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

Seventy-fourth meeting of the Standing Committee
Lyon (France), 7 - 11 March 2022

Interpretation and implementation matters

General compliance and enforcement

Review of significant trade in specimens of Appendix-II species

REVIEW OF STANDING COMMITTEE RECOMMENDATIONS TO SUSPEND TRADE MADE MORE THAN TWO YEARS AGO

1. This document has been prepared by the Secretariat.

Background

2. The role and responsibilities of the Standing Committee in monitoring progress of range States in implementing recommendations under the Review of Significant Trade (RST) in specimens of Appendix-II species are described in paragraph 1 k) to p), and paragraph 2 of Resolution Conf. 12.8 (Rev. CoP17) on *Review of Significant Trade in specimens of Appendix-II species*.

3. Where a species/range State combination is subject to a recommendation to suspend trade under the Review of Significant Trade, there are two processes by which the recommendation can be reviewed and potentially withdrawn. These fall under paragraph 1, subparagraphs o) and p) of the Resolution, which state that:

   o) a recommendation to suspend trade in the affected species with the range State concerned should be withdrawn only when that range State demonstrates to the satisfaction of the Standing Committee, in consultation with the Secretariat and the members of the Animals or Plants Committee, through the relevant Chair, compliance with Article IV, paragraph 2 (a), 3 or 6 (a); and

   p) the Standing Committee, in consultation with the Secretariat and the Chair of the Animals or Plants Committee, shall review recommendations to suspend trade that have been in place for longer than two years, evaluate the reasons why this is the case in consultation with the range State, and, if appropriate, take measures to address the situation.

4. The Standing Committee has reviewed recommendations to suspend trade that have been in place for longer than two years on an irregular basis, depending, *inter alia*, on the availability of funding for the Secretariat to commission detailed studies to facilitate these reviews. The Secretariat was able to provide comprehensive overviews of the status of the cases for the 57th and 59th meetings of the Standing Committee (SC57, Geneva, July 2008, and SC59, Doha, March 2010) [see documents SC57 Doc. 29.2 and SC59 Doc. 14.2; consultancies by TRAFFIC and the United Nations Environment Programme – World Conservation Monitoring Centre (UNEP-WCMC) respectively]. Although no funds were available to commission an overview report for its 62nd meeting (SC62, Geneva, July 2012), the Standing Committee reviewed the status of several cases [see document SC62 Doc. 27.2 (Rev. 1)]. For its 66th meeting (SC66, Geneva, January 2016), the Secretariat contracted UNEP-WCMC to undertake a comprehensive review of all taxa that had been subject to trade suspensions for more than two years on the basis of recommendations

formulated through the Review of Significant Trade (see document SC66 Doc. 31.2 Annex 2). For its 70th meeting (SC70, Sochi, October 2018) the Secretariat presented a review of cases where recommendations to suspend trade had been in place for more than 3 years (see document SC70 Doc. 29.2), many of which had been previously reviewed in detail at SC66 in document SC66 Doc. 31.2 Annex 2.

5. Following SC70, an update of the recommendations by the Standing Committee to suspend trade in the context of the implementation of Resolution Conf. 12.8 (Rev. CoP17) was published on 20 January 2020 in Notification to the Parties No. 2020/006. This listed a total of 46 species/country combinations for fauna and flora that are currently subject to a recommendation to suspend trade under RST. Subsequent to this Notification, the Secretariat noticed that nomenclature changes to the *Tridacna* species for Solomon Islands, agreed at the 17th meeting of the Conference of the Parties (CoP17), were not yet reflected. A new species of *Tridacna* was recognized: *Tridacna ningaloo*; while *T. noae* was split from *T. maxima.* The corrected list of currently valid trade suspensions, including those related to RST is presented on the CITES website. Following the present meeting of the Standing Committee, a new Notification will be published to address these nomenclature issues and reflect relevant decisions taken by the Standing Committee.

6. In accordance with paragraph 1 p) of Resolution Conf. 12.8 (Rev. CoP17), the Secretariat undertook to review recommendations to suspend trade that have been in place for longer than two years and evaluate the reasons why this is the case in consultation with the range States concerned. Concerning fauna cases, the Secretariat decided to focus on those cases that were not reviewed at SC70 and had been subject to a recommendation to suspend trade since 2016, due to limited available resources. The outcomes of this review for relevant cases concerning fauna and flora are outlined in sections 1 and 2 below, respectively.

Section 1: Review of fauna species/country combinations subject to trade suspensions for more than two years

7. The Secretariat commissioned UNEP-WCMC to examine a selection of animal taxa from eight selected Parties (Benin, Cameroon, Fiji, Ghana, Guinea, Senegal, the Solomon Islands and the United Republic of Tanzania) that have been subject to trade suspensions established through the CITES Review of Significant Trade (RST) since 2016, as these were not included in either of the previous comprehensive reviews presented at SC66 and SC70.

Range State	Taxon	Suspension valid from
Benin	*Chamaeleo gracilis*	3 February 2016
	Chamaeleo senegalensis	3 February 2016
	Kinixys homeana	3 February 2016
Cameroon	*Trioceros quadricornis*	15 March 2016
Fiji	*Plerogyra simplex*	3 February 2016
	Plerogyra sinuosa	3 February 2016
Ghana	*Chamaeleo gracilis*	3 February 2016
	Chamaeleo senegalensis	3 February 2016
Guinea	*Hippocampus algiricus*	3 February 2016
Senegal	*Hippocampus algiricus*	3 February 2016
Solomon Islands	*Tridacna derasa,*	3 February 2016
	Tridacna crocea	3 February 2016
	Tridacna gigas	3 February 2016
	Tridacna maxima	3 February 2016
	Tridacna ningaloo[1]	3 February 2016
	Tridacna noae[2]	3 February 2016
	Tridacna squamosa	3 February 2016

[1] *Recognized as a new species at CoP17*

[2] *Split from* Tridacna maxima *at CoP17*

Range State	Taxon	Suspension valid from
United Republic of Tanzania	*Kinyongia fischeri*	3 February 2016
	Kinyongia tavetana	3 February 2016

8. Acting on behalf of the Secretariat, UNEP-WCMC invited these range States to provide any updates to the conservation and protection status of the relevant species in their country, as well as trade information, management actions and any progress on implementing the Animals Committee's recommendations. In addition, the range States were invited to clarify if there was interest in resuming export of specimens of the species in the future and, if so, to confirm whether the country considered that non-detriment findings (NDF) could now be made. Alternatively, if there was no interest in future export, countries were asked to confirm that exports were not anticipated. Finally, range States were invited to outline any challenges faced in implementing the AC/PC recommendations and any underlying reasons for these challenges, as well as identifying what type of support (if any) would be needed to address the recommendations.

9. The results of UNEP-WCMC's consultations are contained in the report in Annex 2 to the present document. That report provides an update to the detailed assessments for the 19 species/country combinations shown in the table in paragraph 7. It makes recommendations on whether the trade suspension may still be warranted, or if the suspension could be lifted. Furthermore, it determines whether appropriate measures are required to address the situation.

Responses from range States

10. Responses are presented in Annex 1 to this document in the language and format that they were received. Of the eight Parties that are subject to a recommendation to suspend trade under RST that were consulted as part of this review, responses were received from five.

11. Three Parties (**Guinea, Senegal** and the **United Republic of Tanzania**) did not respond to the consultation; as a result it is recommended that the trade suspensions for *Hippocampus algiricus* from Guinea and Senegal, and *Kinyongia fischeri* and *K. tavetana* from the United Republic of Tanzania remain in place.

12. **Fiji** confirmed that there was no intention to trade in live corals in the future and, on this basis, it is suggested that the current recommendations to suspend trade in *Plerogyra simplex* and *P. sinosa* could be lifted subject to the publication of zero export quotas.

13. **Cameroon** noted that, while it did not currently wish to resume trade in *Trioceros quadricornis,* a species inventory and NDF could be a future possibility. It is recommended that the trade suspension for this species/country combination remain in place; however, this could be reviewed in the future, subject to Cameroon providing these elements.

14. The responses of the three remaining Parties (**Benin, Ghana** and the **Solomon Islands**) indicated that trade in the ten relevant suspended species may be anticipated in future (amounting to 12 species/country combinations). For these three countries, it was decided in consultation with the Secretariat to compile updated species assessments to evaluate progress against the AC recommendations in detail.

15. On the basis of the responses provided by Benin, Ghana and the Solomon Islands, as well as further information identified through literature searches and in consultation with experts, it was concluded that the retention of the current trade suspensions may be appropriate for all 12 species/country combinations concerning fauna. This is largely on the basis that the majority of AC recommendations remain to be addressed, or on the basis of key weaknesses identified in draft non-detriment findings provided in response to the consultation that, until addressed, may prevent range States from providing a robust demonstration that exports would be non-detrimental to the survival of the species in compliance with Article IV, paragraph 2(a), 3 or 6(a). A full summary of the basis of these recommendations is outlined in Table i) of Annex 2 to this document.

General observations

16. Based on the species accounts, UNEP-WCMC highlights the following additional observations:

    a) Trade in wild-sourced specimens for the following species/country combinations was reported in potential **non-compliance with the Standing Committee's recommendation to suspend trade**, either by the exporting Party or by countries of import: *Kinixys homeana*/Benin, *Chamaeleo gracilis*/Ghana, *C. senegalensis*/Ghana and *Tridacna* spp. (no species specified)/ Solomon Islands. Countries of import (according to importer-reported data, exporter-reported data, or both) were Australia, Benin, Japan, Canada, Indonesia, the Netherlands, New Zealand, Panama, Togo and the United States of America. There is also some evidence that *K. homeana* may be being traded illegally across the Nigeria/Benin border.

    b) Range States highlighted the **lack of funding** available in order to fully address AC recommendations. In particular, Benin highlighted that financial support would be required to undertake population surveys of the three species currently subject to trade suspensions, and that training of management/enforcement officials (e.g. border agents) in Benin and across the subregion was a specific capacity-building need. Similarly, Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES in the country, and in particular that research was needed on species population dynamics and the impact of trade on wild populations. Finally, although not requested, the Solomon Islands may need technical support regarding the identification of *Tridacna ningaloo* and *T. noae*, and possibly population surveys.

    c) A number of **gaps in capacity for compiling CITES annual reports** were identified. For example, data in a number of annual reports submitted by the Solomon Islands were reported in an aggregated format without export permit numbers for each shipment. Instead, total quantities and a list of countries of destination were given for each species/term/purpose/source combination, so for some years it was not possible to assign specific trade volumes to specific countries.

17. UNEP-WCMC's report in Annex 2 highlights that, in most cases, little or no progress has been made in addressing the recommendations of the Animals or Standing Committees. However, the Secretariat would like to draw attention to a number of initiatives that have either taken place or are planned that will assist Parties in addressing outstanding recommendations under RST.

18. The Secretariat commissioned IUCN to provide training to a number of African range States, including Benin and Ghana, on the making of non-detriment findings for species currently under the RST process. This training took place online in March 2021.

19. Ongoing work under the Compliance Assistance Programme (CAP) may also be of relevance in terms of providing support to some of the Parties concerned (see document SC74 Doc. 29). In particular, the Solomon Islands has been identified as a priority country for assistance under the CAP among seven other Parties. Togo has also been selected to benefit from the CAP as one of the first four pilot cases along with Guinea, Nigeria and Suriname. The experience gained and resources developed as a result may be transferable to the situation in Benin and Ghana. Through the CAP, priority Parties will be provided with assistance in restoring compliance, including with addressing recommendations under the RST process and in addressing some potential compliance issues outlined in paragraph 16, including annual reporting and potential non-compliance with the Standing Committee's recommendations to suspend trade under RST.

20. In addition, some funding has been secured from the United States of America to assist Parties in addressing recommendations under the RST, including potential non-compliance with the Standing Committee's recommendations to suspend trade The Secretariat will reach out to Parties concerned to see how these funds might be most effectively allocated.

Section 2: Review of flora species/country combinations subject to trade suspensions for more than two years

21. The flora species/country combinations subject to trade suspensions for more than two years are in total five, as shown in the table below. Updates following SC70 for each of these cases are detailed below.

Range State	Taxon	Suspension valid from
Belize	*Myrmecophila tibicinis*	15 June 2010
Côte d'Ivoire	*Pericopsis elata*	7 September 2012
Equatorial Guinea	*Prunus Africana*	3 February 2009
Lao People's Democratic Republic	*Dendrobium nobile*	1 January 2009
Mozambique	*Cycas thouarsii*	6 December 2006

22. Belize/*Myrmecophila tibicinis*:

    a) Through a letter dated 27 March 2019, the Secretariat communicated to Belize the outcomes of SC70 regarding the Standing Committee's agreement to maintain the recommendation to suspend trade in *Myrmecophila tibicinis*. On 2 November 2020, the Secretariat sent a follow up letter inviting Belize to provide any updates regarding this RST case. At the time of writing the Secretariat has received no reply from Belize to these letters.

    b) On 25 January 2021, the Secretariat also undertook consultations with the IUCN SSC Orchid Specialist Group, that notified the Secretariat that no current or recent work on the species in Belize was known to them, and that there was a lack of clarity of the conservation status, largely due to look-alike problems with *Myrmecophila christinae*. They emphasized that harvest and trade in the species seemed very limited, and that habitat loss and opportunistic local collection seemed to be the main conservation threats.

