Page number
<i>C. amber</i>	6
<i>C. ambreense</i>	7
<i>C. andringitraense</i>	8
<i>C. boettgeri</i>	9
<i>C. brevicorne</i>	10
<i>C. capuroni</i>	11
<i>C. crypticum</i>	12
<i>C. cucullatum</i>	13
<i>C. fallax</i>	14
<i>C. furcifer</i>	15
<i>C. gallus</i>	16
<i>C. gastrotaenia</i>	17
<i>C. glawi</i>	18
<i>C. globifer</i>	19
<i>C. guibei</i>	20
<i>C. guillaumeti</i>	21
<i>C. hafahafa</i>	22
<i>C. hilleniusi</i>	23
<i>C. jevy</i>	24
<i>C. malthe</i>	25
<i>C. marojezense</i>	26
<i>C. nasutum</i>	27
<i>C. oshaughnessyi</i>	28
<i>C. parsonii</i>	29
<i>C. peltierorum</i>	30
<i>C. peyrrierasi</i>	31
<i>C. tsaratananense</i>	32
<i>C. tsyscorne</i>	33
<i>C. vatosoa</i>	34
<i>C. vencesi</i>	35
<i>F. angeli</i>	36
<i>F. antimena</i>	37
<i>F. balteatus</i>	38
<i>F. belalandaensis</i>	39
<i>F. bifidus</i>	40
<i>F. campani</i>	41
<i>F. labordi</i>	42
<i>F. minor</i>	44
<i>F. nicosiai</i>	45
<i>F. petteri</i>	46
<i>F. rhinoceratus</i>	47
<i>F. timoni</i>	48
<i>F. tuzetae</i>	49
<i>F. willsii</i>	50

	Page number
Distribution maps	51
Towards Article IV	56
Conclusions	58
Recommendations	58
Table 1	59
Table 2	61
Bibliography	62

Calumma amber

Raxworthy & Nussbaum, 2006

This species was previously considered as *C. brevicorne* (Raxworthy & Nussbaum, 2006)

- Distr.** This is an endemic species to Madagascar and only known from the Montagne d'Ambre in the north of the island where it occurs between 900 m and 1,300 m elevation (Raxworthy & Nussbaum 1994; Raxworthy & Nussbaum 2006).
- Popl.** There is no information on the population of this species but it may be locally abundant.
- Ecol.** This species occurs in mid-altitude forests.
- Cons.** This species occurs in Montagne d'Ambre NP from where collection is illegal.
- Thre.** Relatively few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Entire range of this species occurs within a national park	C1 Trade suspension	Entire range of this species occurs within a national park	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution entière de cette espèce se trouve dans un parc national	C1 Commerce suspendu	La distribution entière de cette espèce se trouve dans un parc national	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendu

Calumma ambreense

(Ramanantsoa, 1974)

Considered as a distinct species by Glaw & Vences (2007) but was included in *C. oshaughnessyi* in the CITES study (AC24 Doc. 7.2).

-
- Dist.** This chameleon is endemic to the island of Madagascar where it is restricted to two localities in the north, at Montagne d'Ambre and Tsaratanana. This species may also occur at Marojejy and two other localities in the north but because of confusion with *C. globifer*, additional collection and analyses are required.
- Popl.** This species is found in mid-altitude rainforest. Adults maintained territories without aggression.
- Ecol.** This species occurs in humid forests.
- Cons.** This species occurs in Montagne d'Ambre NP and Tsaratanana RNI from where collection is illegal.
- Thre.** Deforestation at Tsaratanana RNI.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Not considered in the review	None	Distribution and ecology poorly known; occurs mainly within strict protected areas	Occurrence in parks and lack of data prohibit legal and sustainable collection	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Pas été considérée dans la revue	Rien	Distribution et écologie moins connues ; se trouve principalement au sein des aires protégées	Distribution dans les parcs et manque de donné sur l'interdiction légale et la collection durable	C1 Commerce suspendue

Calumma andringitraense

(Brygoo, Blanc & Domergue, 1972)

Formerly a subspecies of *C. gastrotaenia* but elevated to species status by Böhme (1997). Individuals from Andohahela in the south-east require additional study to verify their taxonomic status (Glaw & Vences 2007).

- Dist.** This species is endemic to Madagascar and restricted to high elevation humid forest around 1,210 m elevation in the south-east (Raxworthy & Nussbaum 1996a). It is known a number of localities around the Andringitra massif, at Kalambatritra (Andreone & Randrianirina 2007) and may also be present at Andohahela, but specimens from the latter site require additional taxonomic study (Andreone et al. 2001; Glaw & Vences 2007).
- Popl.** There is no published information the population of this species
- Ecol.** This species occurs in intact humid forests at high elevations.
- Cons.** This species occurs in Kalambatritra SR and Andringitra NP from where collection is illegal.
- Thre.** Its high elevation forest habitat is relatively secure.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread in the south-east where it is locally abundant; could support low level collection	C3 Three conditions to be met before trade will be permitted	Distribution and ecology poorly known; occurs mainly within strict protected areas in the south-east	Reject tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue dans le Sud-est où elle est localement abondante ; pourrait supporter une collecte de bas niveau	C3 Trois conditions à remplir avant que le commerce soit autorisé	Distribution et écologie moins connues ; se trouve dans des aires protégées dans le sud-est	Conclusion prévisionnelle dans AC24 Doc. 7.2 refusée	C2 Suspension commerce

Calumma boettgeri

(Boulenger, 1888)

Calumma linotum is tentatively put as a synonym of *C. boettgeri* (Glaw & Vences 2007). This species is probably a complex of sibling species (Raxworthy & Nussbaum 1996a)

- Dist.** This chameleon is endemic to the island of Madagascar where it is restricted to the north of the island (Glaw & Vences 2007). Reports of this species from Mantadia in the east need to be verified (Brady & Griffiths 1999). Found between 650 m (Raxworthy & Nussbaum 1994) and 1,250 m (Andreone et al. 2000).
- Popl.** A total of 35 and 40 *C. boettgeri* were found in one plot on two visits (50 x 100 m) in humid forest in northern Madagascar which provided a calculated population size of 104 ± 33.9 individuals (Raxworthy & Nussbaum 2002).
- Ecol.** There is contrasting evidence of the habitat use by *C. boettgeri*. On Nosy Be is has been found in ylang-ylang and coffee plantations (Andreone et al. 2003) but another, earlier, account stated that it is not known from secondary habitats (Raxworthy & Nussbaum 1994). Elsewhere it has been classed a mid-altitude forest specialist (Raselimanana et al. 2000) but was more abundant in montane than mid-altitude forest in Montagne d'Ambre (Raxworthy & Nussbaum 2002).
- Cons.** This species occurs in three strict protected areas from where collection is illegal.
- Thre.** Although deforestation is reducing available habitat this species appears to be able to survive in degraded habitats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread in the north and locally abundant; could support moderate export	C4 Three conditions to be met before trade will be permitted	Widespread in the northern humid forests; lack of data on population size	Reject tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répandu dans le nord et localement abondante; pourrait supporter un quota d'exportation modéré	C4 Trois conditions à remplir avant que le commerce soit autorisé	Répandue dans les forêts humides dans le Nord ; manqué de donné sur la taille de la population	Conclusion prévisionnelle dans AC24 Doc. 7.2 refusée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma brevicorne

(Günther, 1879)

The taxonomy of this species-group was recently revised (Raxworthy & Nussbaum 2006).

- Dist.** This species is endemic to Madagascar and has a broad latitudinal distribution between the Anosy Mountain in the south and the Tsaratanana Massif in the north, within an elevational band of between 810 and 1000 m (Raxworthy & Nussbaum 2006). Other records of this species need to be re-evaluated in line with division of this taxon into new species (Raxworthy & Nussbaum 2006). Its geographic range information is therefore incomplete and voucher collections need to be re-assessed using the new species classification.
- Popl.** Brady and Griffiths (1999) calculated population densities of 2.4 chameleons ha⁻¹ for this species in the forests around Mantadia NP and Analamazaotra SR. Parcher (1974) considered *C. brevicorne* as very common in Andasibe.
- Ecol.** This species occurs within mid-altitude humid forest where it is more commonly found in open vegetation and disturbed areas (Brady and Griffiths 1999).
- Cons.** This species occurs in strict protected areas from where collection is illegal.
- Thre.** Forest loss is a threat but this species is robust to certain levels of habitat degradation.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Large adult population with good reproductive potential that could support moderate export	C4 Three conditions to be met before trade will be permitted	Widespread and occurs in degraded forests	Accept tentative conclusion in AC24 Doc. 7.2	C4 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Large population adulte avec une meilleure potentielle reproductrice qui pourrait supporter une exportation modérée	C4 Trois conditions à remplir avant que le commerce soit autorisé	Répondue et se trouve dans des forêts dégradées	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C4 Trois conditions à remplir avant que le commerce soit autorisé

Calumma capuroni

(Brygoo, Blanc & Domergue, 1972)

- Dist.** This chameleon is endemic to the island of Madagascar where it is only known from a relatively small area of montane habitat in Andohahela between 1,400 m and 1,920 m elevation (Nussbaum et al. 1999).
- Popl.** There is no information on the population of this species
- Ecol.** This species occurs in montane humid forests (Glaw & Vences 2007; Nussbaum et al. 1999)
- Cons.** This species occurs in a national park from where collection is illegal.
- Thre.** Few anthropogenic threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to a single national park where collection is prohibited	C1 Trade suspension	Restricted to a single national park where collection is prohibited	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans un seul parc national où la collection est interdite	C1 Suspension commerce	Restreinte dans un seul parc national où la collecte est interdite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Suspension commerce

Calumma crypticum

Raxworthy & Nussbaum, 2006

This species was previously included within *Calumma brevicorne*

- Dist.** This species is endemic to Madagascar and has a broad latitudinal distribution between the Anosy Mountain in the south and the Tsaratanana Massif in the north, where it is present in a number of localities in the central highlands. Its elevation range is from 1,050 to 1,850 m. Voucher collections need to be re-assessed to update its geographic range information because of confusion from the previous use of *C. brevicorne* or *C. brevicornis* for this species.
- Popl.** Brady and Griffiths (1999) calculated population estimates for *C. crypticum* (as *C. brevicorne*) in as varying between 1.9 animals ha⁻¹ (0.04 – 13.0 95% confidence interval) and 7.7 animals ha⁻¹ (1.2 – 34.1, 95% confidence interval) in the austral summer. Densities in the austral winter were 1.4 animals ha⁻¹ (0.2 – 4.9, 95% CI).
- Ecol.** This is a forest chameleon that occurs in mid-altitudes between 1,050 m and 1,850 m elevation where it appears to be more abundant in semi-open areas associated with trails, gaps and rivers (Jenkins et al. 1999).
- Cons.** This species occurs in four strict protected areas from where collection is illegal.
- Thre.** Threatened by loss of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread and able to tolerate moderate harvest	C4 Three conditions to be met before trade will be permitted	Widespread but distribution needs to be revised; uncertainty remains over local abundance	Widespread and probably able to tolerate moderate harvest	C4 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue et capable de tolérer un collecte modéré	C4 Trois conditions à remplir avant que le commerce soit autorisé	Répondue mais distribution a besoin d'être révisée ; l'incertitude reste sur l'abondance locale	Répondue et capable de tolérer un collecte modéré	C4 Trois conditions à remplir avant que le commerce soit autorisé

Calumma cucullatum

(Gray, 1831)

- Dist.** This chameleon is endemic to the island of Madagascar where it is found in a number of localities in the east. The northerly most record of this species is from Marojejy (Raselimanana et al. 2000) and the southerly most is from Ambavaniasy. At Marojejy it was found at low elevations, between 440 m and 720 m (Raselimanana et al. 2000). Other confirmed localities include Tsararano (Andreone et al. 2000).
- Popl.** There is no information on the population of this species
- Ecol.** This species occurs in humid forests (Glaw & Vences 2007; Nussbaum et al. 1999)
- Cons.** This species occurs in Marojejy NP from where collection is illegal.
- Thre.** Deforestation is a major threat.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread, locally abundant but rarely observed recently	C2/C3	Widespread distribution in eastern forests; insufficient data to determine whether it could support regular harvest	Accept most cautious conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue, localement abondante mais rarement observée récemment	C2/C3	Largement répandue dans les forêts de l'Est ; donnée insuffisantes pour déterminer si elle pourrait supporter une collecte régulière	Accepter conclusion la plus prudente dans AC24 Doc. 7.2 acceptée	C2 Suspension commerce

Calumma fallax

(Mocquard, 1900)

A taxonomic revision of this species and *C. nasutum* is required (Glaw & Vences 2007)

Dist. This chameleon is endemic to Madagascar but its distribution on the island is poorly known because of its similarity to the widespread *C. nasutum*. The only confirmed locality is Ambohitsara in the south-east (Glaw & Vences 2007). Other localities reported for this taxon in the literature include Andringitra (Raxworthy & Nussbaum 1996a), where it is found between 1,220 m and 1,260 m elevation (Raxworthy & Nussbaum 1996a).