23. Côte d'Ivoire/*Pericopsis elata*:

    a) Through a letter dated 23 April 2019, the Secretariat communicated to Côte d'Ivoire the outcomes of SC70 regarding the Standing Committee's agreement to maintain the recommendation to suspend trade in *Pericopsis elata*. Côte d'Ivoire replied through a letter dated 29 July 2019 acknowledging SC70 agreements and requesting the publication of a zero-export quota for *P. elata*. They also informed the Secretariat that they will not authorize trade in this species until a management plan is developed and shared with the Secretariat.

    b) The Secretariat also brings to the attention of the Standing Committee that, on 1 November 2019, Côte d'Ivoire initiated implementation of a project under the CITES Tree Species Project (CTSP) titled "*Projet de Sauvegarde de* Pericopsis elata *(Assamela) et de* Pterocarpus erinaceus *(Bois de vêne) en Côte d'Ivoire*". The outcomes of the project could be, in the future, relevant to a revision of the recommendation on the trade suspension for this RST case. A status update on this CTSP project is included in document SC74 Doc. 14 on *Tree species Programme: Report of the Secretariat*.

24. Equatorial Guinea/*Prunus africana*:

    a) Through a letter dated 2 November 2020, the Secretariat invited Equatorial Guinea to provide any updates regarding the ongoing recommendations for this RST case.

    b) On 27 January 2021, the Secretariat reached out to the National Authorities of Equatorial Guinea, including through the Chair of the Plants Committee (Ms. Flore Koumba Pambo). At the time of writing, the Secretariat has received no response nor update on this case.

25. Lao People's Democratic Republic/*Dendrobium nobile*:

    a) Through a letter dated 25 March 2019, the Secretariat communicated to the Lao People's Democratic Republic the outcomes of SC70 regarding the Standing Committee's agreement to maintain the recommendation to suspend trade in *Dendrobium nobile*.

    b) In the framework of overarching recommendations of the Article XIII process for the Lao People's Democratic Republic, on 5 February 2021, the Secretariat informally reached out to the National Authorities of the Lao People's Democratic Republic. They informally replied that they may be interested to address the issue within the wider context of ongoing compliance processes. At the time of writing, no further information has been brought to the attention of the Secretariat.

c) On 25 January 2021, the Secretariat also reached out to the IUCN SSC Orchid Specialist Group that compiled personal communications of SSC Orchid Specialist Group members. The responses suggest that the population status of the species in the country is unclear, but that collection seems to continue and that the population seems to continue to decline. Responses also point out that *Dendrobium nobile* specimens of unclear origin and source are among the most commonly sold orchids in ornamental plant markets in South China.

26. Mozambique/*Cycas thouarsii*:

a) On 2 November 2020, the Secretariat invited Mozambique to provide any updates regarding the ongoing recommendations for this RST case.

b) The Secretariat further researched this case, including consultations with the IUCN/SSC Cycad Specialist Group. In this process, the Secretariat revised the final report of a study produced by the Scientific Authority of Mozambique under contract with the Secretariat and received on 24 November 2011, entitled "*A research on distribution, population size classes, reproduction status, threats and management options for CITES. Non-detriment findings of* Cycas thouarsii *in Mozambique"*. The study is available in the CITES NDF database (link) and had been made available to the Standing Committee previously [see document SC62 Doc. 27.2 (Rev. 1)]. Based on literature analysis and field research, the study concludes that *Cycas thouarsii* is not native to Mozambique and no evidence exists of any naturally occurring wild populations in the country.

c) The Chair of the IUCN/SSC Cycad Specialist Group informed the Secretariat that he considered the research and analysis presented by Mozambique to be solid and trustworthy, in particular since the origin of *C. thouarsii* in the wild along the east coast of Africa has been debated over a long period. The species disperses via spongy floating seeds. It was quite possible that it dispersed naturally to the east coast of Africa from its main habitats on Madagascar and the Comoros. The historical evidence for wild *C. thouarsii* in Mozambique was limited and the recent field work confirms that no wild populations exist in the area where historical sightings occurred. The species is easy to propagate and numerous specimens occur in cultivation. Any trade in *C. thouarsii* from Mozambique is thus unlikely to have a negative impact on wild populations and the trade suspension does not serve a useful purpose.

Recommendations

27. On the basis of the findings detailed in the present document, the Standing Committee is invited to:

a) withdraw its recommendation to suspend trade for *Cycas thouarsii* from Mozambique;

b) withdraw its recommendation to suspend trade for *Plerogyra simplex* and *P. sinosa* from Fiji, subject to the publication of voluntary zero export quotas, recalling the provisions of paragraph k) i) of Resolution Conf. 12.8 (Rev. CoP18) that in such circumstances any change to the quota should be communicated to the Secretariat and Chair of the relevant Committee along with a justification, for their agreement;

c) retain the recommendations to suspend trade for the following species/country combinations; and

Range State	Taxon
Belize	*Myrmecophila tibicinis*
Benin	*Chamaeleo gracilis*
	Chamaeleo senegalensis
	Kinixys homeana
Cameroon	*Trioceros quadricornis*
Côte d'Ivoire	*Pericopsis elata*
Equatorial Guinea	*Prunus africana*
Ghana	*Chamaeleo gracilis*
	Chamaeleo senegalensis
Guinea	*Hippocampus algiricus*
Lao People's Democratic Republic	*Dendrobium nobile*
Senegal	*Hippocampus algiricus*

Solomon Islands	*Tridacna derasa,*
	Tridacna crocea
	Tridacna gigas
	Tridacna maxima
	Tridacna ningaloo[3]
	Tridacna noae[4]
	Tridacna squamosa
United Republic of Tanzania	*Kinyongia fischeri*
	Kinyongia tavetana

d) request the Secretariat to write to the exporting and importing Parties referred to in paragraph 16 a) in relation to potential non-compliance with the Standing Committee's recommendations to suspend trade, to check the accuracy of the data and remind them of their obligations under the Convention and report back to the Standing Committee where non-compliance is confirmed.

[3] *Recognized as a new species at CoP17*

[4] *Split from* Tridacna maxima *at CoP17*

Species/country combinations selected for review by the Animals Committee following CoP18:

Range State Responses

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Benin

Chaméléon gracile (*Chamaeleo gracilis*)

BENIN

KPERA[1] GN, ADOUNKE MGR[2], KOROGONE[3] U, SOSSA[3] B.

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2. Laboratoire d'Ecologie Appliquée, Université d'Abomey Calavi, 01BP526. Email : gadounke@ gmail.com

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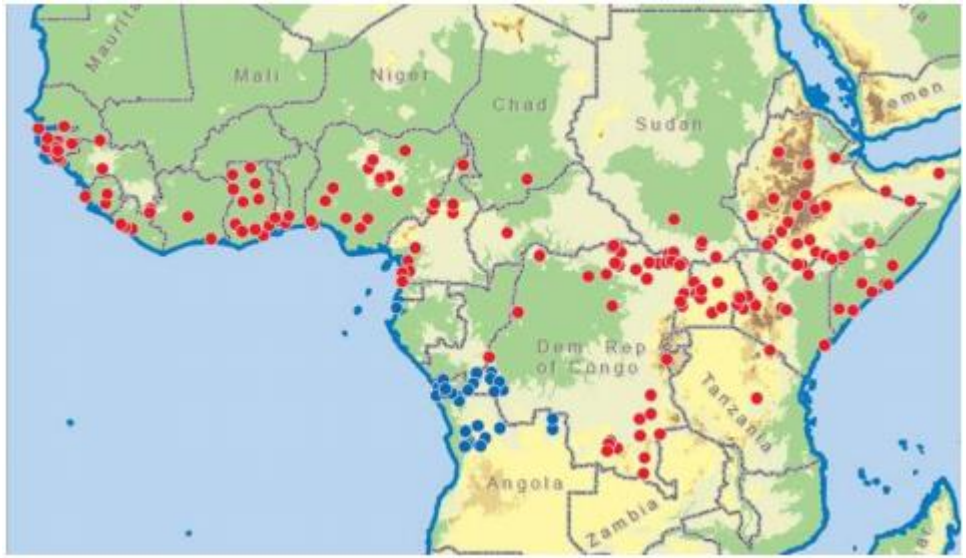
Contexte de l'Espèce (Biologie, Écologie, Statut, Menaces) *Veuillez inclure la littérature citée partout où cela est possible, tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Nomenclature	

Chamaeleo gracilis Hallowell, 1844

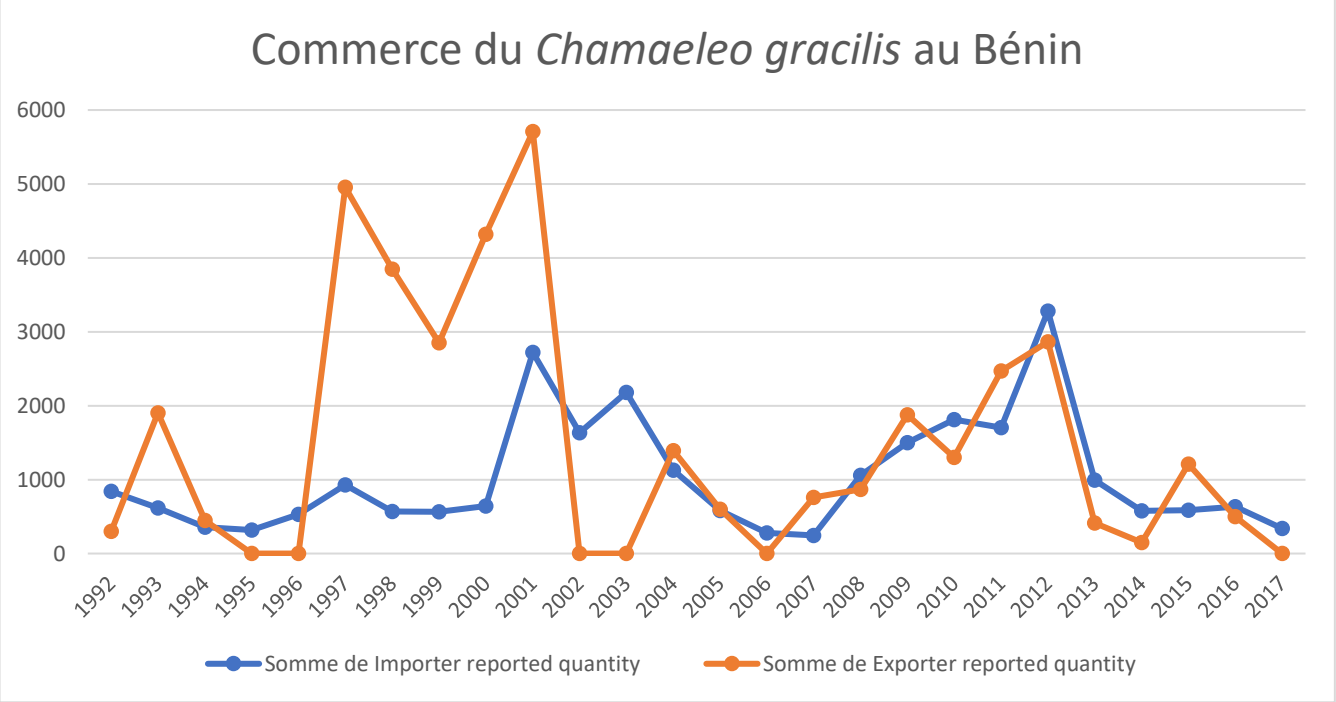
Synonymes :

Chamaeleo gracilis — HALLOWELL 1844: 111
Chamaeleo burchelli — HALLOWELL 1842: 324
Chamaeleo granulosus — HALLOWELL 1856: 147
Chamaeleon gracilis — GRAY 1865: 347
Chamaeleon granulosus — GRAY 1865: 347
Chamaeleon burchelli — GRAY 1865: 348
Chamaeleo simoni BOETTGER 1885
Chamaeleo (Chamaeleo) gracilis — NECAS 1999: 134
Chamaeleo gracilis — TILBURY & TOLLEY 2009
Chamaeleo gracilis — TILBURY 2010: 503
Chamaeleo gracilis — SPAWLS *et al.* 2018: 260
Chamaeleo (Chamaeleo) gracilis gracilis — HALLOWELL 1857
Chamaeleo granulosus HALLOWELL 1857: 147 (fide BOULENGER 1887: 448)
Chamaeleo burchelli HALLOWELL 1857: 147 (fide BOULENGER 1887: 448)
Chamaeleon gracilis leiocephalus — GRAY 1865: 471
Chamaleo (Chamaleo) simoni — BOETTGER 1885 (fide BOULENGER 1887: 448)
Chamaeleon gracilis — WERNER 1911: 12
Chamaeleon gracilis — SCHMIDT 1919: 570
Chamaeleo gracilis gracilis — LOVERIDGE 1929: 84
Chamaeleo gracilis gracilis — MERTENS 1966: 16
Chamaeleo gracilis gracilis — BROADLEY & HOWELL 1991: 12
Chamaeleo gracilis etiennei SCHMIDT 1919
Chamaeleon etiennei — SCHMIDT 1919: 574
Chamaeleo gracilis etiennei — LOVERIDGE 1929: 84
Chamaeleo etiennei — WITTE 1953: 49
Chamaeleo gracilis etiennei — DE WITTE 1965
Chamaeleo gracilis etiennei — MERTENS 1966: 17
Chamaeleo gracilis etiennei — KLAVER & BÖHME 1997

	Chamaeleo (Chamaeleo) etiennei — NECAS 1999: 134 *Chamaeleo gracilis* etiennei — TILBURY 2010 (pers. comm.) *Chamaeleo gracilis* etiennei — CERIACO *et al.* 2014 *Chamaeleo gracilis* etiennei — MARQUES *et al.* 2018)
Répartition Globale	*Chamaeleo gracilis* est largement répandue en savane sub-saharienne, et son aire de répartition traverse tout le milieu de l'Afrique depuis la Somalie, à l'est, jusqu'au Sénégal, à l'ouest (Spawls et Rotich, 1997 ; Spawls *et al.*, 2002 ; Djeukam, 2007), et jusqu'au Soudan, au nord (Townsend et Larson, 2002 ; Aurioles-Gamboa *et al.*, 2010). *C. g. gracilis* est la plus largement répandue des deux sous-espèces, (Klaver et Böhme, 1997 ; Tilbury, 2010), tandis que *C. g.* etiennei est restreinte à la côte occidentale du centre de l'Afrique, y compris l'Angola, le Gabon, la République populaire du Congo et la RD du Congo (Klaver et Böhme, 1997 ; Tilbury, 2010).  Source : Tilbury, 2010
Répartition National *passé et présent, et les aires protégées ou l'espèce et connu*	Harwood (2003) considérait que cette espèce était probablement présente au Bénin, en faisant remarquer que les habitats de forêt sèche et de savane, si appropriés pour cette espèce, étaient "relativement prévalents" dans le pays. La carte de l'aire de répartition de Tilbury (2010) reflétait des stations d'observation à proximité des frontières avec le Togo et le Nigéria. Ullenbruch *et al.* (2010) avaient signalé la présence de cette espèce à Abomey-Djidja (centre sud du Bénin) et dans le Parc National de Pendjari (nord-ouest du Bénin) ; elle avait aussi été rencontrée dans la

	partie béninoise de la Réserve de biosphère transfrontalière du W (nord du Bénin) lors d'enquêtes conduites en 2006-2007 (Chirio, 2009). D'après les interviews réalisées à travers tout le Bénin par Sinsin *et al.* (2008), C. gracilis était identifiée en tant qu'espèce largement répandue, et reconnue par 72,7 p. cent des interviewés en tant qu'espèce présente dans leur environnement local. L'OG CITES du Bénin (in litt. à l'UNEP-WCMC, 2013) avait confirmé sa présence dans les départements de Zou (centre-sud du Bénin), de Plateau (sud-est du Bénin), de Mono (sud-ouest du Bénin) et d'Atlantique (sud du Bénin).
Description Morphologique *inclure les caractères d'identification*	**Description** : *Chamaeleo gracilis* a une tête bien séparée du corps. Son corps et sa queue sont recouverts de petites écailles granuleuses de taille homogène. Il porte sur sa tête deux yeux saillants, recouverts d'une paupière conique percée à son sommet et orientables séparément en tous sens. Il porte un long casque relevé et pointu vers l'arrière. De profil, le rapport entre la distance de l'orbite à la pointe du casque et la distance de l'orbite à la pointe du museau habituellement compris entre 1,5 et 1,8. Il ne possède pas de lobes occipitaux. Sa langue est très longue et vermiforme. Il est pourvu d'une crête ventrale et d'une seule griffe à chaque doigt. Le mâle possède un éperon tarsien. La queue est solide, cylindrique et préhensile, dont la longueur est similaire à celle du corps. La coloration de base est verte, avec une bande latérale blanchâtre en arrière de la base de la patte antérieure et souvent de nombreux petits points sombres plus ou moins apparents sur les côtés du corps. La coloration peut changer rapidement, révélant des motifs dorsaux contrastés ou virant au brun, en particulier quand l'animal est menacé. **Identification** : - Aspect classique d'un caméléon - Coloration dominante verte - Casque pointu vers l'arrière, - Bord postérieur faisant un angle aigu en vue de profil - Présence d'un éperon tarsien chez les mâles
Utilisation des Habitats et l'Écologie Spatiale *par ex., domaine vitale, mouvements, habitats préférés, etc.*	Ce caméléon est particulièrement abondant en zone guinéenne mais il ne pénètre pas dans la grande forêt dense. Arboricole et diurne, il est également souvent observé au sol dans les villages ou sur les chemins de passage.
Caractéristiques Reproductive *inclure, au moins, saisonnalité, fréquence, etc.*	L'espèce atteint la maturité sexuelle à environ cinq ou six mois (Bartlett et Bartlett, 2005), et produit une ou deux pontes par an (Rearick *et al.,* 2013). La taille de ponte-type est de 10-25 œufs (Spawls *et al.,* 2002), mais des pontes de jusqu'à 45 œufs ont été constatées (Engeman *et al*., 2005 ; Tilbury, 2010). L'incubation dure six à sept mois (Bartlett et Bartlett, 2005).

Longévité *Inclure le temps de génération, si connu et/ou tel qu'utilisé dans la Liste Rouge de l'UICN*	La croissance de ce caméléon est très rapide et la durée de vie de l'animal est généralement courte. La longévité est de trois à cinq ans.
Régime Alimentaire	Comme tous les caméléons, il se déplace très lentement et se nourrit d'insectes et autres arthropodes.
Aperçu Général de l'Abondance / Densité de la population *au niveau mondial, national et / ou partout où il est connu*	Les informations sur la taille de la population son inconnu à nos jours. Néanmoins les interviews auprès des communautés locales réalisées par Sinsin *et al.* (2008) suggéraient que les populations de caméléons béninoises étaient généralement en déclin, ce qui avait été confirmé par l'OG CITES du Bénin (in litt. à l'UNEPWCMC, 2013).
Susceptibilité aux Perturbations Anthropogéniques *y compris la pression de récolte, la perte d'habitat, etc.*	C. gracilis fait l'objet de collecte pour les marchés locaux, et l'espèce est vendue à des fins médicinales traditionnelles, bien que ce commerce soit illégal et que l'on ne dispose pas d'estimations concernant les volumes commerciaux en jeu (OG CITES du Bénin in litt. à l'UNEP-WCMC, 2013). Sinsin *et al*. (2008) considéraient tous les caméléons béninois (C. gracilis, C. necasi et C. senegalensis) "fortement menacés", et avertissaient que "si elle se maintient aux niveaux actuels, la demande du marché d'exportation entraînera l'extinction de ces espèces, car elles ne jouissent que d'une protection faible ou inefficace".
Menaces Non Liées à la Récolte *par ex.,, perte d'habitat, collision avec les voitures, etc*.	La perte d'habitat étaient considérées aussi comme une principale menace de cette espèce (UICN *et al*., 1996). Chaque année, les feux de brousse et autres brûlis affectent de vastes zones agricoles, tuant ainsi de nombreux caméléons. Ce qui pourrait potentiellement éradiquer certaines populations (C. Tilbury, in litt. à l'UNEP-WCMC, 2013).
Statut de Conservation Globale *statut sur la Liste Rouge de l'UICN et les tendances de population quantitatives ou inférées, ou toute autre description pertinente*	L'état de la population de cette espèce était jugé assez mal connu (UICN *et al*., 1996), mais elle était considérée comme "non-menacée" (UICN *et al*., 1996 ; Tilbury, 2010). En tant qu'espèce largement répandue, la conservation de C. gracilis n'était pas considérée comme un sujet d'inquiétude prioritaire (Carpenter *et al*., 2004). D'où le statut de Préoccupation mineure sur la liste rouge de l'IUCN
<u>Contexte de Gestion</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document*.	
Histoire Nationale de la Gestion de l'Espèce *Descriptif / narratif*	Carpenter (2004) avait signalé que Bénin avait commencé à exporter des caméléons en 1992. Le Bénin avait transmis tous ses rapports annuels sur 2002-2012, sauf en 2003 et en 2006. Ce pays avait publié des quotas d'exportation pour les spécimens de C. gracilis de source "R" tous les ans depuis 1997, et pour les spécimens sauvages depuis 2010. En 2012, les quotas concernant les spécimens de source "R" semblaient avoir été dépassés d'après les données fournies par le Bénin, mais celles des pays importateurs n'étaient pas encore disponibles. Le quota portant sur les spécimens sauvages semblait avoir été dépassé en 2010 d'après les données des pays importateurs, mais le Bénin n'avait notifié

	aucun commerce de spécimens sauvages. Une analyse des permis a révélé que le permis d'exportation communiqué par le pays importateur du commerce de spécimens sauvages n'avait pas été établi par le Bénin pour l'espèce *C. gracilis*. Les exportations directes de *C. gracilis* depuis le Bénin sur 2002-2012 étaient principalement constituées de spécimens vivants exportés à des fins commerciales, et pour la plupart de source "R". Le Bénin n'avait communiqué que le commerce de spécimens de source "R", mais les pays importateurs avaient signalé, outre ce commerce, celui de spécimens sauvages et élevés en captivité. Les principaux pays importateurs étaient les États-Unis et le Ghana. Les exportations indirectes de *C. gracilis* provenant du Bénin sur 2002-2012 étaient constituées de spécimens vivants exportés à des fins commerciales, pour la plupart de source "R", mais avec une petite proportion de sauvages. L'Union européenne avait suspendu le commerce de sauvages C. gracilis depuis le Bénin en 2002 ; cette suspension, conformément au Règlement de la Commission (CE) nº 578/2013 du 17 juin 2013, reste en vigueur
Commerce International à Partir de Stocks Nationaux *Inclure des données, des chiffres, des tableaux, autant que possible et pertinent*	

Produits Commercialisés Internationalement / But du Commerce *par ex., les peaux, la viande, les animaux domestiques, etc., inclure des détails, des chiffres, des tendances*	97.91% des espèces exporter et importer jusqu'à nos jours sont des spécimens vivants contre seulement 2.09% de la peau (source : analyse de la base de données)
Utilisation et Commerce Domestique *détails, chiffres, tendances annuelles*	Cette espèce affiche une forte mortalité en captivité, par suite de la déshydratation ou d'une forte charge parasitaire (Bartlett et Bartlett, 2001 ; Rearick *et al*., 2013). D'après une évaluation de la morbidité et de la mortalité en captivité réalisée par Altherr et Freyer (2001), *C. gracilis* était considérée inappropriée pour les élevages privés car elle était "difficile à garder », « difficile à élever", affichait une "forte mortalité en captivité", et requérait des conditions environnementales difficiles à émuler. Cependant, au Bénin, lors de visites dans des établissements d'élevage de reptiles béninois en 2002, Harwood (2003) en avait identifié trois fermes qui produisaient des caméléons, et l'un d'eux au moins était capable de produire des *C. gracilis* élevés en captivité. D'après Ineich (2006), il existait au moins quatre établissements d'élevage détenant des *C. gracilis* ; un établissement en possédait 1 500 spécimens et un autre 900, dont 75% de femelles.
Cadre Juridique International	*C. gracilis* figure à l'Annexe II de la CITES depuis le 04/02/1977. Il s'agit d'une des plus importantes espèces de caméléons sur le marché mondial (Carpenter *et al*., 2004). Elle est communément disponible sur le marché des animaux de compagnie aux États-Unis et en Europe, sous forme de spécimens capturés dans la nature (Bartlett et Bartlett, 2001 ; C. Anderson, in litt. à l'UNEP-WCMC, 2013 ; Rearick *et al*., 2013).
Cadre Juridique National *statut de protection et les lois liées à la récolte et au commerce*	Au Bénin, les caméléons font partie des espèces "non considérées comme gibier" d'après l'Annexe IV de la loi nº 87-014 (1987), qui spécifie la nécessité de permis pour la chasse ou la capture de toutes les espèces, sauf pour la chasse traditionnelle (Bénin, 1987). Le Décret AC27 Doc. 12.4 Annexe 1 – p. 52 nº 90-366 (1990) stipule qu'il faut un permis pour détenir des caméléons en captivité, et spécifie la documentation que doivent présenter les établissements d'élevage (Bénin, 1990).
Objectifs Nationaux pour la Gestion de l'Espèce	Contribuer *à* la restauration de son habitat et à la *gestion* durable de l'espèce
Importance de l'Utilisation Durable pour la Gestion Nationale	Conservation de la biodiversité sur le territoire national et le commerce durable
<u>Monitoring de la Population - La Base d'une Utilisation Durable</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	

Mesures de Prise de Décision Prises par vos Organes Scientifiques et de Gestion *description du processus interne par lequel les décisions de monitoring de la population sont prises*	Le processus interne mis en place pour assurer le suivi interne des populations de *Chamaeleo gracilis* tient sur deux axes principaux : - Suivi annuel des élevages - Etudes démographiques des populations dans la nature Le suivi des élevages se fait de façon annuelle et permet d'estimer les capacités de production d'une part et d'avoir une idée de l'évolution des populations de l'espèce élevée en captivité d'autre part. Ce suivi est assuré par l'organe de gestion CITES avec l'étroite collaboration des agents de terrain. Les études démographiques sur les terrains, plus couteux et plus contraignants, ne sont pas toujours réalisées. Plusieurs ressources sont utilisées partant des études conduites par les chercheurs. Malheureusement il n'existe pas dans la littérature des études spécifiques au Bénin sur le monitoring des populations de l'espèce dans la nature.
Suivi National de la Population Sauvage *c.-à-d. activités sur le terrain, le cas échéant*	Les actions de suivi national de la population sauvage se limitent pour l'instant au suivi des élevages. Ce suivi se déroule de façon annuelle en tenant compte de la période de reproduction de l'animal.
Étendue de l'Habitat Convenable au Niveau National *y compris une description de la façon dont cela a été estimé*	La présence de cette espèce n'est pas vérifiée au Bénin mais les observations faites suggèrent que l'habitat convenable à l'espèce serait le sud Bénin. Cependant, la présence de l'espèce a également été
Estimation de la Taille de la Population Sauvage au Niveau National à Partir des Données de Monitoring *y compris une description de la façon dont cela a été estimé*	L'inventaire réalisé en 2006 et présenté à la 25ème session du comité pour les animaux fait état d'une population d'environ 2550 individus dans les élevages. Depuis lors aucune autre estimation n'a encore été réalisée.
Taux de Prélèvement Durable Estimé *théorique no. d'individus par an ou par zone, peuvent être estimés à l'aide de*	Le taux de prélèvement durable pour le Bénin n'est encore déterminé.