Popl. There is no information on the population of this species

Ecol. This species occurs in humid forests (Glaw & Vences 2007; Nussbaum et al. 1999)

Cons. This species may occur in Andringitra National Park from where collection is illegal.

Thre. Relatively few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread, locally abundant but rarely observed recently	C3 Three conditions to be met before trade will be permitted	Widespread in humid forest	Distribution and ecology poorly known	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue, localement abondante mais rarement observée récemment	C3 Trois conditions à remplir avant que le commerce soit autorisé	Répondue dans la forêt humide	Étendue de la distribution et écologie moins connues	C2 Suspension commerce

Calumma furcifer

(Vaillant & Grandidier, 1880)

Dist. This chameleon species is endemic to Madagascar where is restricted to mid-elevation forest in the central east. There are numerous reported collecting localities in the Zahamena-Ankeniheny Corridor (Andekaleka, Antsihananka, Fito, Vohidrazana) and also from nearer sea-level at Toamasina (Glaw & Vences 2007).

Popl. Population densities of 1.1 ha⁻¹ have been calculated (Brady & Griffiths 1999).

Ecol. This is a forest chameleon that occurs in mid-altitudes between 1,050 m and 1,850 m elevation where it appears to be more abundant in semi-open areas associated with trails, gaps and rivers (Jenkins et al. 1999).

Cons. This species may occur in Mangerivola SR from where collection is prohibited.

Thre. Loss and degradation of low elevation humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Limited range, no information on population status; insufficient information regarding whether it could sustain harvest	C2 Trade suspension	Limited range, no information on population status; insufficient information regarding whether it could sustain harvest	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution limitée, aucune information sur le statut de la population ; information insuffisante concernant s'il pourrait supporter le collecte	C2 Suspension commerce	Distribution limitée, aucune information sur le statut de la population ; information insuffisante concernant s'il pourrait supporter le collecte	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Suspension commerce

Calumma gallus

(Günther, 1877)

- Dist.** This chameleon species is endemic to the island of Madagascar where it is widespread, occurring in the north at Andapa, the east at Ambavaniasy and the south-east at Manombo.
- Popl.** Little information is available on this species but it appears to require relatively intact forest, at low or mid-altitudes. A population density of 13.2 per ha was calculated for *C. gallus* in Mantadia (Brady & Griffiths 1999).
- Ecol.** This species inhabits mid-elevation humid forest
- Cons.** This species occurs in Manombo SR from where collection is prohibited.
- Thre.** Loss and degradation of humid forests.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widely, maybe patchily distributed, and capable of sustaining a small quota	C3 Three conditions to be met before trade will be permitted	Localised distribution in lowland humid forest; insufficient information to determine whether it could sustain harvest or not	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Largement, peut-être irrégulièrement distribuée, et capable de soutenir un petit quota	C3 Trois conditions à remplir avant que le commerce soit autorisé	Distribution localisée dans la forêt humide des basses altitudes ; informations insuffisantes pour déterminer s'il pourrait supporter le collecte ou non	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma gastrotaenia

(Boulenger, 1888)

- Dist.** This is an endemic Malagasy species that is widespread in lowland forested habitat in the east and south-east of the island, including Andohahela (Nussbaum et al. 1999), Andringitra (Raxworthy & Nussbaum 1996a)
- Popl.** Population estimates of *C. gastrotaenia* from surveys in the austral summer include 23.7 ha⁻¹ at Andranomay (Jenkins et al. 2003) and 10.5 ha⁻¹ at Mantadia (Brady & Griffiths 1999).
- Ecol.** In Andranomay the density of *C. gastrotaenia* was higher in unburnt than burnt forest (Brady & Griffiths 1999). This species is also reported to be locally abundant alongside small rivers inside humid forest.
- Cons.** This species occurs in Analamazaoatra SR and Mantandia NP from where collection is prohibited.
- Thre.** Loss of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread, locally abundant and capable of sustaining a moderate quota	C4 Three conditions to be met before trade will be permitted	Widespread and relatively abundant in disturbed humid forest; probably capable of sustaining a moderate quota	Accept tentative conclusion in AC24 Doc. 7.2	C4 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue, abondante localement et capable de supporter une collecte modérée	C4 Trois conditions à permettre avant que le commerce soit autorisé	Répondue et relativement abondante dans la forêt humide perturbée ; probablement capable de supporter un quota modéré	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C4 Trois conditions à remplir avant que le commerce soit autorisé

Calumma glawi

Böhme, 1997

This species was split from *C. gastrotaenia* based on external and hemipenal morphology (Böhme 1997)

- Dist.** This chameleon is endemic to Madagascar where it is found in a number of different areas within Ranomafana forest in the south-east, at elevations of between 1030 and 1200 m (Brady & Griffiths 1999; Jenkins et al. 1999).
- Popl.** This species has been recorded at densities of between 6.6 ha⁻¹ and 12.7 ha⁻¹ in Ranomafana National Park during the austral summer and 10.4 ha⁻¹ in the austral winter (Brady & Griffiths 1999; Jenkins et al. 1999). The sample of the population surveyed in the austral summer of 1993/1994 consisted mainly of adult females.
- Ecol.** This species is found in relatively intact mid-altitude humid forest.
- Cons.** This species occurs in Ranomafana NP from where collection is prohibited.
- Thre.** Habitat loss outside of protected areas.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Limited range but locally abundant and likely to sustain limited harvests	C3 Three conditions to be met before trade will be permitted	Ranomafana National Park only, but information on its occurrence in (unprotected) forests are lacking	Reject tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution limitée mais localement abondante et possible de supporter des collectes limitées	C3 Trois conditions à remplir avant que le commerce soit autorisé	Connu dans le parc national de Ranomafana mais pas d'informations sur sa distribution dans les forêts (non-protégées) aux alentours	Conclusion prévisionnelle dans AC24 Doc. 7.2 rejetée	C2 Commerce suspendu

Calumma globifer

(Günther, 1881)

- Dist.** This chameleon is endemic to the island of Madagascar where it appears to be restricted to a relatively small area in the central-east highlands (Raxworthy & Nussbaum 1996b), but additional analyses are required to assess the taxonomic status of individuals from the north (Glaw & Vences 2007).
- Popl.** The population density of this species at a single site was calculated to range between 0.33 and 5.18 individuals per hectare (Jenkins et al. 2003).
- Ecol.** This species is only known from mid-altitude humid forest and was locally abundant in disturbed patches and alongside streams within relatively intact areas of forest vegetation (Jenkins et al. 2003).
- Cons.** Poorly represented in protected areas.
- Thre.** Deforestation and habitat degradation.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Large and productive adult population and likely to sustain limited harvests	C4 Three conditions to be met before trade will be permitted	Uncertainty about the taxonomy and, hence, the distribution of this species	Reject tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Population adulte reproductive et possible de supporter des collectes limitées	C4 Trois conditions à remplir avant que le commerce soit autorisé	Incertitude sur la taxonomie et par conséquent, la distribution de l'espèce	Conclusion prévisionnelle dans AC24 Doc. 7.2 rejetée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma guibei

(Hillenius, 1959)

A lack of adult specimens inhibits the systematic assessment of this taxon in relation to similar taxa, such as *C. boettgeri* (Glaw & Vences 2007)

- Dist.** This chameleon species is endemic to the island of Madagascar where it is only known from two locations in the north, at Antsahamanara and Tsaratanana. Its elevational range has been reported as 1,000 m to 1,800 m elevation (Glaw & Vences 2007) and 1,600 m to 2,100 m (Raxworthy & Nussbaum 1996b).
- Popl.** No information.
- Ecol.** This species used montane humid forest and sclerphyllous forest (Raxworthy & Nussbaum 1996b).
- Cons.** Its occurs within Tsaratanana RNI.
- Thre.** Relatively few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Poorly known and only occurs inside a strict protected area	C1 Trade suspension	Poorly known and only occurs inside a strict protected area	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Peu connue et se trouve uniquement dans une aire protégée	C1 Suspension commerce	Peu connue et se trouve uniquement dans une aire protégée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Suspension commerce

Calumma guillaumeti

(Brygoo, Blanc & Domergue, 1974)

A lack of adult specimens inhibits the systematic assessment of this taxon in relation to similar taxa, such as *C. boettgeri* (Glaw & Vences 2007)

- Dist.** This chameleon is endemic to Madagascar and has a distribution that is restricted highland forests in the north-east of the island. Confirmed collection localities include three massifs at, Anjanaharibe-Sud (Raxworthy et al. 1998), Marojejy (Rakotomalala & Raselimanana 2003; Raselimanana et al. 2000) and Tsaratanana (Raxworthy et al. 1998). This species has been recorded from elevations of between 1250 and 1675 m in Marojejy (Rakotomalala & Raselimanana 2003; Raselimanana et al. 2000).
- Popl.** No information.
- Ecol.** It is restricted to humid forest habitat (Raxworthy et al. 1998).
- Cons.** It occurs in three protected areas, Anjanaharibe-Sud SR, Marojejy NP and Tsaratanana RNI.
- Thre.** Relatively few threats but deforestation inside some parks is of growing concern.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread in northern Madagascar and locally common	C3 Three conditions to be met before trade will be permitted	Widespread in northern Madagascar	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue dans le nord de Madagascar et localement abondante	C3 Trois conditions à remplir avant que le commerce soit autorisé	Répondue dans le nord de Madagascar	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma hafahafa

Raxworthy & Nussbaum, 2006

- Dist.** This species is endemic to Madagascar and is known from a single male collected from forest at the Bemanevika Lakes in the north west at 1,650 m altitude (Raxworthy & Nussbaum 2006).
- Popl.** There is no population information for this species and it is only known from a single specimen collected in 2003.
- Ecol.** The collection site of the holotype was relict humid forest.
- Cons.** The forests at Bemanevika have obtained temporary protected area status.
- Thre.** Habitat loss.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Limited range, unprotected and dwindling habitat	C1 Trade suspension	Only known from a single specimen at a single site that has received a status of provisional protected area status	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution limitée, habitat non-protégé et en déclin	C1 Suspension commerce	Connue à partir d'un seul spécimen et dans un seul site qui a obtenu le statut temporaire d'une aire protégée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Suspension commerce

Calumma hilleniusi

(Brygoo, Blanc and Domergue, 1973)

- Dist.** This chameleon is endemic to the island of Madagascar where its occurrence is reported from at Ankaratra (Vences et al. 2002), Andringitra (Raxworthy & Nussbaum 1996a) and Ivohibe (Raselimanana 1999). Additional investigation is required on specimens from the southern populations to confirm the identification (Vences et al. 2002). It is known from an elevational range of between 1,550 m and 2,550 m (Raxworthy & Nussbaum 1996b). At Andringitra its maximum altitude is 1,850 m (Raxworthy & Nussbaum 1996a).
- Popl.** There is no population information for this species.
- Ecol.** This species is found inside or at the edge of montane humid forest at Ankaratra (Vences et al. 2002) but is also reported to use secondary heathland habitats (Raxworthy & Nussbaum 1996b). Females collected between January and February contained up to ten large eggs (Vences et al. 2002).
- Cons.** This species occurs in two strict protected areas, Andringitra NP and Ivohibe SR.
- Thre.** Actual area of forest occupied is rather low and fire and forest exploitation is a concern.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Insufficient information to determine whether this species could sustain harvests	C2 Trade suspension	Limited range and insufficient information to determine whether this species could sustain harvests	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Information insuffisante pour déterminer si l'espèce pourrait supporter des collectes	C2 Commerce suspendu	Distribution limitée et information insuffisante pour déterminer si elle pourrait supporter des collectes	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendu

Calumma jevy

Raxworthy & Nussbaum, 2006

- Dist.** This is an endemic species to Madagascar and only known from the Marojejy National Park in the north-east of the island. It is restricted to high elevations at between 1,800 m and 2,130 m (Rakotomalala & Raselimanana 2003; Raselimanana et al. 2000).
- Popl.** There is no information on the population of this species.
- Ecol.** This species is restricted to ericoid montane dominated heathland and transitional montane forest. There are numerous records of this species using low grassland vegetation and rocky terrestrial habitats (Brygoo et al. 1974)(Raxworthy & Nussbaum 2006). The rocky habitat may provide an important source of heat during cooler spells and chameleons have been observed 'sprawled' on these outcrops.
- Cons.** This species occurs in Marojejy NP.
- Thre.** Few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to a single national park where collection is prohibited	C1 Trade suspension	Restricted to a single national park where collection is prohibited	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans un seul parc national où la collecte est interdite	C1 Commerce suspendu	Restreinte dans un seul parc national où la collecte est interdite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendu

Calumma malthe

(Günther, 1879)

- Dist.** This chameleon is endemic to the island of Madagascar where it occurs from the north-east to south-east at Analamazaotra, Anjanaharibe-Sud (Raselimanana et al. 2000), Mantadia, Isaka-Ivondro and Tsaratanana (Raxworthy et al. 1998). It has been reported from elevations between 1,200 m and 1,600m from northern forests (Rakotomalala & Raselimanana 2003)..
- Popl.** Densities of up to 31 chamelens per ha were cacluated for Mantadia (Brady & Griffiths 1999).
- Ecol.** This species occurs in relatively intact and disturbnded mid-elevation humid forests
- Cons.** This species occurs in Tsaratana RNI and Mantadia NP.
- Thre.** Forest loss and degradation.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread and locally abundant; occurs in disturbed habitats could support moderate harvests	C4 Three conditions to be met before trade will be permitted	Widespread and locally abundant; occurs in disturbed habitats could support moderate harvests	Accept tentative conclusion in AC24 Doc. 7.2	C4 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répandue et localement abondante ; se trouve dans un habitat perturbé pourrait supporter des collectes modérées	C4 Trois conditions à remplir avant que le commerce soit autorisé	Répandue et localement abondante ; se trouve dans un habitat perturbé pourrait supporter des collectes modérées	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C4 Trois conditions à remplir avant que le commerce soit autorisé

Calumma marojezense

(Brygoo, Blanc & Domergue, 1970)

Dist. This chameleon is endemic to Madagascar and has a distribution that is restricted to lowland forests (475-625 m) in the north-east of the island. Confirmed collection localities include three massifs at, Anjanaharibe-Sud (Andreone et al. 2000), Marojejy (Raselimanana et al. 2000), Anandrivola (Andreone et al. 2001), Masoala (Andreone et al. 2001). At Marojejy, this species was found in forest less than 850 m elevation (Raselimanana et al. 2000).

Popl. There is no information on this species

Ecol. This species is restricted to intact low elevation forest (Raselimanana et al. 1998).

Cons. This species occurs in Tsaratana RNI and Mantadia NP.

Thre. Loss and degradation of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widespread and locally abundant in northern Madagascar; could support moderate harvests	C3 Three conditions to be met before trade will be permitted	Widespread in the north; insufficient information to determine whether this species could support harvests but appears to be locally common	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Répondue et localement abondante dans le nord de Madagascar ; pourrait supporter des collectes modérées	C3 Trois conditions à remplir avant que le commerce soit autorisé	Répondue dans le nord; information insuffisante pour déterminer si l'espèce pourrait supporter des collectes mais apparaît être localement abondante	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma nasutum

(Duméril & Bibron, 1836)

Several lines of evidence indicate that *C. nasutum* is a complex of several species (Glaw & Vences 2007)

- Dist.** It is chameleon endemic to the island of Madagascar and is distributed throughout a wide area in the humid eastern part of the country, including Andringitra (Nussbaum et al. 1999).
- Popl.** This species was reported in relatively low abundance in Andohahela where it was thought to be a competitor with *Brookesia nasus* (Andreone & Randriamahazo 1997). Population density estimates for *C. nasutum* vary between 6.2 and 33.4 animals per ha (Brady & Griffiths 1999). Adult density was reported higher in disturbed than undisturbed forest (Brady & Griffiths 1999).
- Ecol.** This species is associated with humid forest but can tolerate a wide range of vegetation types. It has been found in a pine plantation near in the north (Raxworthy & Nussbaum 1994), and degraded roadside forest and regenerating farmland in the east (Brady & Griffiths 1999; Rabearivony et al. 2008). Nevertheless, this species appears to require the presence of some native forest vegetation.
- Cons.** This species occurs in a number of strict protected areas
- Thre.** Loss of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Large adult population that could sustain modest harvest	C4 Three conditions to be met before trade will be permitted	Widespread in intact and disturbed habitats and could probably sustain modest harvest	Accept tentative conclusion in AC24 Doc. 7.2	C4 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Population adulte élevée et pourrait supporter une collecte modérée	C4 Trois conditions à remplir avant que le commerce soit autorisé	Répandue dans un habitat intact et perturbé et pourrait probablement supporter une collecte modérée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C4 Trois conditions à remplir avant que le commerce soit autorisé

Calumma oshaughnessyi

(Günther, 1881)

- Dist.** This chameleon is endemic to mid altitude humid forest on the island of Madagascar where it is known from a number of localities in the central highland and south-east between Antoetra in the north (Andreone et al. 2007) and Andohahela to the south (Glaw & Vences 2007).
- Popl.** Brady and Griffiths (1999) estimated a population size of 6.3 to 52.6 million, although this was undertaken including the most northerly populations at Montagne d'Ambre which are now considered as a distinct species (Glaw & Vences 2007).
- Ecol.** This species occurs mainly in mid-altitude forest and Brady and Griffiths (1999). This species is dependent on relatively intact humid forest (Jenkins et al. 1999) and densities are lower in selectively logged forest (Brady and Griffiths 1999).
- Cons.** This species occurs in Ranomafana NP.
- Thre.** Loss and degradation of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Large adult population that could sustain modest harvest	C4 Three conditions to be met before trade will be permitted	Previous estimates of the range of this species included <i>C. ambreense</i> ; little information available on this species outside of protected areas	Reject tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Population adulte abondante et pourrait supporter une collecte modérée	C4 Trois conditions à remplir avant que le commerce soit autorisé	Estimation auparavant de la distribution de cette espèce incluse <i>C. ambreense</i> ; peu d'information disponible sur cette espèce en dehors des aires protégées	Conclusion prévisionnelle dans AC24 Doc. 7.2 rejetée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma parsonii

(Cuvier, 1824)

- Dist.** This large chameleon species is found in the humid eastern part of the island, from Ranomafana in the south to Anjanaharibe Sud in the north (Rakotomalala & Raselimanana 2003). It has been reported from elevations between 45-230 m (Rabearivony et al. 2008) and 1600 m (Rakotomalala & Raselimanana 2003). Other confirmed localities include Ambolokolpatrika (Andreone et al. 2000). Brady and Griffiths (1999) estimated it has an extent of occurrence of 184, 592 km².
- Popl.** Brady and Griffiths (1999) estimated the national population size to range between 3.9 million and 37.5 million based on densities estimates and available habitat.
- Ecol.** Brady and Griffiths (1999) reported densities of between 1.3 and 3.9 chameleons per ha in relatively intact forest at Mantadia NP with lower densities (0.1 – 0.4 ha⁻¹) in more disturbed forest in the same area. Its population densities are consistently lower than other *Calumma* species (Brady and Griffiths (1999) although this might be because *C. parsonii* roosts in elevated locations in the canopy out of reach of nocturnal surveys by torch light. Brady and Griffiths (1999) estimated 17,844 km² and 20,714 km² of lowland and mid altitude forest was remaining within the likely range of *C. parsonii*.
- Cons.** This species occurs in Mantadia NP and Analamazoatra SR.
- Thre.** Loss and degradation of humid forest

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Large adult population that could sustain modest harvest	C3/C4 Three conditions to be met before trade will be permitted	Relatively widespread but at low population densities	Accept the most conservative option in the tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Population adulte abondante et peut supporter une collecte modérée	C3/C4 Trois conditions à remplir avant que le commerce soit autorisé	Relativement répandue mais les densités des populations basses	La plupart de l'option conservatoire dans la conclusion prévisionnelle in AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Calumma peltierorum

Raxworthy & Nussbaum, 2006

Formerly considered as *Calumma malthe* (Brygoo, 1971; Hillenius, 1959)

- Dist.** This is an endemic species to Madagascar and only known from two massifs, Tsaratanana and Anjanaharibe-Sud, at elevations between 1,700 m and 2,580 m (Raxworthy & Nussbaum 2006).
- Popl.** There is no population information available for this species.
- Ecol.** This species is restricted to intact montane humid forest. It occurs in sympatry with *Calumma malthe* at Anjanaharibe-Sud between 1700 m and 1,850 m (Raxworthy & Nussbaum 2006).
- Cons.** This species occurs in Anjanaharibe Sud SR and Tsaratana RNI.
- Thre.** Few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Only known from two protected areas from where collection is prohibited	C2 Trade suspension	Collection from the wild is illegal in the two sites where this species occurs	Reject the tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Seulement connue dans deux aires protégées où la collecte est interdite	C2 Commerce suspendu	Collection dans le milieu sauvage est illégale dans les deux sites où l'espèce se trouve	Conclusion prévisionnelle dans AC24 Doc. 7.2 rejetée	C1 Commerce suspendu

Calumma peyrierasi

(Brygoo, Blanc & Domergue, 1974)

- Dist.** This species is endemic to Madagascar and is restricted to the high elevation forests of Marojejy in the north-east (Andreone et al. 2001) between 1,675 m and 1,950 m (Raselimanana et al. 2000).
- Popl.** This species is believed to be relatively rare (Andreone et al. 2001)
- Ecol.** This species occupies dense montane bush vegetation between (Glaw & Vences 2007).
- Cons.** This species occurs in Marojejy NP.
- Thre.** Few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to a single national park where collection is prohibited	C1 Trade suspension	Restricted to a single national park where collection is prohibited	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans un seul parc national où la collecte est interdite	C1 Commerce suspendu	Restreinte dans un seul parc national où la collecte est interdite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendu

Calumma tsaratananaense

(Brygoo & Domergue, 1968)

- Dist.** This chameleon species is endemic to the island of Madagascar where it is only known from only locality, at Tsaratanana, in the north of the island (Glaw & Vences 2007). The altitudinal range of this species is between 2,700 m and 2,800 m (Raxworthy & Nussbaum 1996b).
- Popl.** There is no information on this species – it known only from the type specimen.
- Ecol.** This species occurs in high elevation heathland habitats (Raxworthy & Nussbaum 1996b).
- Cons.** This species occurs in Tsaratana RNI.
- Thre.** Relatively few threats.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to a single national park where collection is prohibited	C1 Trade suspension	Restricted to a single national park where collection is prohibited	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans un seul parc national où la collecte est interdite	C1 Commerce suspendu	Restreinte dans un seul parc national où la collecte est interdite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendu

Calumma tsycorne

Raxworthy & Nussbaum, 2006

- Dist.** This is an endemic species to Madagascar and only known from two sites in the south east, in Kalambatritra Special Reserve and Andohahela National Park, between elevations of 1,250 m and 1140 m (Raxworthy & Nussbaum 2006).
- Popl.** There is no information on the population of this species.
- Ecol.** *Calumma tsycorne* is found in relatively intact mid-altitude humid forest and appears dependent on this type of vegetation.
- Cons.** This species occurs in Kalambatritra SR and Andohahela NP.
- Thre.** Loss of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to two strict protected areas; insufficient information on the status of this species	C2 Trade suspension	Restricted to two strict protected areas; insufficient information on the status of this recently described species	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans deux aires protégées ; information insuffisante sur le statut de cette espèce	C2 Commerce suspendu	Restreinte dans deux aires protégées ; information insuffisante sur le statut de cette espèce récemment décrite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendu

Calumma vatosoa

Andreone, Mattioli, Jesu & Randrianirina, 2001

- Dist.** This species has only been collected from the Tsararano forest in north-east Madagascar at 665 m elevation (Andreone et al. 2001).
- Popl.** There is no information on the population of this species.
- Ecol.** The type specimen was collected from a mosaic habitat consisting of lowland humid rainforest and small patches of ericoid heathland (Andreone et al. 2001).
- Cons.** No active or passive conservation measures in place.
- Thre.** Habitat loss.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Insufficient information on the status of this species	C2 Trade suspension	Insufficient information on the status of this species	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Information insuffisante sur le statut de cette espèce	C2 Commerce suspendu	Information insuffisante sur le statut de cette espèce	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendu

Calumma vencesi

Andreone, Mattioli, Jesu & Randrianirina, 2001

- Dist.** This species has a restricted range in the north-east of Madagascar where it has been collected from three forests, Betaolana, Besariaka and Tsararano, to the north-west of the Andapa basin (Andreone et al. 2001). Initially described from three sites, between 700 and 960 m elevation, but probably occurs between 600 and 1000 m (Andreone et al. 2001).
- Popl.** Thought to be locally abundant, with one report of 10 individuals per four hours of search effort (Andreone et al. 2001).
- Ecol.** This species occurs in intact humid forest and its absence from degraded forest areas indicates that it is intolerant of habitat modification (Andreone et al. 2001).
- Cons.** No active or passive conservation measures in place.
- Thre.** Habitat loss.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Widely distributed in the north where it is locally common; likely to be able to support limited harvest	C3 Three conditions to be met before trade will be permitted	Widely distributed in the north where it is locally common; likely to be able to support limited harvest	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution large dans le nord où elle est abondante localement ; possible de supporter des collectes limitées	C3 Trois conditions à remplir avant que le commerce soit autorisé	Distribution large dans le nord où elle est abondante localement ; possible de supporter des collectes limitées	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer angeli

(Brygoo and Domergue, 1968)

- Dist.** *Furcifer angeli* is endemic to the island of Madagascar where it is restricted to areas of dry forest in the north-west (Glaw & Vences 2007). It is known from four localities between Anjiamangirana and Parc National de Namoroka (Raselimanana 2008).
- Popl.** *Furcifer angeli* is reported to be less common at the Ankarokaroka site within Parc National d'Ankarafantsika than other dry forest Parc National Baie de Baly, near Soalala (Ramanamanjato & Rabibisoa 2002).
- Ecol.** In Parc National d'Ankarafantsika *F. angeli* was found in degraded deciduous forest (Ramanamanjato & Rabibisoa 2002). It is considered endemic to this type of forest vegetation and does not occur in heavily modified habitats (Raselimanana & Rakotomalala 2003). Raselimanana (2008) reports that *F. angeli* is a diurnally active species that lives in trees and has a close association with dry forest.
- Cons.** This species occurs in Ankarafantsika NP.
- Thre.** Loss and degradation of dry deciduous forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Relatively widespread but apparently not common within its range; additional information is needed	C2 Trade suspension	Restricted to western Madagascar and apparently not common; additional information is needed	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement répandue mais apparemment pas abondante dans son aire de distribution ; information supplémentaire est nécessaire	C2 Commerce suspendu	Restreinte dans l'ouest de Madagascar et pas abondante dans son aire de distribution ; information supplémentaire est nécessaire	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendu

Furcifer antimena

(Brygoo and Domergue, 1968)

- Dist.** *Furcifer antimena* is restricted to the south-west of Madagascar at elevations between 5 m and 80 m above sea-level (Raselimanana 2004; Raselimanana & Rakotomalala 2003). The most easterly known location is around Antsokay and the airstrip at Toliara (Brygoo 1971) and the most northerly near Morombe (Raselimanana 2004).
- Popl.** In a field assessment of three *Furcifer* chameleons near Toliara, *F. antimena* constituted 15% of the 146 individuals encountered during line transects at night and a density of 18.7 individuals per hectare was calculated (Andriamandimbarisoa 2007). Occurs at lowest density of species surveyed in Ranobe-Mikea and has a small area of occurrence (Karsten et al. 2009). There is some reported evidence of local population declines in the last 15 years but the reasons are unclear (Andriamandimbarisoa 2007).
- Ecol.** It is considered a forest species by Raselimanana and Rakotomalala (2003) and is known to occur in both relatively intact and degraded areas (Raselimanana 2004).
- Cons.** Little effective conservation within its range.
- Thre.** Loss and destruction of spiny forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Locally abundant within its restricted range and has a high reproductive potential; likely able to support a limited harvest	C3 Three conditions to be met before trade will be permitted	Occurs at low density in a small geographic area but likely able to support a limited harvest	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Localement abondante dans son aire de distribution restreinte et a une haute potentialité reproductive ; semble capable de supporter une collecte limitée	C3 Trois conditions à remplir avant que le commerce soit autorisé	Présente une densité faible dans une petite aire de distribution mais semble capable de supporter une collecte limitée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer balteatus

(Duméril & Bibron, 1851)

- Dist.** This species is endemic to Madagascar and its distribution is restricted to the central south-east at around 1,050 m above sea level (Glaw & Vences 2007; Raselimanana & Rakotomalala 2003).
- Popl.** A There is very little available information on the population of *F. balteatus* although it is not thought to exceed 10,000 individuals (CBSG 2002).
- Ecol.** *Furcifer balteatus* is found in mid-altitude humid forest, where it is associated with degraded areas and forest edges (Glaw & Vences 2007).
- Cons.** This species has been found inside Ranomafana NP (Raselimanana & Rakotomalala 2003) and Andohahela NP (CBSG 2002).
- Thre.** Loss of humid forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Limited distribution and quantitative information but this species can survive in degraded habitats	C2 Trade suspension	Limited distribution and quantitative information but this species can survive in degraded habitats	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Distribution et information quantitative limitées mais cette espèce peut survivre dans des habitats dégradés	C2 Commerce suspendu	Distribution et information quantitative limitées mais cette espèce peut survivre dans des habitats dégradés	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendu

Furcifer belalandaensis

(Brongniart, 1800)

- Dist.** This species is endemic to Madagascar where it is known from a single locality, Belalanda, near Toliara in the south west (Brygoo 1978; CBSG 2002; Glaw & Vences 2007). The last published sighting of this species was in 1995 (Raxworthy & Nussbaum 2000).
- Popl.** There are no published data on the population of *F. belalandaensis* but it is not thought to exceed 250 individuals (CBSG 2002). Given that recent surveys have failed to detect this species (Andriamandimbarisoa 2007), its presumed tiny geographic range and dwindling available habitat (Raxworthy & Nussbaum 2000), it is unlikely to be common anywhere in its range. .
- Ecol.** The habitat around Belalanda village is degraded gallery forest (Brygoo 1978; Glaw & Vences 2007; Raxworthy & Nussbaum 2000). This species was not found during extensive surveys in other forest habitats in the region and is therefore likely to be restricted to gallery forest (Raxworthy & Nussbaum 2000).
- Cons.** None.
- Thre.** Reported illegal collection.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Extremely localized and may be extinct	C1 Trade suspension	Extremely localized but not extinct	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Extrêmement localisée et peut être éteinte	C1 Commerce suspendue	Extrêmement localisée mais pas éteinte	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendue

Furcifer bifidus

(Brongniart, 1800)

- Dist.** This species is endemic to Madagascar and is found in the east of the island in regions north of the Mangoro River as far north as Marojejy (Glaw & Vences 2007). Its maximum elevation is recorded at 450 m (Raselimanana & Rakotomalala 2003).
- Popl.** There is no information on the population biology or status of this species although it may be rare because even though it has been recorded from Analamazaotra SR (Raselimanana & Rakotomalala 2003) it was not found during a detailed survey of this site and surrounding areas (Rakotondravony 2004). In the Loky-Manambato complex near Daraina, *F. bifidus* was found in only one of the 12 forests surveyed, at Binara, in transitional forest (Rakotondravony 2006).
- Ecol.** This species is known from humid forests but detailed information lacking.
- Cons.** Occurs in Analamazaotra SR.
- Thre.** Deforestation.

Summary

Tentative conclusion	Category recommendation	Current assessment	Current conclusion	Current recommendation
Limited quantitative information available; survives in degraded habitats; relatively widespread; rarely encountered	C2/C3	Limited quantitative information available; survives in degraded habitats; relatively widespread; rarely encountered	Accept the most conservative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle	Recommandation pour la catégorie	Évaluation en cours	Conclusion en cours	Recommandation en cours
Information quantitative limitée mais cette espèce peut survivre dans des habitats dégradés et est relativement répandue mais seulement recensée pendant les suivis	C2/C3	Information quantitative limitée mais cette espèce peut survivre dans des habitats dégradés et est relativement répandue mais seulement recensée pendant les suivis	Accepter conclusoin la plus prudente	C2 Commerce suspendu

Furcifer campani

(Brongniart, 1800)

- Dist.** This species is endemic to Madagascar and inhabits the central highlands from Andringitra in the south to Ankaratra in the north (Brygoo 1971; Glaw & Vences 2007; Raxworthy & Nussbaum 1996a; Vences et al. 2002). Brygoo (1971) reported this species from Ibity, Ambohimombo, Antobeba and Ambatolampy but specimen evidence from these localities is lacking (Vences et al. 2002). It is found between 1,850 m and 2,500 m above sea-level (Raxworthy & Nussbaum 1996b) and has a fragmented distribution in isolated massifs which suggests that its area of occupancy is quite small.
- Popl.** There is a lack of quantitative information on its populations (Raxworthy & Nussbaum 1996a; Vences et al. 2002) but it might be locally abundant in suitable habitat (Brady & Griffiths 1999) and total population size may exceed 10,000 individuals (CBSG 2002).
- Ecol.** It uses secondary heathland and savanna grasslands with shrubs and although occurs is sympatric with the widespread *Furcifer lateralis* it is tolerant of a narrower range of abiotic conditions (Andreone et al. 2007; Raxworthy & Nussbaum 1996b; Vences et al. 2002).
- Cons.** This species occurs in Andringitra NP.
- Thre.** Illegal collection and habitat reduction from bush fire.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Relatively extensive range and a high reproductive rate; could support moderate harvest	C3 Three conditions to be met before trade will be permitted	Restricted range to high elevation grassland where it is locally abundant; could support moderate harvest	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement à large distribution et à un taux de reproduction élevée ; pourrait supporter une collecte modérée	C3 Trois conditions à remplir avant que le commerce soit autorisé	Distribution restreinte Relativement à distribution dans les savanes à altitude élevée ; pourrait supporter une collecte modérée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer labordi

(Brongniart, 1800)

- Dist.** This species is restricted to the west and south west of Madagascar and is found in low elevation sites, between 20 m and 100 m above sea-level, with remaining forest cover (Glaw & Vences 2007; Raselimanana 2008). It has been recorded from the Mikea forest in south-western Madagascar (Karsten et al. 2008; Raselimanana 2004), the Menabe forests in western Madagascar (Raselimanana & Rakotomalala 2003), Parc National de Kirindy Mite (Raselimanana 2008) and two sites further north, Katsepy and Soalala (Brygoo 1978).
- Popl.** In a field assessment of three *Furcifer* chameleons near Toliara, *F. labordi* constituted 16% of the 146 individuals encountered during line transects at night and a density of 29.7 individuals per hectare was calculated (Andriamandimbarisoa 2007).
- Ecol.** *Furcifer labordi* is a chameleon species that is strongly associated with remaining forest in Madagascar, especially spiny forest in the south-west and deciduous forest in the west (Raselimanana & Rakotomalala 2003). This species exhibits a bizarre life history that consists of an annual cycle where synchronous hatching occurs in November, followed by rapid growth into maturity, copulation in January and senescence and death by April (Karsten et al. 2008). Eggs are deposited in nests in the ground and remain in diapause until shortly before the rains (Karsten et al. 2008). There is little quantitative data on clutch size for this species in the wild, but a radio tracked female was observed laying 11 eggs in southern Madagascar (Karsten et al. 2008).
- Cons.** This species occurs in Kirindy Mite NP.
- Thre.** Loss and degradation of spiny and deciduous forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation	Current assessment	Current conclusion	Current recommendation
Relatively extensive range and locally common but annual life cycle raises concerns about harvesting; more information is needed	C2 Trade suspension	Wide range but annual life cycle raises concerns about harvesting; more information is needed	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement à large distribution et localement abondante mais le cycle de vie annuel pose des inquiétudes sur la collecte ; information additionnelle sur cette espèce est nécessaire	C2 Commerce suspendue	Large distribution mais son cycle de vie annuel pose des inquiétudes sur la collecte ; information additionnelle est nécessaire	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendue

Furcifer minor

(Günther, 1879)

- Dist.** This species is endemic to Madagascar and appears restricted to the southern highlands although there is a single, questionable, record from Bélo-sur-mer on the west coast (Birkinshaw et al. 2004; Brygoo 1971; Glaw & Vences 2007). Aside from the record on the west coast *F. minor* is restricted to an elevational range of between 1,060 m and 1,360 m above sea level (Raselimanana 1998).
- Popl.** There is no information on the population of *F. minor*.
- Ecol.** There is very little published information available on this species (Brady & Griffiths 1999). It has been reported as a forest species (IUCN/SSC et al. 1993) but has also been observed in coffee plantations in Itremo (Ramanantsoa 1974). A dissected female contained 12 eggs and oviposition occurs in April (Glaw & Vences 2007).
- Cons.** None.
- Thre.** Illegal collection.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Locally common in degraded habitats and could sustain a modest harvest	C3 Three conditions to be met before trade will be permitted	Locally common in degraded habitats and could sustain a modest harvest	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Localement abondante dans les habitats dégradés et pourrait supporter une collecte modérée	C3 Trois conditions à remplir avant que le commerce soit autorisé	Localement abondante dans les habitats dégradés et pourrait supporter une collecte modérée	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer nicosiai

Jesu, Mattioli and Schimmenti 1999

The *Furcifer verrucosus*, *F. nicosiai*, *F. oustaleti* group is in need of major revision and probably contains as yet undescribed species (Glaw & Vences 2007).