données spécifiques ou déduits d'espaces similaires.	
Calcul des Prélèvements au Niveau National *population sauvage * taux de prélèvement durable estimé*	L'évaluation de la population réelle de l'espèce n'a pu être réalisée. Les observations éparses faites ne permettent pas pour l'instant de procéder à des prélèvements en milieu naturel
Monitoring de le Récolte	Le monitoring de la récolte des espèces est prévu pour se faire sur la base d'autorisations délivrées par l'organe de gestion. Les structures déconcentrées de l'administration au niveau du lieu de collecte sont chargées du suivi rigoureux des récoltes qu'elles attestent par un visa de récolte conforme à la législation. Ce suivi impose le respect des normes de récoltes tenant compte du sexe, de l'age et de l'état des femelles. La récolte des femelles gestantes est par exemple interdite par les textes.
Monitoring de la Commerce / Commerçants	Le monitoring du commerce se fait sur la base de la délivrance des permis et d'autorisation par l'organe de gestion. La liste des commerçants agréés est également établie au début de chaque année afin de s'assurer que ceux exercent l'activité le font en toute légalité.
Informations Supplémentaires Pertinentes	
<u>Contrôle du Commerce et la Gestion</u>	
Quotas en Place	Le Bénin est suspendu du commerce donc aucun quota n'est en place actuellement pour l'espèce
Système National de Permis / Autorisation *descriptif / narratif, y compris référence aux lois et aux chiffres*	Le Benin ne dispose pas encore d'une loi CITES. Mais il existe des textes législatifs et qui définissent les conditions de délivrance des autorisations et des permis. - l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ;

	- la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Loi-Cadre N° 2014-19 DU 07 AOÛT 2014, relative à la pêche et à l'aquaculture en République du Bénin - La loi 098-030 du 12 février 1999 portant loi cadre de l'environnement en République du Bénin stipule à Article 51 que « Outre les dispositions des Conventions, traités et accords internationaux en matière de protection de la diversité biologique (la faune et la flore) ratifiées par la République du Bénin, sont fixées par les lois et règlements : • La liste des espèces animales et végétales qui doivent bénéficier d'une protection particulière et les modalités d'application de cette protection ; • Les interdictions permanentes ou temporaires dictées en vue de permettre la préservation des espèces menacées, rares ou en voie de disparition, ainsi que leur milieu • Les conditions de l'exploitation, de la commercialisation et de l'utilisation, du transport et de l'exportation des espèces visées à l'alinéa précédent Entre 2006 et 2017, les permis délivrés ont permis d'exporter 12415 spécimens vivant de l'espèce (CITES database)
Règlementation sur la Récolte / la Production / le Commerce	- L'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - La loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Les lois de finance
Marquage et Traçabilité des Spécimens Commercialisés	Après établissement du permis d'exportation, une copie est effectuée pour être classé. Les différentes pièces sont scannées et archivées et les informations sont insérées la base numérique de donnée de la CITES au niveau national

description des processus en place et des bases de données	Au départ, le permis doit être visé par l'autorité forestière et les quantités vérifiées.
Permis d'Exportation CITES et le Processus National de Vérification de la Traçabilité *description des processus en place et des bases de données*	Au niveau national, il est procédé à une confirmation des permis émis par le pays exportateur avant la délivrance des permis d'importation. Après l'établissement du permis, une copie est effectuée pour être classée et archivée puis les données sont inscrites dans la base de données de la CITES au niveau national. Ensuite un contrôle aux différents postes de sortie.
Commerce Illégal de l'Espèce	Les données sur le commerce illégal de l'espèce au niveau national ne sont pas disponibles
Renforcement des Capacités pour Améliorer la Gestion Nationale de l'Espèce *description de tous les efforts, les processus pour les agents et les autres acteurs*	- Formation des agents de contrôle (douane, police et forêt) sur les mesures et système de contrôle au niveau des frontières (port, aéroport, terrestre) - Formation sur l'identification des espèces menacée (vivant, trophée etc….) -Formation sur l'application de la CITES -Formation sur la lutte anti braconnage
Taxes, Frais, et Autres Financement pour la Gestion Continue du Commerce *par ex., frais de permis CITES, frais de licence de récolte, frais d'exportation, la quarantaine, les certificats d'inspection sanitaire, etc.*	*frais de permis CITES :* déterminé en fonction de la loi des finances en cour de l'année d'exercice. *frais de licence de récolte :* déterminé en fonction de la loi des finances en cour de l'année d'exercice *frais d'exportation :* déterminé en fonction de la loi des finances en cour de l'année d'exercice
Recherches Supplémentaires Nécessaires pour cette Espèce et la Gestion du Commerce dans votre Pays	• Ecologie de l'espèce, • Abondance en élevage et dans la nature • Bio-monitoring des populations de l'espèce • Traçabilité des Spécimens Commercialisés • Monitoring de la Commerce formel et informel
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Tableau 01 : Quantité exportées de spécimen de *Chamaeleo gracilis* de 2008 à 2017 au Bénin

Year	2008	2009	2010	2010	2010	2011	2011	2012	2012	2013	2013	2014	2015	2016	2017
Importer quantity	20	1500	200	1210	400	1532	173	3133	147	812	183	580	585	635	340
Exporter quantity		1875		1300		2470		2685		415		150	1210	500	
Source	W	R	C	R	W	R	C	R	W	R	I	R	R	R	I

Chaméléon du Sénégal (*Chamaeleo senegalensis*)

BENIN

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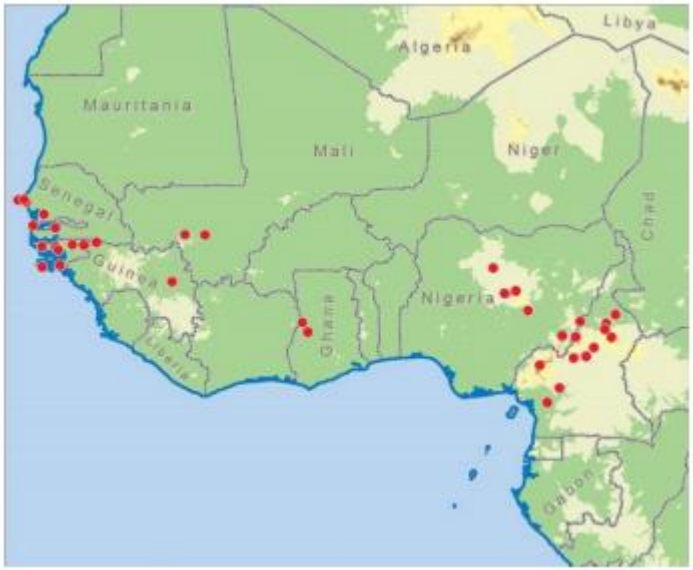
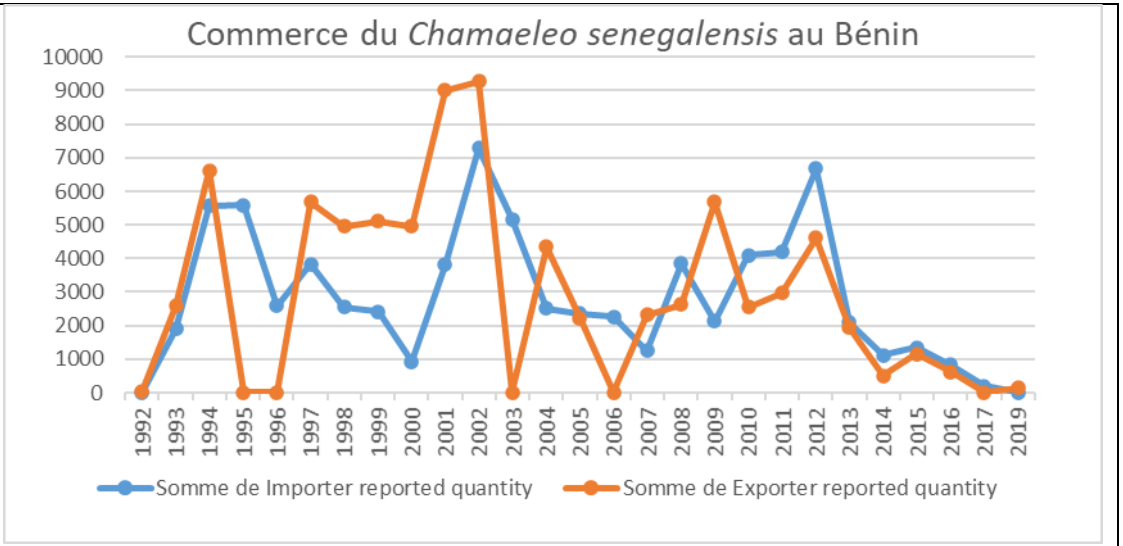
Contexte de l'Espèce (Biologie, Écologie, Statut, Menaces) *Veuillez inclure la littérature citée partout où cela est possible, tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Nomenclature	 Source : Image Google

	Nom commun Chaméléon du Sénégal **Noms scientifiques** *Chamaeleo senegalensis* DAUDIN 1802 *Chamaeleon subcroseus* MERREM 1820 *Chamaeleo gymnocephalus* KAUP 1825: 592 *Chamaeleon leptopus* FITZINGER 1826 *Chameleon galeoratus* — GRAY 1831 *Chamaeleo Senegalensis* — DUMÉRIL & BIBRON 1836: 221 *Chamaeleon leptopus* — FITZINGER 1843 (nomen nudum) *Chamaeleon senegalensis* var. leiocephalus GRAY 1865 *Erizia senegalensis* — GRAY 1865 *Chamaeleon liocephalus* — BOETTGER 1887 (n. substit. pro Chamaeleon) *Chamaeleo senegalensis* var. tibatiensis MONARD 1951 *Chamaeleo (Chamaeleo) senegalensis* — NECAS 1999: 142 *Chamaeleo senegalensis* — TILBURY & TOLLEY 2009 *Chamaeleo senegalensis* — TILBURY 2010: 534
Répartition Globale	L'aire de répartition totale de cette espèce, estimée à plus de deux millions de km² (Wilms *et al.*, 2013), s'étend depuis le Sénégal et la Gambie, à l'Ouest, jusqu'au Cameroun, à l'Est (Klaver et

	Böhme, 1997 ; Leaché *et al.*, 2006 ; Francis, 2008 ; Wilms *et al.*, 2013). Tilbury (2010) considérait que la Centrafrique était l'État le plus oriental de son aire de répartition.  Source : Tilbury, 2010
Répartition National *passé et présent, les aires protégées où l'espèce est observée*	Le caméléon du Sénégal, est une espèce de sauriens de la famille des Chamaeleonidae. Sa présence de l'espèce a été signalée au Bénin dans les Départements de l'Atlantique, de l'Ouémé (Sud), du Mono (sud-ouest), de Zou et de Collines (centre-sud et dans la partie béninoise de la Réserve de Biosphère transfrontalière du W au cours d'enquêtes conduites entre mai 2006 et novembre 2007 (Chirio, 2009). Ullenbruch *et al.* (2010) avaient recensé quatre spécimens ayant officiellement pour origine Djidja (sud du Bénin) vendus sur un marché local en 2002.

Description Morphologique *inclure les caractères d'identification*	*Chamaeleo senegalensis* est figure parmi les plus grands caméléons. Certains individus peuvent atteindre 40 cm. C'est un reptile, qui a besoin de chaleur et d'un taux d'humidité assez haut pour survivre. Il est timide mais manipulable, ce qui fait qu'il est conseillé pour les débutants d.
Utilisation des Habitats et l'Écologie Spatiale *par ex., domaine vitale, mouvements, habitats préférées, etc.*	*C. senegalensis* est typiquement rencontrée dans les habitats de savane humide (Leaché *et al*., 2006 ; Wilms *et al*., 2013). Il est souvent observé en abondance dans les villages particulièrement sur les arbres de Neem (Azadirachta indica A.Juss.) (Trape *et al*. 2012).
Caractéristiques Reproductive *inclure, au moins, saisonnalité, fréquence, etc.*	Cette espèce atteint la maturité sexuelle en captivité à l'âge d'environ six mois, et elle peut se reproduire plusieurs fois par an (Francis, 2008) ; la ponte peut atteindre jusqu'à 70 œufs, et l'incubation dure environ sept mois (Tilbury, 2010).
Longévité *Inclure le temps de génération, si connu et/ou tel qu'utilisé dans la Liste Rouge de l'UICN*	La longévité de l'espèce est de 5 ans environ
Régime Alimentaire	Il se nourrit des grillons, criquets, des blattes
Aperçu Général de l'Abondance / Densité de la population *au niveau mondial, national et / ou partout où il est connu*	la taille et la tendance de la population étaient réputées "inconnues", et il avait été fait remarquer la nécessité d'entreprendre des actions de suivi et de recherche pour garantir la prévention d'un déclin significatif de la population (Wilms *et al*., 2013).
Susceptibilité aux Perturbations Anthropogéniques *y compris la pression de récolte, la perte d'habitat, etc.*	C. senegalensis était collectée pour des marchés locaux et commercialisée à des fins médicinales traditionnelles ; cependant, ces transactions étant illicite, on ne disposait pas d'estimations concernant les volumes commerciaux en jeu (OG CITES du Bénin à A l'UNEP-WCMC, 2013). Au cours de visites réalisées par Ullenbruch *et al*. (2010), C. senegalensis était "rencontrée sur tous les marchés dans le sud du Bénin".
Menaces Non Liées à la Récolte *par ex., perte d'habitat, collision avec les voitures, etc*.	Les feux de brousse et autres brûlis affectent de vastes zones agricoles, tuant ainsi de nombreux caméléons, et les adultes font l'objet d'une collecte intensive, ce qui pourrait potentiellement éradiquer certaines populations (C. Tilbury, in litt. à l'UNEP-WCMC, 2013).

Statut de Conservation Globale *statut sur la Liste Rouge de l'UICN et les tendances de population quantitatives ou inférées, ou toute autre description pertinente*	L'espèce a un statut de préoccupation mineure sur la liste rouge de l'IUCN
<u>Contexte de Gestion</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Histoire Nationale de la Gestion de l'Espèce *Descriptif / narratif*	D'après Carpenter (2004), le Bénin avait commencé à exporter des caméléons en 1992. Une analyse des données commerciales sur la période 1977-2001 avait révélé que C. senegalensis était l'espèce de caméléon la plus exportée depuis le Bénin (Carpenter *et al*., 2004). En 2003, 98 spécimens de C. senegalensis accompagnés d'un Permis CITES délivré pour 50 spécimens de C. gracilis avaient été confisqués en transit depuis le Bénin vers les Etats-Unis (TRAFFIC, 2012). L'OG CITES du Bénin (in litt.à l'UNEP-WCMC, 2013) a signalé que cette espèce était commercialisée illicitement vers le Cameroun, à des fins médicinales. L'Union européenne avait suspendu la commercialisation de C. senegalensis depuis le Bénin en 2009 pour les spécimens de source "R", et en 2010 pour celle de spécimens sauvages ; depuis 2012, la suspension concernant les C. senegalensis de source "R" ne s'applique qu'aux spécimens d'une longueur tête-tronc supérieure à 6 cm. Conformément au Règlement de la Commission (CE) nº 578/2013 du 17 juin 2013, ces deux suspensions restent en vigueur. Les exportations directes de C. senegalensis depuis le Bénin sur 2002-2012 étaient principalement constituées de spécimens vivants, pour la plupart de source "R" (Tableau 2), échangés à des fins commerciales. Ce pays n'avait communiqué que la commercialisation de spécimens de source "R", mais les pays importateurs avaient signalé, outre le commerce de spécimens de source "R", celui de spécimens sauvages et élevés en captivité. Une confiscation/saisie de 209 animaux vivants avait aussi été notifiée par le Royaume Uni en 2004. Les principaux pays importateurs étaient les États-Unis et le Ghana. Les exportations indirectes de C. senegalensis provenant du Bénin sur 2002-2012 étaient principalement constituées de spécimens vivants échangés à des fins commerciales, pour la plupart de source "R", et d'une petite proportion de spécimens sauvages et élevés en captivité.

Commerce International à Partir de Stocks Nationaux *Inclure des données, des chiffres, des tableaux, autant que possible et pertinent*	 De 1992 à nos jours, la quantité de *C. senegalensis* exporté reporté (79928 spécimens) est supérieure aux quantités importées reporté (76569 spécimens) avec les pics d'exportation et d'importation enregistrés en 2002 et estimé respectivement à plus de 9000 et 7000 spécimens.
Produits Commercialisés Internationalement / But du Commerce *par ex., les peaux, la viande, les animaux domestiques, etc., inclure des détails, des chiffres, des tendances*	98.48% des espèces exporter et importer jusqu'à nos jours sont des spécimens vivants contre seulement 1.53% de la peau (source : analyse de la base de données)
Utilisation et Commerce Domestique *détails, chiffres, tendances annuelles*	D'après Ineich (2006), il existait au moins cinq établissements d'élevage détenant des C. senegalensis ; l'un détenait 1 500 spécimens, et un autre 1 350 spécimens, dont 75% de femelles. Il avait été signalé que la capture de spécimens sauvages afin d'améliorer le stock de reproducteurs dans les élevages de caméléons faisait l'objet d'un permis payant et d'une autorisation délivrée par l'OG CITES (Harwood, 2003). L'information sur la capacité d'élevage des installations servait à établir les quotas (Harwood, 2003), en tenant compte de Chamaeleo senegalensis AC27 Doc. 12.4 Annexe 1 – p. 68 ce que 20% des juvéniles étaient relâchés dans la

	nature après avoir été élevés en ranch, à la fin de chaque saison, et que le taux de mortalité des œufs et des juvéniles était d'environ 10% (Ineich, 2006).
Cadre Juridique International	*C. senegalensis* figure à l'Annexe II de la CITES depuis le 04/02/1977. Elle était très demandée sur le marché des animaux de compagnie : d'après une analyse des données sur le commerce au cours de la période 1977-2001 réalisée par Carpenter *et al*. (2004), *C. senegalensis* représentait un quart des exportations mondiales de caméléons. Cette espèce était communément disponible sous forme de spécimens capturés dans la nature (Bartlett et Bartlett, 2001 ; C. Anderson, in litt. à l'UNEPWCMC, 2013).
Cadre Juridique National *statut de protection et les lois liées à la récolte et au commerce*	Les caméléons font parties des espèces "non considérées comme gibier" d'après l'Annexe IV de la loi nº 87-014 (1987), portant réglementation de la protection de la nature et de la chasse au Bénin (Bénin, 1987). Cette loi spécifie la nécessité d'un permis pour la chasse ou la capture de toutes les espèces, à l'exception des pratiques de chasse traditionnelle (Bénin, 1987). Le Décret nº 90-366 (1990) spécifie qu'il faut un permis pour détenir des caméléons en captivité, et donne des détails sur la documentation que doivent présenter les établissements d'élevage (Bénin, 1990).
Objectifs Nationaux pour la Gestion de l'Espèce	Contribuer *à* la restauration de son habitat et à la *gestion* durable de l'espèce
Importance de l'Utilisation Durable pour la Gestion Nationale	Conservation de la biodiversité sur le territoire national et le commerce durable
<u>Monitoring de la Population - La Base d'une Utilisation Durable</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document*.	
Mesures de Prise de Décision Prises par vos Organes Scientifiques et de Gestion *description du processus interne par lequel les décisions de monitoring de la population sont prises*	Le processus interne mis en place pour assurer le suivi des populations de *Chamaeleo senegalensis* tient sur deux axes principaux : - Suivi annuel des élevages - Etudes démographiques des populations dans la nature Le suivi des élevages se fait de façon annuelle et permet d'estimer les capacités de production d'une part et d'avoir une idée de l'évolution des populations de l'espèce élevée en captivité

	d'autre part. Ce suivi est assuré par l'organe de gestion CITES avec l'étroite collaboration des agents de terrain. Les études démographiques sur les terrains, plus couteux et plus contraignants, ne sont pas toujours réalisées. Plusieurs ressources sont utilisées partant des études conduites par les chercheurs. Malheureusement il n'existe pas dans la littérature des études spécifiques au Bénin sur le monitoring des populations de l'espèce dans la nature.
Suivi National de la Population Sauvage *c.-à-d. activités sur le terrain, le cas échéant*	Les actions de suivi national de la population sauvage se limitent pour l'instant au suivi des élevages. Ce suivi se déroule de façon annuelle en tenant compte de la période de reproduction de l'animal.
Étendue de l'Habitat Convenable au Niveau National *y compris une description de la façon dont cela a été estimé*	La présence de l'espèce a été signalée au Bénin dans les Départements de l'Atlantique, de l'Ouémé (Sud), du Mono (sud-ouest), de Zou et de Collines (centre-sud) et dans la partie nord-béninoise de la Réserve de Biosphère transfrontalière du W au cours d'enquêtes conduites entre mai 2006 et novembre 2007 (Chirio, 2009). Ullenbruch *et al.* (2010) avaient recensé quatre spécimens ayant officiellement pour origine Djidja (sud du Bénin) vendus sur un marché local en 2002. Sur cette base, nous estimons que l'habitat convenable de l'espèce est prioritairement le sud Bénin
Estimation de la Taille de la Population Sauvage au Niveau National à Partir des Données de Monitoring *y compris une description de la façon dont cela a été estimé*	L'espèce est estimée aujourd'hui à plus de 10000 ; suite aux mouvements d'exportation de *Chamaeleo senegalensis* au Bénin de 1996 à 2004 (source UNEP-WCMC) et dont le commerce a été suspendu au Bénin depuis 2017.
Taux de Prélèvement Durable Estimé *théorique no. d'individus par an ou par zone, peuvent être estimés à l'aide de données spécifiques ou déduits d'espaces similaires*	Le taux de prélèvement durable pour le Bénin n'est encore déterminé.

Calcul des Prélèvements au Niveau National *population sauvage * taux de prélèvement durable estimé*	L'évaluation de la population réelle de l'espèce n'a pu être réalisée. Les observations éparses faites ne permettent pas pour l'instant de procéder à des prélèvements en milieu naturel
Monitoring de le Récolte	Le monitoring de la récolte des espèces est prévu pour se faire sur la base d'autorisations délivrées par l'organe de gestion. Les structures déconcentrées de l'administration au niveau du lieu de collecte sont chargées du suivi rigoureux des récoltes qu'elles attestent par un visa de récolte conforme à la législation. Ce suivi impose le respect des normes de récoltes tenant compte du sexe, de l'age et de l'état des femelles. La récolte des femelles gestantes est par exemple interdite par les textes.
Monitoring de la Commerce / Commerçants	Le monitoring du commerce se fait sur la base de la délivrance des permis et d'autorisation par l'organe de gestion. La liste des commerçants agréés est également établie au début de chaque année afin de s'assurer que ceux exercent l'activité le font en toute légalité.
Informations Supplémentaires Pertinentes	
Quotas en Place	Le Bénin est suspendu du commerce depuis 2017 et donc aucun quota n'est en place actuellement pour l'espèce.
Système National de Permis / Autorisation *descriptif / narratif, y compris référence aux lois et aux chiffres*	Le Benin ne dispose pas encore d'une loi CITES. Mais il existe des textes législatifs et qui définissent les conditions de délivrance des autorisations et des permis. - l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ;

	- Loi-Cadre N° 2014-19 DU 07 AOÛT 2014, relative à la pêche et à l'aquaculture en République du Bénin - La loi 098-030 du 12 février 1999 portant loi cadre de l'environnement en République du Bénin stipule à Article 51 que « Outre les dispositions des Conventions, traités et accords internationaux en matière de protection de la diversité biologique (la faune et la flore) ratifiées par la République du Bénin, sont fixées par les lois et règlements : • La liste des espèces animales et végétales qui doivent bénéficier d'une protection particulière et les modalités d'application de cette protection ; • Les interdictions permanentes ou temporaires dictées en vue de permettre la préservation des espèces menacées, rares ou en voie de disparition, ainsi que leur milieu • Les conditions de l'exploitation, de la commercialisation et de l'utilisation, du transport et de l'exportation des espèces visées à l'alinéa précédent Entre 2000 et 2019, les permis délivrés ont permis d'exporter 54773 spécimens vivant de l'espèce (CITES database).
Règlementation sur la Récolte / la Production / le Commerce	- l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Les lois de finance
Marquage et Traçabilité des Spécimens Commercialisés *description des processus en place et des bases de données*	Après établissement du permis d'exportation, une copie est effectuée pour être classée. Les différentes pièces sont scannées et archivées et les informations sont insérées dans la base numérique de données de la CITES au niveau national

	Au départ, le permis doit être visé par l'autorité forestière au niveau de l'aéroport et les quantités vérifiées.
Permis d'Exportation CITES et le Processus National de Vérification de la Traçabilité *description des processus en place et des bases de données*	Au niveau national, il est procédé à une confirmation des permis émis par le pays exportateur avant la délivrance des permis d'importation. Après l'établissement du permis, une copie est faite pour être classée et archivée puis les données sont inscrites dans la base de donnée de la CITES au niveau national. Ensuite un contrôle est fait aux différents postes de sortie.
Commerce Illégal de l'Espèce	Les données sur le commerce illégal de l'espèce au niveau national n'existent pas.
Renforcement des Capacités pour Améliorer la Gestion Nationale de l'Espèce *description de tous les efforts, les processus pour les agents et les autres acteurs*	- Biologie de reproduction de l'espèce -formation sur les systèmes d'élevage -Formation des agents de contrôle (douane, police et forêt) sur les mesures et système de contrôle au niveau des frontières (port, aéroport, terrestre) - Formation sur l'identification des espèces menacée (vivant, trophée etc..) -Formation sur l'application de la CITES -Formation sur la lutte anti braconnage
Taxes, Frais, et Autres Financement pour la Gestion Continue du Commerce *par ex., frais de permis CITES, frais de licence de récolte, frais d'exportation, la quarantaine, les certificats d'inspection sanitaire, etc.*	*frais de permis CITES :* déterminé en fonction de la loi des finances en cour de l'année d'exercice. *frais de licence de récolte :* déterminé en fonction de la loi des finances en cours de l'année d'exercice *frais d'exportation :* déterminé en fonction de la loi des finances en cour de l'année d'exercice *les certificats d'inspection sanitaire :* déterminé en fonction de la loi des finances en cour de l'année d'exercice

Recherches Supplémentaires Nécessaires pour cette Espèce et la Gestion du Commerce dans votre Pays	• Ecologie de l'espèce, • Abondance en élevage et dans la nature • Bio-monitoring des populations de l'espèce • Traçabilité des Spécimens Commercialisés • Monitoring de la Commerce légal et illégal

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Tableau 01 : Quantité exportées de spécimen de *Chamaeleo senegalensis* de 2008 à 2017 au Bénin

Year	2008	2009	2009	2009	2010	2010	2011	2011	2012	2012	2012	2013	2013	2013	2014	2015	2016	2016	2016	2017
Importer	3848	2124	100		3605	500	3985	200	5641	900	135	1799		300	1120	1350	835			198
Exporter	2620	3625			2550		2970		4610			1535	400		500	1155	620			
Source	R	R	C	W	R	W	R	C	R	I	W	R	W	I	R	R	R	R	R	I

Kinixys de home ou tortue de maison (*Kinixys homeana*)