- Dist.** This species is restricted to a relatively small area of western Madagascar and is only known from the Parc National Tsingy de Bemaraha (Raselimanana 2008). Records of *F. nicosiai* from the Menabe Region appear to represent a new species
- Popl.** In a survey of the dry deciduous forest of Parc National Tsingy de Bemaraha 22 *F. nicosiai* out of a total of 758 chameleons were found (Randrianantoandro et al. in press).
- Ecol.** This species appears to be associated with relatively intact, dry deciduous forest (Jesu et al. 1999; Randrianantoandro et al. 2008, in press; Raselimanana & Rakotomalala 2003).
- Cons.** This species occurs in Bemaraha NP.
- Thre.** None.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Restricted to a single national park where collection is prohibited	C1 Trade suspension	Restricted to a single national park where collection is prohibited	Accept tentative conclusion in AC24 Doc. 7.2	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Restreinte dans un seul parc national où la collecte est interdite	C1 Commerce suspendue	Restreinte dans un seul parc national où la collecte est interdite	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C1 Commerce suspendue

Furcifer petteri

(Brygoo & Domergue, 1966)

Individuals from Parc National Tsingy de Bemaraha may represent a new species (Bora et al. in press).

- Dist.** *Furcifer petteri* is endemic to the island of Madagascar where it is restricted to the north-west, between Bemaraha NP and Montagne des Français (Glaw & Vences 2007). It is thought to occur between elevations of 120 m and 850 m above sea level (Raselimanana & Rakotomalala 2003).
- Popl.** Although there are no quantitative data available on the population of *F. petteri* it was considered to be a rare species in a survey of Montagne des Français (D'Cruze et al. 2007). Also, in a chameleon survey of Tsingy de Bemaraha NP, *Furcifer cf. petteri* was only encountered on two occasions, representing 3% of all the chameleons observed during the study (Randrianantoandro et al. in press). However, Glaw and Vences (2007) note that *F. petteri* can be locally abundant.
- Ecol.** This species has been recorded from relatively intact humid forest, degraded forest and well vegetated gardens (Glaw & Vences 2007). It was encountered in trees and on the ground in Montagne des Français where it was associated with forest habitats (D'Cruze et al. 2007). In the Loky-Manambato complex near Daraina, *F. petteri* was found in nine of the 12 forests surveyed, in degraded and relatively intact dry forest vegetation (Rakotondravony 2006).
- Cons.** This species occurs in Bemaraha NP.
- Thre.** None.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Locally common and widespread	C3 Three conditions to be met before trade will be permitted	Widespread occurrence but little information on local abundance	Accept tentative conclusion in AC24 Doc. 7.2	C3

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Localement abondante et répandue	C3 Trois conditions à remplir avant que le commerce soit autorisé	Distribution répandue mais moindre information sur son abondance locale	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer rhinoceratus

(Gray, 1843)

F. monoceras is considered a junior synonym of *F. rhinoceratus* (Glaw & Vences 2007).

Dist. This chameleon is endemic to the island of Madagascar where it occurs in a relatively small area of the dry west (Glaw & Vences 2007). It is known from around Ankarafantsika National Park in the north of its range to Soalala in the south-west.

Popl. None.

Ecol. It inhabits dry deciduous forest (Ramanamanjato & Rabibisoa 2002). The snake *Mimophis mahafalensis* is a predator.

Cons. It occurs in Ankarafantsika National Park.

Thre. Loss and degradation of deciduous dry forest.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Relatively restricted range and but apparently common and could support a low harvest	C3 Three conditions to be met before trade will be permitted	Relatively restricted range and but apparently common and could support a low harvest outside of national parks	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement à distribution restreinte mais apparemment abondante et pourrait supporter une collecte modérée	C3 Trois conditions à remplir avant que le commerce soit autorisé	Relativement à distribution restreinte mais apparemment abondante et pourrait supporter une collecte modérée en dehors des parcs nationaux	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé

Furcifer timoni

Glaw, Köhler and Vences 2009

- Dist.** *Furcifer timoni* is endemic to the island of Madagascar where it is known from a single humid forest site in the extreme north between 750 m and 900 m altitude (Glaw et al. 2009). It might also occur at Marojejy NP.
- Popl.** There are no data on the population of this species.
- Ecol.** A forest canopy species (Glaw et al. 2009).
- Cons.** Occurs in Montage d'Ambre NP.
- Thre.** Unknown.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Not included in the review	None	New species, published since AC24 Doc. 7.2, only occurs in protected areas	Legal trade not permitted at sites where it occurs	C1 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Pas incluse dans la revue	Rien	Nouvelle espèce, publiée après AC24 Doc. 7.2 ; se trouve uniquement dans une aire protégée	Commerce légale pas allouée dans les sites où elle se trouve	C1 Commerce suspendue

Furcifer tuzetae

(Brygoo, Bourgat & Domergue, 1972)

Dist. *Furcifer tuzetae* is endemic to the island of Madagascar where it was thought to be restricted to a small areas of dry forest in the south-west (Glaw & Vences 2007). More recently, this species has been discovered in two localities in the north-west of the island (Raselimanana 2008). Areas between the north-western and south-western localities have been visited and it is not clear whether this species is present across a wide area, but it exceptionally rare, or if it is genuinely restricted to these two isolated areas.

Popl. There are no data on the population of this species.

Ecol. There are no published accounts of its habitat and ecology although it is thought to be restricted to forest habitats (Raselimanana 2008).

Cons. None.

Thre. Unknown.

Summary

Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Relatively widespread and may be able to sustain a small harvest but more information is needed	C2 Trade suspension	Relatively widespread but evidently extremely rare within its range	Accept tentative conclusion in AC24 Doc. 7.2	C2 Trade suspension

Resumé

Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement répandue et peut être capable de supporter une petite collecte mais information additionnelle est nécessaire	C2 Commerce suspendue	Relativement répandue mais extrêmement rare dans son aire de distribution	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C2 Commerce suspendue

Furcifer willsii

(Günther, 1890)

- Dist.** This species is endemic to Madagascar where it occurs in the north and central north-east of the island between 600 m and 1,300 m above sea level (Glaw & Vences 2007).
- Popl.** In a rapid assessment survey at five sites in the Mantadia-Zahamena Corridor *F. willsii* was only located at one site (Iofa) and was considered a rare species overall (Rabibisoa et al. 2005). It was also considered to be present at a low abundance in an area of the Anjozorobe-Angavo forest corridor, where it was found in only one of the seven forest areas surveyed (Raselimanana & Andriamampionona 2007). In a survey of five forest areas in eastern Madagascar *F. willsii* was only found in Perinét [Analamazaotra] (Raxworthy 1988). It therefore appears that *F. willsii* is an uncommon member of the chameleon species assemblage throughout its range.
- Ecol.** Very little is known about the habitat and ecology this species. Although *F. willsii* has been found in open areas it is considered a species mostly restricted to mid-altitude humid forest (Andreone et al. 2007). It may roost higher in vegetation than other species (Glaw & Vences 2007; Pacher 1974). In and around Analamazaotra SR and Ranomafana NP *F. willsii* was found in degraded habitats at the forest edge (Brady & Griffiths 1999). There is also a single observation from within relatively intact forest (Raxworthy 1988). The abundance of this species may therefore be underestimated if it is more common in highly degraded forests or in tree canopies.
- Cons.** This species is known from Analamazaotra SR and Ranomafana NP.
- Thre.** Loss of humid forest.

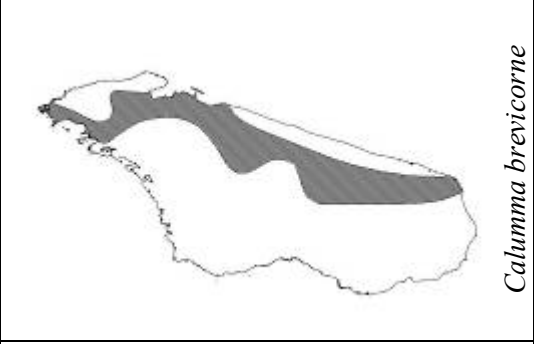
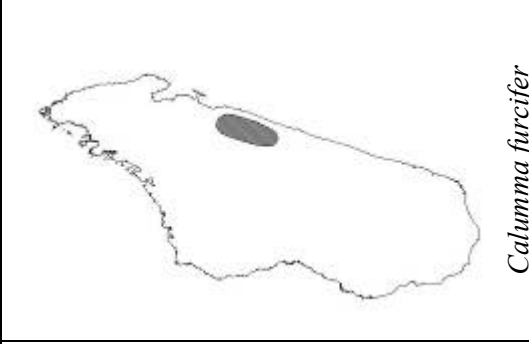
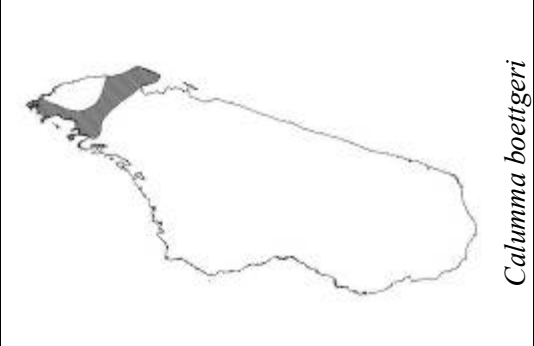
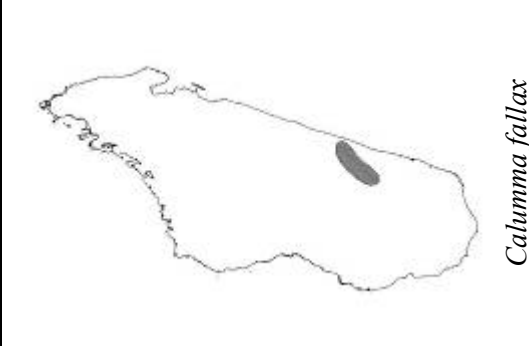
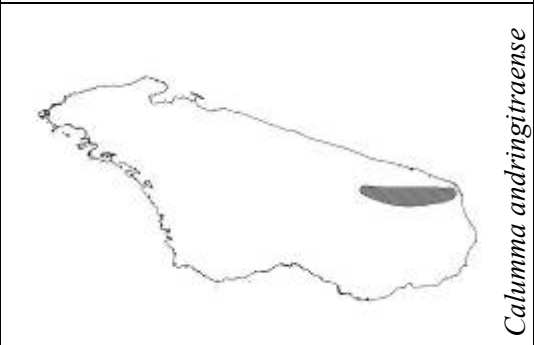
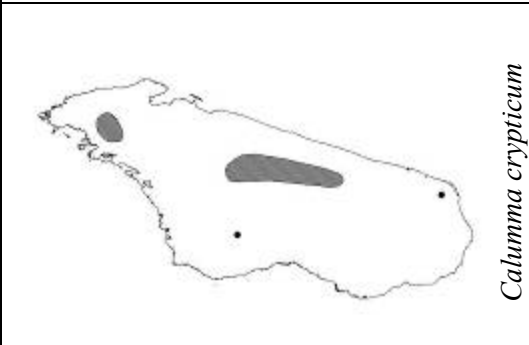
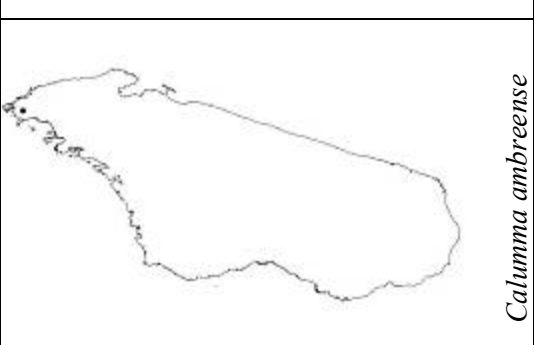
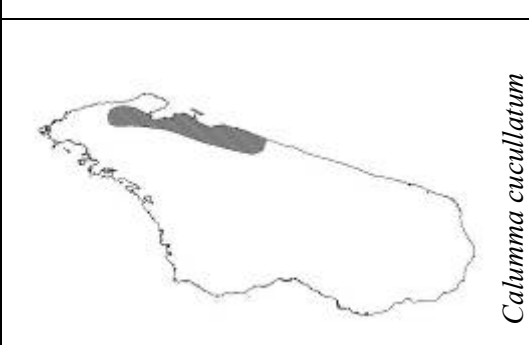
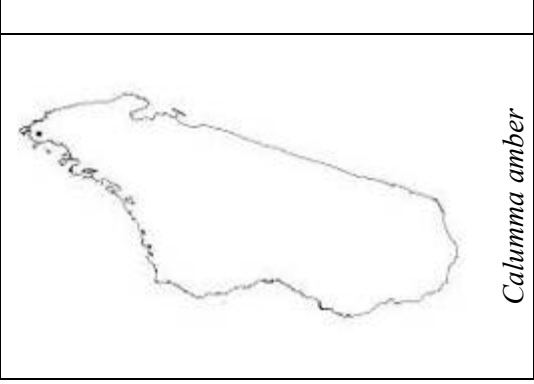
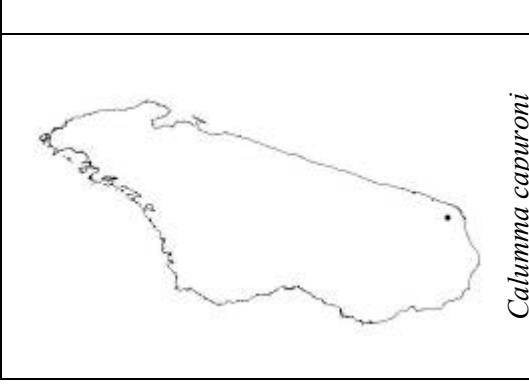
Summary