BENIN

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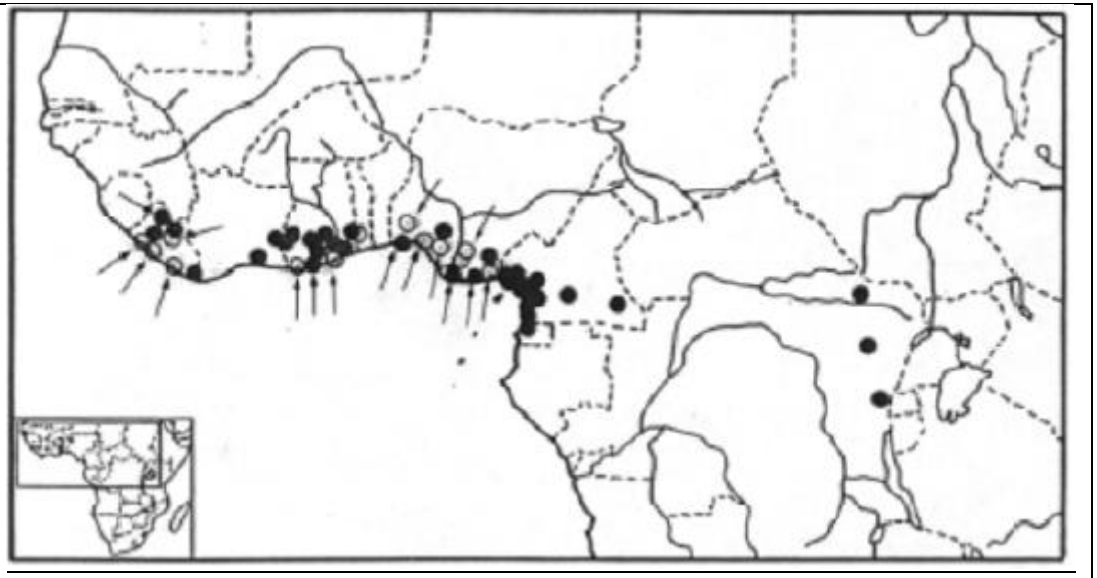
Contexte de l'Espèce (Biologie, Écologie, Statut, Menaces) *Veuillez inclure la littérature citée partout où cela est possible, tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Nomenclature	 Source : Image Google

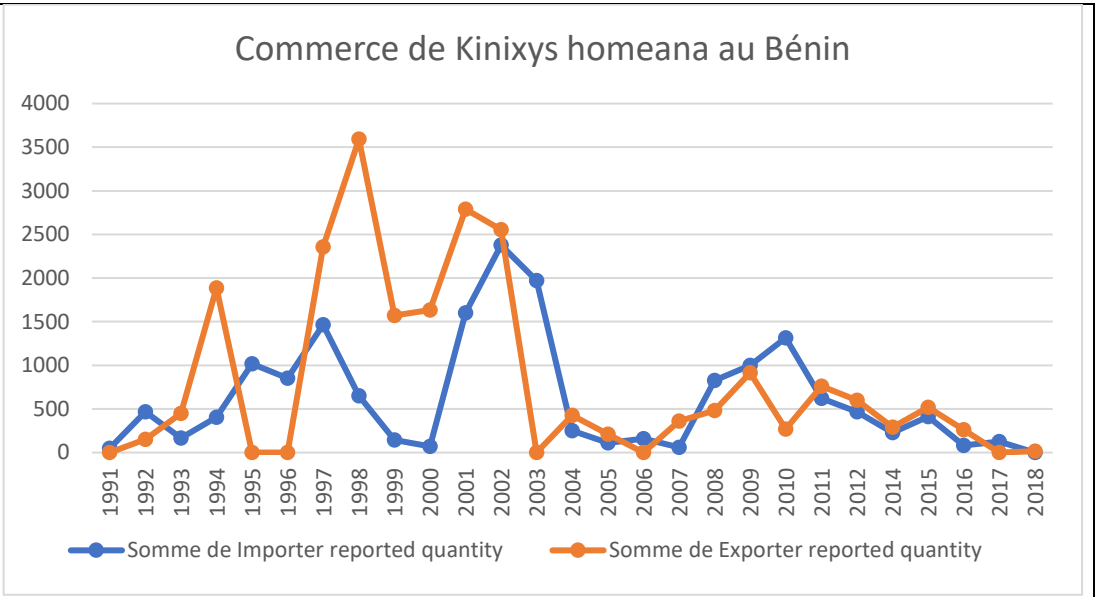
	Kinixys homeana Bell, 1827 *Kinixys homeana* BELL 1827 *Cinixys homeana* — DUMÉRIL & BIBRON 1835: 161 *Cinixys Homeana* — DUMÉRIL & BIBRON 1854: 222 *Kinixys homeana* — GRAY 1864: 170 *Cinixys homeana* — BOULENGER 1889 *Kinixys homeana* — HOOGMOED 1979 *Kinixys homeana* — VALVERDE 2005 *Kinixys homeana* — TTWG 2014
Répartition Globale	L'aire de répartition de *K. homeana* couvre du Liberia, à l'ouest, jusqu'au Cameroun et la RD du Congo, à l'est (Broadley, 1989 ; Iverson, 1992 ; Bonin *et al.*, 2006 ; Fritz et Havaš, 2007 ; Branch, 2008 ; Vetter, 2011) ; sa présence en République du Congo (Congo-Brazzaville) avait été signalée par Branch (2008) et Jackson et Blackburn (2010), et d'après Vetter (2011) sa présence dans ce pays était probable. À partir de projections des différentes aires de répartition, Buhlmann *et al.* (2009) avaient estimé que l'aire de répartition totale de *K. homeana* était de 1 825 142 km^2. Luiselli *et al.* (2006) avaient fait remarquer que les cartes de répartition existantes représentaient l'aire de répartition historique de cette espèce, mais que plus récemment la superficie des habitats adéquats avait diminué ; ils estimaient qu'en 1992, son aire de répartition ouvrait environ 788 843 km^2, mais qu'en 2006 elle avait rétréci jusqu'à une taille de 5% de cette valeur (9 235 km^2), et qu'elle était probablement encore plus réduite (Luiselli *et al.*, 2006). Les zones protégées couvrent environ 3% de l'aire de répartition totale de l'espèce (Luiselli *et al.*, 2006).

	 Source : Luiselli *et al*., 2006
Répartition National *passé et présent, et les aires protégées ou l'espèce et connu*	D'après divers auteurs, le Bénin ne faisait pas partie de l'aire de répartition de l'espèce (Pritchard, 1979b ; Broadley, 1989 ; Iverson, 1992 ; Ullenbruch *et al.*, 2010 ; Luiselli *et al.*, 2012), mais Luiselli *et al.* (2006) et Uetz (2013) avaient néanmoins signalé sa présence dans le pays, et la carte de répartition de Vetter (2011) indiquait qu'elle était rencontrée dans le sud du Bénin. Luiselli *et al.* (2008) avaient acté sa présence à Cotonou et Porto Novo (littoral sud), Maran (2009) avait rapporté des observations dans le département de Zou, dans le centre-sud du Bénin, en 2002, et Diagne (2010) avait constaté sa présence dans les forêts marécageuses de Lokoli, dans le sud du pays. L'OG CITES béninois (*in litt.* à l'UNEP-WCMC, 2013) avait confirmé sa présence dans le département de Plateau (sud-est du Bénin). Luiselli *et al.* (2006) estimaient qu'en 1992, l'aire de répartition potentielle de cette espèce couvrait 2 600 km2 au Bénin, mais ils faisaient remarquer que son aire de répartition réelle était probablement plus réduite.

Description Morphologique *inclure les caractères d'identification*	Ce sont des espèces de taille moyenne et grande avec une carapace n'excédant pas les 400 mm. Kinixys est le seul genre de tortue terrestre à pouvoir se renfermer complètement dans sa carapace grâce à une charnière présente sur sa carapace.
Utilisation des Habitats et l'Écologie Spatiale *par ex., domaine vitale, mouvements, habitats préférées, etc.*	*Kinixys homeana* est une tortue d'Afrique occidentale qui habite les forêts sempervirentes de basse altitude (Broadley, 1989 ; Ernst *et al.*, 2013), dont elle préfère les sites les plus humides (Bonin *et al.*, 2006) : elle est souvent rencontrée le long des cours d'eau et en habitat marécageux (Branch, 2008). Luiselli (2003) et Luiselli *et al.* (2006) avaient signalé que cette espèce pouvait être rencontrée dans les îlots de végétation dense des zones où elle était chassée, mais qu'elle occupait des habitats plus variés dans les zones où elle était protégée de la chasse.
Caractéristiques Reproductive *inclure, au moins, saisonnalité, fréquence, etc.*	*Kinixys homeana* produit des pontes de deux à quatre œufs (Kirkpatrick, 1998) jusqu'à deux fois par an, généralement pendant la saison sèche, en décembre et janvier (Maran et Serpol, 2006).
Longévité *Inclure le temps de génération, si connu et/ou tel qu'utilisé dans la Liste Rouge de l'UICN*	L'espérance de vie est d'environ 15 ans à 20 ans
Régime Alimentaire	L'écologie alimentaire de *K. homeana* a été étudiée à l'état sauvage uniquement dans les forêts du delta du fleuve Niger, au sud du Nigéria. Dans ce domaine, *K. homeana* expose un régime omnivore à la fois dans les parcelles forestières humides matures et modifiées, avec de la matière végétale, des graines, des champignons, des oligochaeta, des gastropodes et un large éventail d'arthropodes étant fréquemment mangé (Luiselli 2006b), avec quelques variations quantitatives dans la composition du régime alimentaire par type d'habitat. Il peut également se nourrir de grenouilles et récupérer des cadavres (Branch 2007), et comparé à la plupart des autres espèces de tortues, il a un plus carnivore régime alimentaire (Luiselli 2006c).
Aperçu Général de l'Abondance / Densité de la population *au niveau mondial, national et / ou partout où il est connu*	La taille de la population de *Kinixys homeana* était estimée a 4.205.000 de spécimens (Luiselli *et al*., 2006). La densité de la population était considéré relativement faible (Bonin *et al*., 2006) ; une estimation d'environ 1.4 spécimens/ha, calculée pour le Nigéria, était jugée représentative de l'aire de répartition totale (Luiselli *et al*., 2006). Lors d'enquêtes réalisées en octobre-novembre 2003, Luiselli *et al.* (2006) avaient observé un spécimen au

	cours des 29 heures d'étude de terrain à Cotonou, mais aucun au cours des 31 heures d'étude à Porto Novo. Luiselli *et al.* (2008) avaient aussi réalisé six autres relevés par transect linéaire (5 000 m de long et 20 m de large) à travers les forêts humides littorales, à différentes saisons, sur 2003-2005 ; au total, ils avaient capturé seize *K. homeana*, et en concluaient que la densité de population de cette espèce était faible. D'après les interviews réalisées à travers tout le Bénin par Sinsin *et al.* (2008), 76 % des habitants locaux considéraient que les populations de tortues (*K. belliana* et *K. homeana*) déclinaient, et l'OG CITES du Bénin (*in litt.* à l'UNEP-WCMC, 2013) a confirmé la tendance au déclin de la population.
Susceptibilité aux Perturbations Anthropogéniques *y compris la pression de récolte, la perte d'habitat, etc.*	*K. homeana* était communément chassée au Bénin pour la consommation locale (Luiselli *et al.*, 2006 ; Sinsin *et al.*, 2008), et Maran (2009) avait averti que l'espèce pourrait disparaître du pays à moins que sa protection ne soit améliorée. Cette espèce était disponible sur les marchés locaux (OG CITES du Bénin, *in litt.* à l'UNEP-WCMC, 2013).
Menaces Non Liées à la Récolte *par ex.,, perte d'habitat, collision avec les voitures, etc*.	La perte d'habitat constitue l'une des principales menaces pour la population de *K. homeana* (Broadley, 1989 ; Bonin *et al.,* 2006 ; Branch, 2008).
Statut de Conservation Globale *statut sur la Liste Rouge de l'UICN et les tendances de population quantitatives ou inférées, ou toute autre description pertinente*	*K. homeana* a été classée Vulnérable sur la Liste rouge de l'IUCN en se basant sur un déclin de la population de 90% sur trois générations (quarante ans) ainsi que sur la tendance continue escomptée au déclin de la population (Luiselli *et al*., 2006).
Contexte de Gestion *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document*.	
Histoire Nationale de la Gestion de l'Espèce *Descriptif / narratif*	Le Bénin avait transmis tous ses rapports annuels sur 2002-2012 sauf en 2003 et en 2006, et publié tous les ans à partir de 1997 des quotas d'exportation pour les spécimens de *K. homeana* de source "R", et à partir de 2010 pour les spécimens sauvages et élevés en captivité. Le commerce de spécimens de source "R" était resté en-deçà du quota tous les ans d'après les données fournies aussi bien par les pays importateurs que par l'exportateur. Les quotas concernant les spécimens sauvages et élevés en captivité semblaient avoir été dépassé en 2010 d'après les données fournies par les pays importateurs ; le Bénin n'avait notifié aucun commerce de spécimens sauvages, hormis cent animaux en 2008, et le seul commerce de spécimens élevés en captivité notifié par ce

	pays était une exportation de trente animaux, signalée en 2011, et celle de vingt autres en 2012. Une analyse des permis avait révélé que les permis d'exportation de spécimens sauvages et élevés en captivité communiqués par le pays importateur en 2010 — le Ghana — n'avaient pas été notifiés par le Bénin pour l'espèce *K. homeana*. Les exportations directes de *K. homeana* depuis le Bénin sur 2002-2012 étaient constituées de spécimens vivants échangés à des fins commerciales, pour la plupart élevés en ranch. Le commerce d'animaux de source "R" avait globalement décru au cours de la période. Ce pays n'avait signalé l'exportation de spécimens sauvages qu'en 2008, mais les pays importateurs avaient notifié des importations de spécimens sauvages en 2002, 2008 et 2010. L'importation de 225 spécimens élevés en captivité sur 2009-2010 avait été signalée, alors que le Bénin n'avait communiqué l'exportation que de 50 spécimens élevés en captivité sur 2011-2012. Le Royaume Uni avait également signalé l'importation de 56 animaux saisis/confisqués en 2002. Le principal pays importateur de spécimens de source "R", le Ghana, était aussi le principal pays importateur de spécimens sauvages, et le seul pays importateur depuis le Bénin de *K. homeana* élevés en captivité. Les exportations indirectes de *K. homeana* provenant du Bénin sur 2002-2012 étaient constituées de spécimens vivants échangés à des fins commerciales, pour la plupart de source "R", mais avec une forte proportion de sauvages. En 2003, Luiselli *et al.* (2006) avaient dénombré 97 *K. homeana* au cours de trois visites de marchés dans les principaux marchés de Cotonou, et 109 spécimens au cours de trois autres visites dans ceux de Porto Novo. Maran (2009) avait aussi observé en 2002 des *K. homeana* vivants à vendre sur les marchés de Porto Novo, où cette espèce était vendue comme gibier ou à des fins de médecine traditionnelle. Le prix de *K. homeana*, 4 000 CFA (env. 8 USD de l'époque) par animal, était supérieur à celui de *K. belliana*, 3 000 CFA (env. 6 USD) (Maran, 2009). D'après les vendeurs, les spécimens en vente provenaient des réserves forestières de Dogo et Kétou (Bénin central) (Maran, 2009). L'Union européenne avait suspendu le commerce depuis le Bénin de spécimens sauvages de *K. homeana* en 2005, et celui des spécimens de source "R" en 2006 ; cette suspension, conformément au Règlement de la Commission (CE) nº 578/2013, du 17 juin 2013, reste en vigueur.

Commerce International à Partir de Stocks Nationaux *Inclure des données, des chiffres, des tableaux, autant que possible et pertinent*	
Produits Commercialisés Unternationalement / But du Commerce *par ex., les peaux, la viande, les animaux domestiques, etc., inclure des détails, des chiffres, des tendances*	99.26% des espèces exporter et importer jusqu'à nos jours sont des spécimens vivants contre seulement 0.74% de la peau (source : analyse de la base de données)
Utilisation et Commerce Domestique *détails, chiffres, tendances annuelles*	Harwood (2003) avait signalé qu'en 2002 il existait cinq fermes autorisées à exporter des reptiles vivants, toutes situées dans le sud du Bénin. Un système de quotas avait été mis en œuvre, et les quotas d'exportation pour les spécimens élevés en captivité ou en ranch étaient calculés d'après l'information fournie par les fermes concernant leurs niveaux de stock (Harwood, 2003). Toujours d'après Harwood (2003), quelques nouveau-nés étaient conservés pour renforcer la population reproductrice adulte, et des spécimens supplémentaire étaient collectés tous les ans dans la nature afin d'éviter la consanguinité. Un système de quotas était à l'œuvre pour limiter le nombre de spécimens capturés dans la nature, mais les éleveurs pouvaient demander à ce que ces quotas soient augmentés (Harwood, 2003). Les relâchages dans la nature de spécimens élevés en ranch étaient

	réalisés sous la supervision des autorités de ressort, mais ils ne faisaient l'objet d'aucun procès-verbal (Harwood, 2003).
Cadre Juridique International	*K. homeana* figure à l'Annexe II de la CITES depuis le 01/07/75, et elle avait été retenue pour l'ÉCI CITES en 1993, à une époque où le commerce international, bien que jugé ne pas avoir de répercussions négatives sur cette espèce à un niveau global, était toutefois susceptible d'affecter les populations locales (WCMC *et al.*, 1993). Luiselli *et al.* (2006) avaient fait remarquer que l'espèce était protégée par des lois coutumières à plusieurs endroits de son aire de répartition, mais recommandaient, vu son statut, d'en faire l'objet d'une législation de protection dans tous les pays. L'Union européenne avait suspendu le commerce de *K. homeana* sauvages vivantes depuis tous les pays entre 1999 et 2004.
Cadre Juridique National *statut de protection et les lois liées à la récolte et au commerce*	Comme d'autres tortues, *K. homeana* est classée parmi les espèces de petit gibier dans l'Annexe III de la loi nº 87-014 (1987) (Bénin, 1987). Sa chasse serait permise sauf lorsqu'elle est rencontrée en zones protégées (Bénin, 1987).
Objectifs Nationaux pour la Gestion de l'Espèce	
Importance de l'Utilisation Durable pour la Gestion Nationale	
<u>Monitoring de la Population - La Base d'une Utilisation Durable</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Mesures de Prise de Décision Prises par vos Organes Scientifiques et de Gestion *description du processus interne par lequel les décisions de monitoring de la population sont prises*	Le processus interne mis en place pour assurer le suivi des populations de *K. homeana* tient sur deux axes principaux : - Suivi annuel des élevages - Etudes démographiques des populations dans la nature Le suivi des élevages se fait de façon annuelle et permet d'estimer les capacités de production d'une part et d'avoir une idée de l'évolution des populations de l'espèce élevée en captivité d'autre part. Ce suivi est assuré par l'organe de gestion CITES avec l'étroite collaboration des agents de terrain. Les études démographiques sur les terrains, plus couteux et plus contraignants, ne sont pas toujours réalisées. Plusieurs ressources sont utilisées partant des études conduites par les

	chercheurs. Malheureusement il n'existe pas dans la littérature des études spécifiques au Bénin sur le monitoring des populations de l'espèce dans la nature.
Suivi National de la Population Sauvage *c.-à-d. activités sur le terrain, le cas échéant*	Les actions de suivi national de la population sauvage se limitent pour l'instant au suivi des élevages. Ce suivi se déroule de façon annuelle en tenant compte de la période de reproduction de l'animal.
Étendue de l'Habitat Convenable au Niveau National *y compris une description de la façon dont cela a été estimé*	Sur la base des observation et de la connaissance historique de la présence de l'espèce en milieu naturel, l'habitat convenable de l'espèce est le sud Bénin sur une superficie estimée à moins de 2600 km2
Estimation de la Taille de la Population Sauvage au Niveau National à Partir des Données de Monitoring *y compris une description de la façon dont cela a été estimé*	A estimer
Taux de Prélèvement Durable Estimé *théorique no. d'individus par an ou par zone, peuvent être estimés à l'aide de données spécifiques ou déduits d'espaces similaires*	Le taux de prélèvement durable pour le Bénin n'est encore déterminé.
Calcul des Prélèvements au Niveau National *population sauvage * taux de prélèvement durable estimé*	L'évaluation de la population réelle de l'espèce n'a pu être réalisée. Les observations éparses faites ne permettent pas pour l'instant de procéder à des prélèvements en milieu naturel
Monitoring de le Récolte	Le monitoring de la récolte des espèces est prévu pour se faire sur la base d'autorisations délivrées par l'organe de gestion. Les structures déconcentrées de l'administration au niveau du lieu de collecte sont chargées du suivi rigoureux des récoltes qu'elles attestent par un visa de récolte conforme à la législation. Ce suivi impose le respect des normes de récoltes tenant compte du sexe, de l'âge et de l'état des femelles. La récolte des femelles gestantes est par exemple interdite par les textes.
Monitoring de la Commerce / Commerçants	Le monitoring du commerce se fait sur la base de la délivrance des permis et d'autorisation par l'organe de gestion. La liste des commerçants agréés est également établie au début de chaque année afin de s'assurer que ceux exercent l'activité le font en toute légalité.

Informations Supplémentaires Pertinentes	
<u>Contrôle du Commerce et la Gestion</u>	
Quotas en Place	Le Bénin est suspendu du commerce donc aucun quota n'est en place actuellement pour l'espèce.
Système National de Permis / Autorisation *descriptif / narratif, y compris référence aux lois et aux chiffres*	Le Benin ne dispose pas encore d'une loi CITES. Mais il existe des textes législatifs et qui définissent les conditions de délivrance des autorisations et des permis. - l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Loi-Cadre N° 2014-19 DU 07 AOÛT 2014, relative à la pêche et à l'aquaculture en République du Bénin - La loi 098-030 du 12 février 1999 portant loi cadre de l'environnement en République du Bénin stipule à Article 51 que « Outre les dispositions des Conventions, traités et accords internationaux en matière de protection de la diversité biologique (la faune et la flore) ratifiées par la République du Bénin, sont fixées par les lois et règlements : • La liste des espèces animales et végétales qui doivent bénéficier d'une protection particulière et les modalités d'application de cette protection ; • Les interdictions permanentes ou temporaires dictées en vue de permettre la préservation des espèces menacées, rares ou en voie de disparition, ainsi que leur milieu

	• Les conditions de l'exploitation, de la commercialisation et de l'utilisation, du transport et de l'exportation des espèces visées à l'alinéa précédent Entre 2006 et 2018, les informations fournies par les pays importateurs signalent l'exportation du Bénin de 4472 spécimens vivant de l'espèce (CITES database).
Règlementation sur la Récolte / la Production / le Commerce	- l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; Les lois de finance
Marquage et Traçabilité des Spécimens Commercialisés *description des processus en place et des bases de données*	Après établissement du permis d'exportation, une copie est effectuée pour être classée. Les différentes pièces sont scannées et archivées et les informations sont insérées dans la base numérique de données de la CITES au niveau national Au départ, le permis doit être visé par l'autorité forestière au niveau de l'aéroport et les quantités vérifiées.
Permis d'Exportation CITES et le Processus National de Vérification de la Traçabilité *description des processus en place et des bases de données*	Au niveau national, il est procédé à une confirmation des permis émis par le pays exportateur avant la délivrance des permis d'importation. Après l'établissement du permis, une copie est faite pour être classée et archivée puis les données sont inscrites dans la base de donnée de la CITES au niveau national. Ensuite un contrôle est fait aux différents postes de sortie.
Commerce Illégal de l'Espèce	Les données sur le commerce illégal de l'espèce au niveau national n'existent pas.
Renforcement des Capacités pour Améliorer la Gestion Nationale de l'Espèce	- Les dérives dans les sources des spécimens exportés - Système de suivi concernant les réexportations au sein de la sous-région par les autorités CITES - Biologie de reproduction de l'espèce

description de tous les efforts, les processus pour les agents et les autres acteurs	- formation sur les systèmes d'élevage - Formation des agents de contrôle (douane, police et forêt) sur les mesures et système de contrôle au niveau des frontières (port, aéroport, terrestre) - Formation sur l'identification des espèces menacée (vivant, trophée etc..) - Formation sur l'application de la CITES Formation sur la lutte anti braconnage
Taxes, Frais, et Autres Financement pour la Gestion Continue du Commerce *par ex., frais de permis CITES, frais de licence de récolte, frais d'exportation, la quarantaine, les certificats d'inspection sanitaire, etc.*	*frais de permis CITES :* déterminé en fonction de la loi des finances en cour de l'année d'exercice. *frais de licence de récolte :* déterminé en fonction de la loi des finances en cours de l'année d'exercice *frais d'exportation :* déterminé en fonction de la loi des finances en cour de l'année d'exercice
Recherches Supplémentaires Nécessaires pour cette Espèce et la Gestion du Commerce dans votre Pays	• Ecologie de l'espèce, • Abondance en élevage et dans la nature • Bio-monitoring des populations de l'espèce • Traçabilité des Spécimens Commercialisés • Monitoring de la Commerce formel et informel

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Tableau 01 : Quantité exportées de spécimen de *Chamaeleo senegalensis* de 2006 à 2018 au Bénin

Year	2006	2007	2008	2008	2009	2009	2010	2010	2010	2011	2011	2012	2012	2012	2014	2014	2015	2016	2017	2018
Importer quantity	158	60	425	400	975	25	114	200	1000	520	100	20	415	32	228		495		125	
Exporter quantity		362	380	100	915		210			730	30	20	580		240	50	730	50		15
Source	R	R	R	W	R	C	R	C	W	R	C	C	R	W	R	W	R	W	W	W

Scorpion empéreur (*Pandinus imperator*)

BENIN

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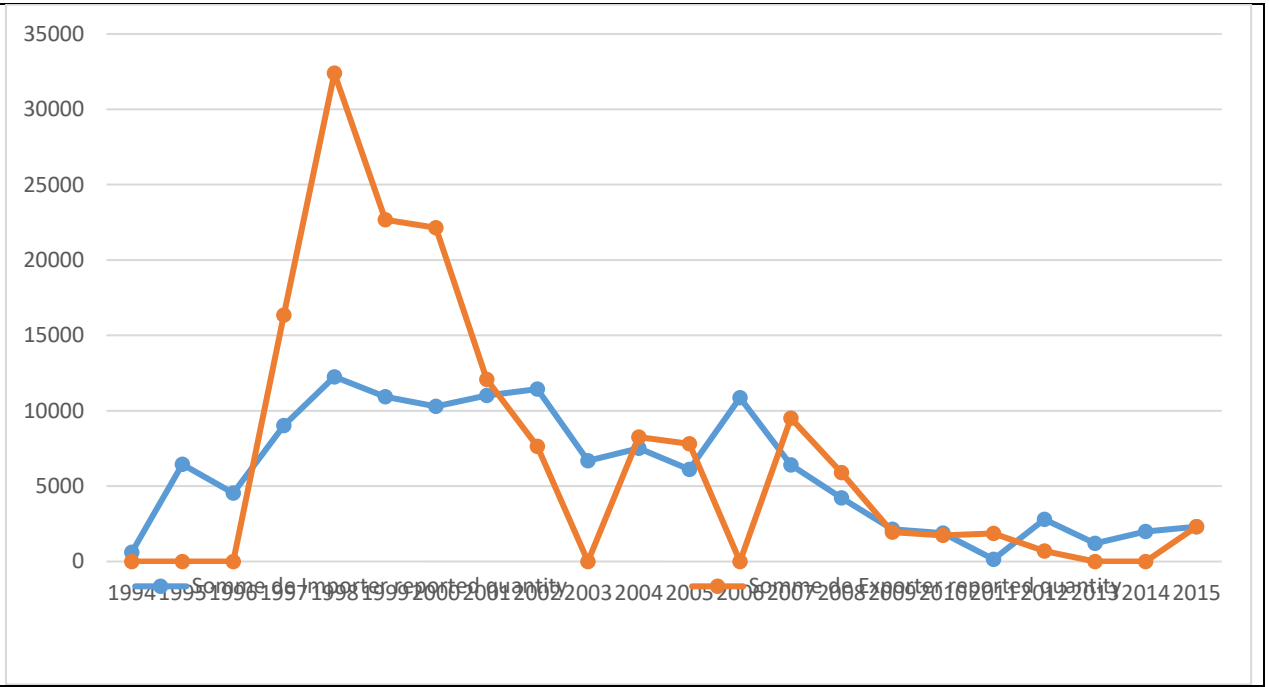
Contexte de l'Espèce (Biologie, Écologie, Statut, Menaces) *Veuillez inclure la littérature citée partout où cela est possible, tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Nomenclature	