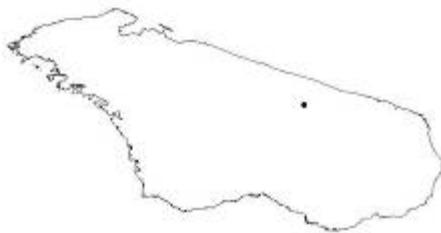

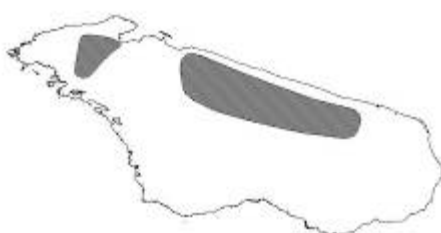



Tentative conclusion AC24 Doc. 7.2	Category recommendation E-AC24-Sum-Rec-Final	Current assessment	Current conclusion	Current recommendation
Relatively widespread and is found more often in degraded than intact forest	C3 Three conditions to be met before trade will be permitted	Relatively widespread and is found more often in degraded than intact forest	Accept tentative conclusion in AC24 Doc. 7.2	C3 Three conditions to be met before trade will be permitted



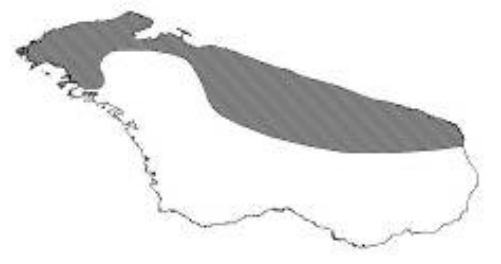
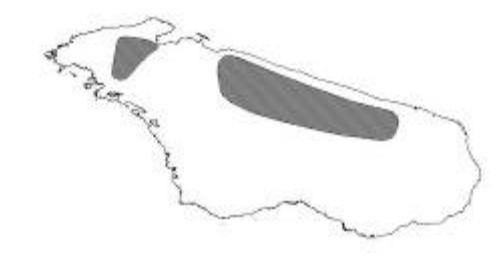


Resumé



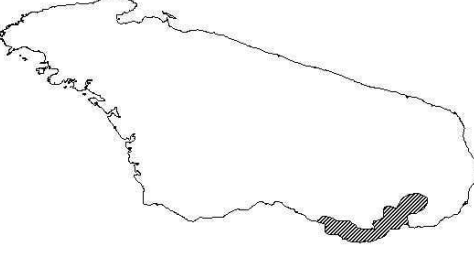


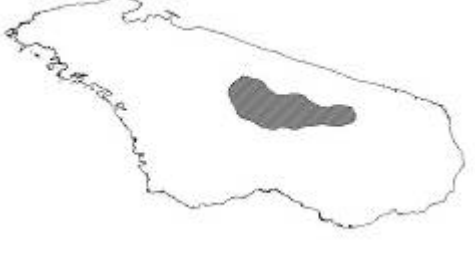




Conclusion prévisionnelle AC24 Doc. 7.2	Recommandation pour la catégorie E-AC24-Sum-Rec-Final	Évaluation en cours	Conclusion en cours	Recommandation en cours
Relativement répandue et est souvent plus observée dans les forêts dégradées qu'intactes	C3 Trois conditions à remplir avant que le commerce soit autorisé	Relativement répandue et est souvent plus observée dans les forêts dégradées qu'intactes	Conclusion prévisionnelle dans AC24 Doc. 7.2 acceptée	C3 Trois conditions à remplir avant que le commerce soit autorisé



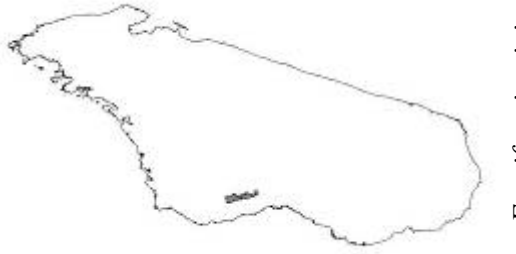
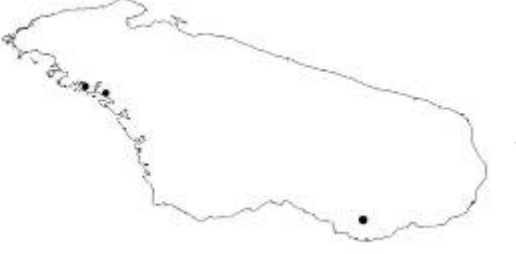

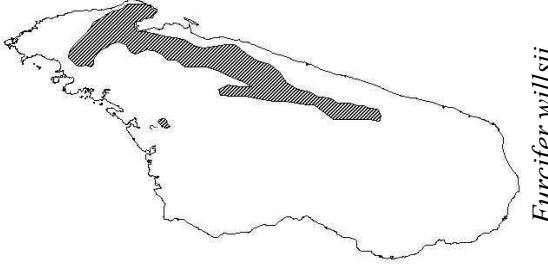
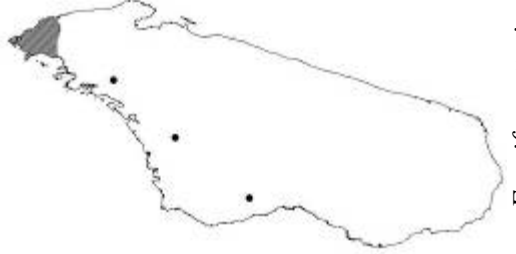
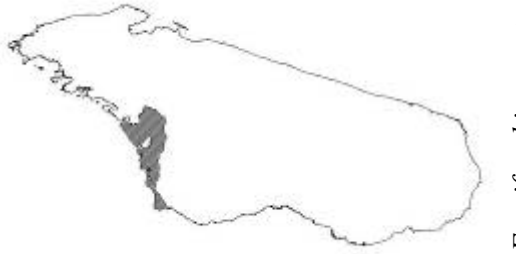
Chameleon Distribution Maps

	<i>Calumma brevicorne</i>		<i>Calumma furcifer</i>
	<i>Calumma boettgeri</i>		<i>Calumma fallax</i>
	<i>Calumma andringitraense</i>		<i>Calumma crypticum</i>
	<i>Calumma ambreense</i>		<i>Calumma cucullatum</i>
	<i>Calumma amber</i>		<i>Calumma capuroni</i>

	<i>Calumma guibei</i>		<i>Calumma malthe</i>
	<i>Calumma globifer</i>		<i>Calumma jevy</i>
	<i>Calumma glawi</i>		<i>Calumma hilleniusi</i>
	<i>Calumma gastrotaenia</i>		<i>Calumma hafahafa</i>
	<i>Calumma gallus</i>		<i>Calumma guillaumeti</i>

	<p><i>Calumma oshaughnessyi</i></p>		<p><i>Calumma globifer</i></p>		<p><i>Calumma nastutum</i></p>		<p><i>Calumma gastrotaenia</i></p>		<p><i>Calumma marojezense</i></p>		<p><i>Calumma tsycorne</i></p>		<p><i>Calumma tsaratananense</i></p>		<p><i>Calumma peyerasi</i></p>		<p><i>Calumma peltierom</i></p>		<p><i>Calumma parsoni</i></p>
---	-------------------------------------	---	--------------------------------	--	--------------------------------	---	------------------------------------	---	-----------------------------------	---	--------------------------------	---	--------------------------------------	---	--------------------------------	---	---------------------------------	---	-------------------------------

 <p><i>Furcifer balteatus</i></p>	 <p><i>Furcifer minor</i></p>
 <p><i>Furcifer antimena</i></p>	 <p><i>Furcifer labordi</i></p>
 <p><i>Furcifer angeli</i></p>	 <p><i>Furcifer campani</i></p>
 <p><i>Calumma vencesi</i></p>	 <p><i>Furcifer bifidus</i></p>
 <p><i>Calumma vatosoa</i></p>	 <p><i>Furcifer belalandaensis</i></p>

 <p><i>Furcifer monoceras</i></p>	 <p><i>Furcifer timoni</i></p>
 <p><i>Furcifer nicosiai</i></p>	 <p><i>Furcifer tuzetae</i></p>
 <p><i>Furcifer angeli</i></p>	 <p><i>Furcifer willsii</i></p>
 <p><i>Furcifer petteri</i></p>	
 <p><i>Furcifer rhinoceros</i></p>	

Towards Article IV

Article IV *Species on Appendix II*

Export permits only granted when:

Scientific Authority have advised that export is non-detrimental to the species in the wild

CITES has provided Madagascar with six recommendations which will, if implemented, enable exports of some chameleon species (C3 and C4) to be in accordance with Article IV. In this section we briefly review each of these with respect to the Scientific Authority:

1. *Established conservative annual export quota for wild specimens intended for trade, based on estimates of sustainable offtake and scientific information.*

CITES Authorities and experts meet regularly in Madagascar to discuss species related issues, including the setting of annual quota. The current method adopted by the Scientific Authority for Animals in Madagascar used information on geographical distribution (excluding populations within strict protected areas) and local population density to calculate annual export quota for reptiles. Export quota are therefore conservative because only 10-20% of the calculated annual quota is put forward and based on scientific information because extent of occurrence and density information uses publications.

Problems

- a. Extent of occurrence over estimates the amount of area occupied for species with a fragmented distribution (e.g. restricted to high elevations)
 - b. Sites from where density data have been collected are not the same sites as where collection occurs
 - c. Estimates of sustainable offtake are not included
2. *Forwarded the quota details to the Secretariat (including zero quotas) and provide information and data used by the Scientific Authority to determine that the quantities would not be detrimental to the survival of the species in the wild*

Effective communication exists between the CITES Authorities in Madagascar and in Switzerland. Madagascar has the capacity and expertise to provide science-based justification for its chameleon export quota.

Problems

- a. Estimates of sustainable offtake are not included in current quota calculations

- b. Additional capacity building for Malagasy CITES Authorities and experts are needed with respect to delivering non-detriment findings
3. *The Secretariat after consultation with the Animals Committee should publish the quota agreed by the Animals Committee (including any zero quotas). No export should occur until the agreed quotas have been published on the Secretariat's website.*

This is beyond the scope of this report.

4. *Ensured that specimens produced from captive-production systems were distinguished in trade from genuine wild-harvested specimens, that separate export quotas were established and notified to the Secretariat*

This is beyond the scope of this report.

5. *Conducted a status assessment, including an evaluation of threats to the species; developed and implemented an internationally agreed standard population monitoring programme for the species; and advised the Secretariat of the details of the assessment and the programme.*

The IUCN has commissioned the first stage of the Madagascar Reptile Red List assessment and hopes to hold an expert workshop in late 2010.

It is not clear what an internationally agreed standard population monitoring programme is – but it would best be developed on a species-by-species basis. Standard methods exist for surveying chameleons in Madagascar and these are suitable for monitoring purposes.

Problem

- a. Monitoring of harvested populations requires reliable information on collection sites. Existing collaboration between scientists and chameleon exporters in Madagascar has not yet achieved the close level of cooperation needed to monitor collection, and its impact on local populations.
6. *Based any changes to the conservative annual export quota for wild-taken specimens on the results of the assessment and monitoring programme*

There is no monitoring programme in place.

Conclusions

1. This review recommends 8 changes to the tentative conclusions made by the report to CITES (AC24 Doc. 7.2)
 - a. Three concern species that were originally classed as C3 but we consider to warrant their retention in the trade suspension
 - b. Three concern species that we consider are better classed as C3, than C4, although this does not alter their overall status as species for which Article IV compliance is possible
 - c. One species for which we consider there is enough information to classify it as C1 rather than C2
 - d. One species that was listed as C2/C3 where we recommend that the C2 category is used
2. Nineteen species of Malagasy chameleons could probably sustain low to moderate levels of annual collection for international trade.
3. The uncertainty surrounding the taxonomy and distribution of 12 species render it impossible to export in compliance with Article IV.
4. Eight species are restricted entirely to strict protected areas from where legal collection for commercial purposes is forbidden.
5. The IUCN Red List, Malagasy national legislation and CITES database need to be updated.
6. The lack of scientific information about sustainable offtake is a major barrier to obtaining non-detriment findings for C3 species.
7. Provisional protected areas provide the potential for facilitating sustainable and equitable harvests of C3/C4 species and should be developed as pilot sites for scientific study and monitoring on the impact of collection.

Recommendations

1. Establish conservative export quota for species listed as C4 and submit to CITES along with detailed explanation of how the quota was calculated.
2. Identify priority C3 species (e.g. conservation need or commercial demand) and establish population monitoring at sites from where collection could be focused (and managed) in the near future.
3. Identify sites where C3 species could be collected from, whilst subject to scientific monitoring and community involvement.
4. Consider adopting the recommendations from the Reptile and Amphibian Working Group at the *International Expert Workshop on Non-Detriment Findings* (AC21 Doc. 9.1), with C4 species aligned to 'Low Risk' and automatic NDFs, C3 as 'Medium Risk' which require close monitoring and C1 and C2 as 'High Risk' with automatic no NDF.
5. Commission a study on the potential problem of look-a-like species that could lead to C2/C1 species traded erroneously or deliberately as C3/C4 species.
6. Assess the conservation status of Malagasy chameleons for the IUCN Red List
7. Update the CITES taxonomy and national legislation to reflect advances in taxonomy.

Table 1. A summary of the IUCN Red List, National Malagasy Legislation and CITES Appendix information for each *Calumma* chameleon species (NE: Not Evaluated; NL Not Listed; Cat 1.2 Protected Species that can be collected with authorisation from the government; II: Appendix II). For each species, the Extent of Occurrence (EOO) is given, plus the estimated % of that area that occurs within Madagascar National Parks (MNP) and provisional protected areas (PPA). Lines in grey highlight differences between the conclusions from the CITES study and those of this report. The column 'Article IV' summaries recommends for the trade suspension to remain (non compliance) or lifted if the conditions stipulated by CITES are met (conditional compliance).

Species	IUCN RL	National Law	CITES App.	EOO km ²	% MNP	% PPA	Tentative conclusion AC24 Doc. 7.2	Recommendations to Malagasy CITES SA (fauna)	Article IV
<i>C. amber</i>	NE	NL	NL	175	100	0	C1	C1	Non compliance
<i>C. ambreense</i>	NE	NL	NL	175	100	0	NE	C1	Non compliance
<i>C. andringitraense</i>	NE	NL	II	16,958	13	4	C3	C2	Non compliance
<i>C. boettgeri</i>	NE	Cat 1.2	II	30,072	20	14	C4	C3	Conditional compliance
<i>C. brevicorne</i>	NE	Cat 1.2	II	151,653	7	11	C4	C4	Conditional compliance
<i>C. capuroni</i>	NE	Cat 1.2	II	728	100	0	C1	C1	Non compliance
<i>C. cucullatum</i>	NE	Cat 1.2	II	32,687	6	14	C2/C3	C2	Non compliance
<i>C. crypticum</i>	NE	NL	NL	37,386	8	10	C4	C4	Conditional compliance
<i>C. fallax</i>	NE	Cat 1.2	II	102,08	0.3	2	C3	C2	Non compliance
<i>C. furcifer</i>	NE	Cat 1.2	II	14,614	6	31	C2	C2	Non compliance
<i>C. gallus</i>	NE	Cat 1.2	II	10,293	8	40	C3	C3	Conditional compliance
<i>C. gastrotaenia</i>	NE	Cat 1.2	II	102,721	4	14	C4	C4	Conditional compliance
<i>C. glawi</i>	NE	Cat 1.2	II	405	100	0	C3	C2	Non compliance
<i>C. globifer</i>	NE	Cat 1.2	II	2,396	0	21	C4	C3	Conditional compliance
<i>C. guibei</i>	NE	Cat 1.2	II	492	100	0	C1	C1	Non compliance
<i>C. guillaumeti</i>	NE	Cat 1.2	II	7,789	12	30	C3	C3	Conditional compliance
<i>C. hafahafa</i>	NE	NL	NL	307	0	100	C1	C1	Non compliance
<i>C. hilleniusi</i>	NE	Cat 1.2	II	660	54	41	C2	C2	Non compliance
<i>C. jeiy</i>	NE	NL	NL	598	100	0	C1	C1	Non compliance
<i>C. linotum</i> ¹	NE	Cat 1.2	II	NA	NA	NA	C2	NA	Non compliance
<i>C. maithe</i>	NE	Cat 1.2	II	5,031	20	36	C4	C4	Conditional compliance
<i>C. marojeziense</i>	NE	Cat 1.2	II	19,155	16	21	C3	C3	Conditional compliance

<i>C. nesutum</i>	NE	Cat 1.2	II	219,683	6	9	C4	C4	C4	Conditional compliance
<i>C. oshaughnessyi</i>	NE	Cat 1.2	II	32,264	11	14	C4	C4	C3	Conditional compliance
<i>C. parsonii</i>	NE	Cat 1.2	II	82,322	6	16	C3/C4	C3	C3	Conditional compliance
<i>C. peltiorum</i>	NE	NL	NL	3,866	8	55	C2	C2	C1	Non compliance
<i>C. peyrierasi</i>	NE	Cat 1.2	II	598	100	0	C1	C1	C1	Non compliance
<i>C. tsaratananense</i>	NE	Cat 1.2	II	492	100	0	C1	C1	C1	Non compliance
<i>C. tscopyrne</i>	NE	NL	NL	9,250	11	4	C2	C2	C2	Non compliance
<i>C. vatosa</i>	NE	NL	II	1,740	2	10	C2	C2	C2	Non compliance
<i>C. vencesi</i>	NE	NL	II	2,592	11	41	C3	C3	C3	Conditional compliance

¹*C. linoatum* is tentatively put as a synonym of *C. boettgeri* (Glaw & Vences 2007)

Table 2. A summary of the IUCN Red List, National Malagasy Legislation and CITES Appendix information for each *Furcifer* chameleon species (NE: Not Evaluated; NL Not Listed; Cat 1.2 Protected Species that can be collected with authorisation from the government; II: Appendix II). For each species, the Extent of Occurrence (EOO) is given, plus the estimated % of that area that occurs within Madagascar National Parks (MNP) and provisional protected areas (PPA). Lines in grey highlight differences between the conclusions from the CITES study and those of this report. The column 'Article IV' summaries recommends for the trade suspension to remain (non compliance) or lifted if the conditions stipulated by CITES are met (conditional compliance).

Species	IUCN RL	National Law	CITES App.	EOO km ²	% MNP	% PPA	Tentative conclusion AC24 Doc. 7.2	Recommendations to Malagasy CITES SA (fauna)	Article IV
<i>F. angeli</i>	NE	Cat 1.2	II	13,262	17	18	C2	C2	Non compliance
<i>F. antimena</i>	NE	Cat 1.2	II	11,661	2	49	C3	C3	Conditional compliance
<i>F. baiteatus</i>	NE	Cat 1.2	II	8,047	5	21	C2	C2	Non compliance
<i>F. belandanaensis</i>	NE	Cat 1.2	II	16	0	0	C1	C1	Non compliance
<i>F. bifidus</i>	NE	Cat 1.2	II	70,394	7	15	C2/C3	C2	Non compliance
<i>F. campani</i>	VU	Cat 1.2	II	1,109	28	5	C3	C3	Conditional compliance
<i>F. labordi</i>	VU	Cat 1.2	II	27,063	6	26	C2	C2	Non compliance
<i>F. minor</i>	VU	Cat 1.2	II	26,369	1	1	C3/C4	C3	Conditional compliance
<i>F. monoceras</i> ¹	NE	Cat 1.2	II	NA	NA	NA	C1	NA	Non compliance
<i>F. nicosiai</i>	NE	Cat 1.2	II	1,115	100	0	C1	C1	Non compliance
<i>F. petteri</i>	NE	Cat 1.2	II	11,429	9	19	C3	C3	Conditional compliance
<i>F. rhinocerotus</i>	NE	Cat 1.2	II	19,364	10	17	C3	C3	Conditional compliance
<i>F. timoni</i>	NE	NL	NL	825	100	0	NE	C1	Non compliance
<i>F. tuzetae</i>	NE	Cat 1.2	II	1,143	13	0	C2	C2	Non compliance
<i>F. willsii</i>	NE	Cat 1.2	II	69,493	11	19	C3	C3	Conditional compliance

¹*F. monoceras* is tentatively put as a junior synonym of *F. rhinocerotus* (Glaw & Vences 2007)

Literature Cited

- Andreone, F., F. Glaw, R. A. Nussbaum, C. J. Raxworthy, M. Vences, and J. E. Randrianirina. 2003. The amphibians and reptiles of Nosy Be (NW Madagascar) and nearby islands: a case study of diversity and conservation of insular fauna. *Journal of Natural History* **37**:2119-2149.
- Andreone, F., F. M. Guarino, and J. E. Randrianirina. 2005. Life history traits, age profile and conservation biology of the panther chameleon (*Furcifer pardalis*) at Nosy Be, NW Madagascar. *Tropical Zoology* **18**:209-225.
- Andreone, F., F. Mattioli, R. Jesu, and J. E. Randrianirina. 2001. Two new chameleons of the genus *Calumma* from north-east Madagascar, with observations on hemipenal morphology in the *Calumma furcifer* group (Reptilia, Squamata, Chamaeleonidae). *Herpetological Journal* **11**:53-68.
- Andreone, F., and H. Randriamahazo. 1997. Ecological and taxonomic observations on the amphibians and reptiles of the Andohahela low altitude rainforest, S. Madagascar. *Revue fr. Aquariol.* **24**:95-128.
- Andreone, F., and J. Randrianirina. 2007. The amphibians and reptiles of Kalambatritra, a little-known rainforest of south-eastern Madagascar. *Bollettino del Museo Regionale di Scienze Naturali di Torino* **24**:179-190.
- Andreone, F., J. E. Randrianirina, P. D. Jenkins, and G. Aprea. 2000. Species diversity of Amphibia, Reptilia and Lipotyphla (Mammalia) at Ambolokopatrika, a rainforest between the Anjanaharibe-Sud and Marojejy Massifs, NE Madagascar. *Biodiversity and Conservation* **9**:1587-1622.
- Andreone, F., M. Vences, F. Glaw, and J. Randrianirina. 2007. Remarkable records of amphibians and reptiles on Madagascar's central high plateau. *Tropical Zoology* **20**:19-39.
- Andriamandimbiarisoa, L. N. 2007. Contribution à l'étude de l'histoire naturelle de trois espèces de caméléons de la région de Toliary, *Furcifer verrucosus* (Cuvier, 1829), *Furcifer labordi* (Grandidier, 1872) et *Furcifer antimena* (Grandidier, 1872): biologie, ecologie et ethologie de la reproduction. Page 73. Département de Biologie Animale. Université d'Antananarivo, Antananarivo.
- Birkinshaw, C., T. H. Andriamihajarivo, L. Randrianaina, C. Randrianarivelo, B. Rasolondraibe, A. Ravohangy, and R. Razafindrasoa. 2004. Evaluation bio-ecologique des ressources naturelles et pressions anthropiques - études socio-economique en vue d'établir une proposition de stratégie de conservation pour le massif d'Iremo. Missouri Botanical Gardens. Unpublished report.
- Böhme, W. 1997. Eine neue Chamaleonart aus der *Calumma gastrotaenia* - Verwandtschaft Ost-Madagaskr. *Herpetofauna* **19**:5-10.
- Bora, P., J. C. Randrianantoandro, R. Randrianavelona, E. F. Hantalalaina, R. R. Andriantsimanarilafy, D. Rakotondravony, O. R. Ramilijaona, M. Vences, R. K. B. Jenkins, F. Glaw, and J. Kohler. in press. The herpetofauna of the Tsingy de Bemaraha plateau, western Madagascar: checklist, biogeography and conservation.
- Brady, L. D., and R. A. Griffiths. 1999. Status assessment of chameleons in Madagascar. IUCN Species Survival Commission, Cambridge.

- Brygoo, E. R. 1971. Reptiles Sauriens Chamaeleonidae. Genre *Chamaeleo*. Faune de Madagascar **33**:1-318.
- Brygoo, E. R. 1978. Reptiles Sauriens Chamaeleonidae. Genre *Brookesia* et complément pour le genre *Chamaeleo*. Faune de Madagascar **47**:1-173.
- Carpenter, A. I., O. Robson, J. M. Rowcliffe, and A. R. Watkinson. 2005. The impacts of international and national governance changes on a traded resource: a case study of Madagascar and its chameleon trade. *Biological Conservation* **123**:279-287.
- CBSG. 2002. Evaluation et Plans de Gestion pour la Conservation (CAMP) de la Faune de Madagascar. Lémuriens, Autres Mammifères, Reptiles et Amphibiens, Poissons d'eau douce et Evaluation de la Viabilité des Populations et des Habitats de *Hypogeomys antimena* (Vositse). SSC/IUCN, Apple Valley, MN.
- D'Cruze, N. C., J. Sabel, K. Green, J. Dawson, C. Gardner, J. Robinson, G. Starkie, M. Vences, and F. Glaw. 2007. The first comprehensive survey of amphibians and reptiles at Montagne des Français, Madagascar. *Herpetological Conservation and Biology* **2**:87-99.
- Glaw, F., J. Kohler, and M. Vences. 2009. A distinctive new species of chameleon of the genus *Furcifer* (Squamata: Chamaeleonidae) from Montagne d'Ambre rainforest of northern Madagascar. *Zootaxa* **2269**:32-42.
- Glaw, F., and M. Vences 2007. A fieldguide to the amphibians and reptiles of Madagascar. Third Edition. Vences & Glaw Verlag, Cologne.
- IUCN/SSC, BIODÉV, and I. S. M. R. a. A. S. Group. 1993. A preliminary review of the distribution and status of reptile and amphibian species exported from Madagascar. Joint Nature Conservation Committee, Peterborough.
- Jenkins, R. K. B., L. D. Brady, M. Bisoa, J. Rabearivony, and R. A. Griffiths. 2003. Forest disturbance and river proximity influence chameleon abundance in Madagascar. *Biological Conservation* **109**:407-415.
- Jenkins, R. K. B., L. D. Brady, K. Huston, J. L. D. Kauffmann, J. Rabearivony, G. Raveloson, and M. Rowcliffe. 1999. The population status of chameleons within Ranomafana National Park, Madagascar. *Oryx* **33**:38-47.
- Jesu, R., F. Mattioli, and G. Schimmenti. 1999. On the discovery of a new large chameleon inhabiting the limestone outcrops of western Madagascar: *Furcifer nicosiai* sp. nov. (Reptilia, Chamaeleonidae). *Doriana* **12**:1-14.
- Karsten, K. B., L. N. Andriamandimbarisoa, S. F. Fox, and C. J. Raxworthy. 2008. Discovery of a unique tetrapod life history: and annual chameleon living mostly as an egg. *Proceeding of the National Academy of Sciences* **105**:8980-8984.
- Karsten, K. B., L. N. Andriamandimbarisoa, S. F. Fox, and C. J. Raxworthy. 2009. Population densities and conservation assessments for three species of chameleons in the Toliara region of south-western Madagascar. *Amphibia-Reptilia* **30**:341-350.
- Nussbaum, R. A., C. J. Raxworthy, A. P. Raselimanana, and J.-B. Ramanamanjato. 1999. Amphibians and reptiles of the Réserve Naturelle Intégrale d'Andohahela, Madagascar. In A floral and faunal inventory of the Réserve Naturelle Intégrale d'Andohahela, Madagascar: with reference to elevational variation. *Fieldiana: Zoology* **94**:155-173.

- Parcher, S. P. 1974. Observation on the natural histories of six Malagasy Chamaeleontidae. *Zeitschrift Tierpsychol* **34**:500-523.
- Rabearivony, J., L. D. Brady, R. K. B. Jenkins, and O. R. Ravohangimalala. 2008. Habitat use and abundance of a low-altitude chameleon assemblage in eastern Madagascar. *Herpetological Journal* **17**:247-254.
- Rabibisoa, N., J. E. Randrianirina, J. Rafanomezantsoa, and F. C. E. Rabemananjara. 2005. Inventaire des reptiles et amphibiens du corridor Mantadia-Zahamena, Madagascar. *RAP Bulletin of Biological Assessment* **32**:102-117.
- Rakotomalala, D. 2002. Diversité des reptiles et amphibiens de la Réserve Spéciale de Manongarivo, Madagascar. *Boissiera* **59**:339-358.
- Rakotomalala, D., and A. P. Raselimanana. 2003. Les amphibiens et les reptiles des massifs de Marojejy, d'Anjanaharibe-Sud et du couloir forestier Betaolana in L. Wilme, editor. Nouveaux resultats d'inventaires biologiques faisant reference a l'altitude dans la region des massifs montagneux de Maorjejy et d'Anjanaharibe-Sud. *Recherches Pour Le Developement*.
- Rakotondravony, H. 2004. Diversité des caméléons forestiers de la région d'Andasibe (Madagascar) et modèle de distribution de cette communauté selon différent types phisionomiques. *La Terre et la vie: Revue d'Ecologie* **59**:529-544.
- Rakotondravony, H. 2006. Patterns de la diversité des reptiles et amphibiens de la région de Loky-Manambato. Pages 101-148 in L. Wilme, editor. Inventaires de la faune et de la flore du nord de Madagascar dans la région Loky-Manambato, Analamerana et Andavakoera. *Recherches pour le Développement Série Sciences Biologiques*.
- Ramanamanjato, J.-B., and N. Rabibisoa. 2002. Evaluation rapide de la diversité biologique de reptiles et amphibiens de la Reserve Naturelle Integrale d'Ankarafantsika. Pages 98-104 in O. Missa, editor. *A Biological Assessment of the Reserve Naturelle Integrale d'Ankarafantsika*. Conservation International, Washington D.C.
- Ramanantsoa, G. A. 1974. Connaissance des Caméléonidés communs de la Province de Diégo-Suarez par la Population Paysanne. *Bulletin Academie Malagache* **51**:147-149.
- Randrianantoandro, J. C., R. Randrianavelona, R. R. Andriantsimanarilafy, H. E. Fideline, D. Rakotondravony, M. Randrianasolo, H. L. Ravelomanantsoa, and R. K. B. Jenkins. 2008. Identifying priority areas for dwarf chameleon (*Brookesia* spp.) conservation in Tsingy de Bemaraha National Park, Madagascar. *Oryx* **42**:578-573.
- Randrianantoandro, J. C., R. Randrianavelona, R. R. Andriantsimanarilafy, H. E. Fideline, D. Rakotondravony, M. Randrianasolo, H. L. Ravelomanantsoa, and R. K. B. Jenkins. in press. Identifying priority areas for dwarf chameleon (*Brookesia* spp.) conservation in Tsingy de Bemaraha National Park, Madagascar. *Oryx*.
- Raselimanana, A., and R. Andriamampionona. 2007. La faune herpétologique du « Couloir d'Anjozorobe Angavo »: Diversité, caractéristiques et aspect biogéographique. Pages 111-139 in L. Wilme, editor. *Inventaires de la faune et de la flore du couloir forestier d'Anjozorobe – Angavo*. *Recherches pour le Développement Série Sciences Biologiques*, Antananarivo.

- Raselimanana, A., C. J. Raxworthy, and R. A. Nussbaum. 2000. Herpetofaunal species diversity and elevational distribution within the Parc National de Marojejy, Madagascar. *Fieldiana: Zoology*:157-153.
- Raselimanana, A. P. 1998. La diversité de la faune des reptiles d'amphibiens. Pages 43-57 in S. M. Goodman, editor. *Inventaire Biologique Forêt d'Andranomay, Anjozorobe. Recherches Pour Le Développement*.
- Raselimanana, A. P. 1999. Herpetofauna in B. Rasolonandrasana, editor. *Inventaire biologique de la Réserve Spéciale du Pic d'Ivohibe et du couloir forestier qui la relie au Parc National d'Andringitra. Recherches pour le Développement*.
- Raselimanana, A. P. 2004. L'herpetofaune de la forêt de Mikea. Pages 37-50 in S. M. Goodman, editor. *Inventaire floristique et faunistique de la forêt de Mikea : paysage écologique et diversité biologique d'une préoccupation majeure pour la conservation. Recherches Pour Le Développement*.
- Raselimanana, A. P. 2008. Herpétofaune des forêts sèches malgaches. *Malagasy Nature* **1**:46-75.
- Raselimanana, A. P., and D. Rakotomalala. 2003. Chamaeleonidae, Chameleons. Pages 961-969 in J. Benstead, editor. *The Natural History of Madagascar*. The University of Chicago Press, Chicago and London.
- Raselimanana, A. P., D. Rakotomalala, and F. Rakotondraparany. 1998. Les reptiles et amphibiens: diversité et conservation. Pages 183-195 in S. M. Goodman, editor. *Inventaire Biologique de la Forêt Tampolo. Recherches Pour Le Développement*.
- Raxworthy, C. J. 1988. Reptiles, rainforest and conservation in Madagascar. *Biological Conservation* **43**:181-211.
- Raxworthy, C. J., F. Andreone, R. A. Nussbaum, N. Rabibisoa, and H. Randriamahazo. 1998. Amphibians and reptiles of the Anjanaharibe-Sud Massif, Madagascar: Elevational distribution and regional endemism. In *A floral and faunal inventory of the Réserve Spéciale d'Anjanaharibe-Sud: with reference to elevational variation*. *Fidiana: Zoology* **90**:79-92.
- Raxworthy, C. J., and R. A. Nussbaum. 1994. A rainforest survey of amphibians, reptiles and small mammals of Montagne d'Ambre, Madagascar. *Biological Conservation* **69**:65-73.
- Raxworthy, C. J., and R. A. Nussbaum. 1996a. Amphibians and reptiles of the Réserve Naturelle Intégrale d'Andringitra, Madagascar: a study of elevational distribution and local endemism. *Fieldiana: Zoology* **85**:158-170.
- Raxworthy, C. J., and R. A. Nussbaum. 1996b. Montane amphibian and reptile communities. *Conservation Biology* **10**:750-756.
- Raxworthy, C. J., and R. A. Nussbaum. 2000. Extinction and extinction vulnerability of amphibians and reptiles in Madagascar. *Amphibian and Reptile Conservation* **2**:15-23.
- Raxworthy, C. J., and R. A. Nussbaum. 2002. Reptile mark-recapture trials using rainforest plots at Montagne d'Ambre, Madagascar. *Phelsuma* **10**:41-48.
- Raxworthy, C. J., and R. A. Nussbaum. 2006. Six new species of occipital-lobed *Calumma* Chameleons (Squamata: Chamaeleonidae) from Montane Regions of Madagascar, with a new description and revision of *Calumma brevicorne*. *Copeia*:711-734.

Vences, M., F. Andreone, F. Glaw, N. Raminsoa, J. E. Randrianirina, and D. R. Vieites. 2002. Amphibians and reptiles of the Ankaratra Massif: reproductive diversity, biogeography and conservation of a montane fauna in Madagascar. *Italian Journal of Zoology* **69**:263-284.