	Source : Image Google Synonymes : • *Buthus imperator* C. L. Koch, 1841 • *Heterometrus roeseli* Simon, 1872 • *Pandinus africanus* Thorell, 1876 • *Scorpio simoni* Becker, 1880 • *Pandinus camerounensis* Lourenço, 2014
Répartition Globale	*Pandinus imperator* est originaires d'Afrique de l'Ouest et se trouvent principalement dans les forêts du Nigeria, Sierra Léone, Libéria, Guinée, Mali, Burkina faso, Cameroun, Ghana, Togo, Bénin, Côte d'Ivoire, (Pandinus, 2009)  Source : Lourenço 2014
Répartition National *passé et présent, et les aires protégées ou l'espèce et connu*	L'espèce est rencontrée du Nord au Sud dans les forêts du territoire béninois
Description Morphologique *inclure les caractères d'identification*	*Pandinus imperator* est l'une des plus grandes espèces de scorpions au monde, mesurant en moyenne 20 cm de longueur. Ils ont également tendance à être plus lourds que les autres scorpions et les femelles enceintes

	peuvent peser plus de 28 g. Le corps du scorpion empereur est de couleur noire brillante avec deux énormes pédipalpes (pinces) à l'avant, quatre pattes et une longue queue (telson) se terminant par un dard. Les scorpions empereurs ont des structures sensorielles spéciales appelées pectines derrière leurs membres pour détecter les caractéristiques du terrain. Les mâles ont généralement des pectines plus grosses que les femelles. Comme les autres arthropodes, les scorpions empereurs subissent plusieurs mues. Leur venin est doux et principalement utilisé à des fins défensives; ils utilisent généralement leurs énormes griffes pour tuer leurs proies. Comme les autres scorpions, les scorpions empereurs dégagent un aspect vert bleuâtre fluorescent sous la lumière UV. (Rein, éd. 2009; Ross, 2009; «Emperor Scorpion (*Pandinus imperator*)», 2009).
Utilisation des Habitats et l'Écologie Spatiale *par ex., domaine vitale, mouvements, habitats préférées, etc.*	*Pandinus imperator* se trouvent généralement dans les forêts chaudes et humides. Ils résident dans des terriers et préfèrent vivre sous la litière de feuilles, les débris forestiers, les berges des cours d'eau et aussi dans les monticules de termites, leur principale proie. Les scorpions empereurs ont tendance à vivre en communauté et se trouvent en grand nombre dans les régions d'habitation humaine. (Rein, éd. 2009; «Emperor Scorpion (Pandinus imperator)», 2009)
Caractéristiques Reproductive *inclure, au moins, saisonnalité, fréquence, etc.*	La portée varie entre 9 et 30. Sa période de gestation est longue (7 à 9 mois ou plus si l'individu est stressé) et les juvéniles présentent une grande dépendance vis à vis de leurs parents (plusieurs mois ou années dans la nature). Il semblerait qu'il existe une parade nuptiale avant l'accouplement et les fortes densités dans les élevages captifs du Bénin doivent l'entraver ou du moins limiter son efficacité. Les naissances en ranches se font toute l'année, avec cependant un pic qui semblerait se dégager vers les mois de février à avril. Les spécimens nés en captivité atteignent une taille permettant leur commercialisation en 8 à 10 mois.
Longévité *Inclure le temps de génération, si connu et/ou tel qu'utilisé dans la Liste Rouge de l'UICN*	L'expérience de vie est de 7 à 10 ans, dont environ 3 ans pour atteindre l'âge adulte.
Régime Alimentaire	Les scorpions empereurs mangent généralement des insectes et d'autres arthropodes et chassent parfois de petits vertébrés. Ils mangent généralement des termites. Les adultes ne tuent généralement pas leurs proies à l'aide de leur dard, mais déchirent plutôt leurs proies à l'aide de leurs puissantes pinces. Les juvéniles, cependant, dépendent de leurs dards pour tuer leurs proies. (Casper, 1985; «Empereur Scorpion (Pandinus imperator)», 2009)

Aperçu Général de l'Abondance / Densité de la population *au niveau mondial, national et / ou partout où il est connu*	
Susceptibilité aux Perturbations Anthropogéniques *y compris la pression de récolte, la perte d'habitat, etc.*	On a estimé que environ 100 000 P. imperator ont été exportés d'Afrique de l'Ouest en 1995 et 1996 (Programme commercial UICN / CSE) (1). L'espèce est menacée par une surexploitation dans le commerce des animaux de compagnie.
Menaces Non Liées à la Récolte *par ex.,, perte d'habitat, collision avec les voitures, etc.*	La destruction continue de son habitat par la déforestation représente aussi une menace.
Statut de Conservation Globale *statut sur la Liste Rouge de l'UICN et les tendances de population quantitatives ou inférées, ou toute autre description pertinente*	Espèce protégée par la Convention de Washington et la décision no 338/97 du conseil de l'Europe. Tout achat ou don doit être assorti d'une facture ou d'un certificat de cession, l'importation nécessite un numéro CITES.
Contexte de Gestion *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Histoire Nationale de la Gestion de l'Espèce *Descriptif / narratif*	Les scorpions constituent les principales exportations CITES du Bénin entre 1991 et 2004. Les systèmes de production du Bénin fonctionnent tous selon le même mode opératoire et prétendent produire leurs animaux à partir d'élevages en captivité (Harwood, 2003: 35), aussi bien d'après les directeurs des établissements que d'après les autorités CITES locales. Leurs spécimens commercialisés sont (ou devraient être en théorie) de source C. Un stock initial de reproducteurs est prélevé une seule fois dans la nature sous contrôle des autorités et le renouvellement de ce stock ne se fait qu'à partir de la conservation d'une proportion des jeunes produits par l'élevage lui-même et non relâchés. Un échange de mâles adultes entre exportateurs permettrait de diversifier le pool génique de chaque élevage.
Commerce International à Partir de Stocks Nationaux *Inclure des données, des chiffres, des tableaux, autant que possible et pertinent*	Confère tableau 01

	
Produits Commercialisés Unternationalement / But du Commerce *par ex., les peaux, la viande, les animaux domestiques, etc., inclure des détails, des chiffres, des tendances*	98.67% des espèces exporter et importer jusqu'à nos jours sont des spécimens vivants contre seulement 0.33% de la peau (source : analyse de la base de données)
Utilisation et Commerce Domestique *détails, chiffres, tendances annuelles*	Quantité inestimable pour sa vêture thérapeutique
Cadre Juridique International	Protéger sur le plan international et en annexe II à la CITES
Cadre Juridique National *statut de protection et les lois liées à la récolte et au commerce*	Loi 2002 -16 portant régime de la faune en république du Bénin L'espèce n'est pas annexée au Bénin selon la loi 2002-16
Objectifs Nationaux pour la Gestion de l'Espèce	Mettre en place un système de suivi efficace pour arriver à une grande reproduction de l'espèce en milieu confiné

Importance de l'Utilisation Durable pour la Gestion Nationale	Utilisation pour ses vêtures thérapeutiques et pour son commerce
<u>Monitoring de la Population - La Base d'une Utilisation Durable</u> *Tous les tableaux / figures peuvent être référencés ici mais les insérez à la fin du document.*	
Mesures de Prise de Décision Prises par vos Organes Scientifiques et de Gestion *description du processus interne par lequel les décisions de monitoring de la population sont prises*	Le processus interne mis en place pour assurer le suivi des populations de *Pandinus impérator* tient sur deux axes principaux : - Suivi annuel des élevages - Etudes démographiques des populations dans la nature Le suivi des élevages se fait de façon annuelle et permet d'estimer les capacités de production d'une part et d'avoir une idée de l'évolution des populations de l'espèce élevée en captivité d'autre part. Ce suivi est assuré par l'organe de gestion CITES avec l'étroite collaboration des agents de terrain. Les études démographiques sur les terrains, plus couteux et plus contraignants, ne sont pas toujours réalisées. Plusieurs ressources sont utilisées partant des études conduites par les chercheurs. Malheureusement il n'existe pas dans la littérature des études spécifiques au Bénin sur le monitoring des populations de l'espèce dans la nature.
Suivi National de la Population Sauvage *c.-à-d. activités sur le terrain, le cas échéant*	Les actions de suivi national de la population sauvage se limitent pour l'instant au suivi des élevages. Ce suivi se déroule de façon annuelle en tenant compte de la période de reproduction de l'animal.
Étendue de l'Habitat Convenable au Niveau National *y compris une description de la façon dont cela a été estimé*	L'espèce se retrouve sur toute l'étendue du territoire national
Estimation de la Taille de la Population Sauvage au Niveau National à Partir des Données de Monitoring *y compris une description de la façon dont cela a été estimé*	A estimer. Seuls les spécimens détenus dans les élevages sont estimés à environ 4500 individus
Taux de Prélèvement Durable Estimé	Le taux de prélèvement durable pour le Bénin n'est encore déterminé.

théorique no. d'individus par an ou par zone, peuvent être estimés à l'aide de données spécifiques ou déduits d'espaces similaires	
Calcul des Prélèvements au Niveau National *population sauvage * taux de prélèvement durable estimé*	L'évaluation de la population réelle de l'espèce n'a pu être réalisée. Les observations éparses faites ne permettent pas pour l'instant de procéder à des prélèvements en milieu naturel
Monitoring de le Récolte	Le monitoring de la récolte des espèces est prévu pour se faire sur la base d'autorisations délivrées par l'organe de gestion. Les structures déconcentrées de l'administration au niveau du lieu de collecte sont chargées du suivi rigoureux des récoltes qu'elles attestent par un visa de récolte conforme à la législation. Ce suivi impose le respect des normes de récoltes tenant compte du sexe, de l'âge et de l'état des femelles. La récolte des femelles gestantes est par exemple interdite par les textes.
Monitoring de la Commerce / Commerçants	Le monitoring du commerce se fait sur la base de la délivrance des permis et d'autorisation par l'organe de gestion. La liste des commerçants agréés est également établie au début de chaque année afin de s'assurer que ceux exercent l'activité le font en toute légalité.
Informations Supplémentaires Pertinentes	
Contrôle du Commerce et la Gestion	
Quotas en Place	Le Bénin est suspendu du commerce donc aucun quota n'est en place actuellement pour l'espèce.
Système National de Permis / Autorisation *descriptif / narratif, y compris référence aux lois et aux chiffres*	Le Benin ne dispose pas encore d'une loi CITES. Mais il existe des textes législatifs et qui définissent les conditions de délivrance des autorisations et des permis. - l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ;

	- la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Loi-Cadre N° 2014-19 DU 07 AOÛT 2014, relative à la pêche et à l'aquaculture en République du Bénin - La loi 098-030 du 12 février 1999 portant loi cadre de l'environnement en République du Bénin stipule à Article 51 que « Outre les dispositions des Conventions, traités et accords internationaux en matière de protection de la diversité biologique (la faune et la flore) ratifiées par la République du Bénin, sont fixées par les lois et règlements : • La liste des espèces animales et végétales qui doivent bénéficier d'une protection particulière et les modalités d'application de cette protection ; • Les interdictions permanentes ou temporaires dictées en vue de permettre la préservation des espèces menacées, rares ou en voie de disparition, ainsi que leur milieu • Les conditions de l'exploitation, de la commercialisation et de l'utilisation, du transport et de l'exportation des espèces visées à l'alinéa précédent Entre 2006 et 2015, les informations fournies par les pays importateurs signalent l'exportation du Bénin de 23935 spécimens vivant de l'espèce (CITES database).
Règlementation sur la Récolte / la Production / le Commerce	- l'arrêté N°601/MDR/DC/DFRN/SA du 08 OCTOBRE 1992 portant application en République du Bénin de la Convention sur le Commerce International des Espèces de Faune et de Flore sauvages menaces d'Extinction (CITES) ; - la loi N° 93 -009 du 2 juillet 1993 portant régime des forêts en République du Bénin et son décret d'application ; - La loi N° 2002-16 du 18 octobre 2004 portant régime de la faune en République du Bénin et son décret d'application ; - Les lois de finance

Marquage et Traçabilité des Spécimens Commercialisés *description des processus en place et des bases de données*	Après établissement du permis d'exportation, une copie est effectuée pour être classée. Les différentes pièces sont scannées et archivées et les informations sont insérées dans la base numérique de données de la CITES au niveau national Au départ, le permis doit être visé par l'autorité forestière au niveau de l'aéroport et les quantités vérifiées.
Permis d'Exportation CITES et le Processus National de Vérification de la Traçabilité *description des processus en place et des bases de données*	Au niveau national, il est procédé à une confirmation des permis émis par le pays exportateur avant la délivrance des permis d'importation. Après l'établissement du permis, une copie est faite pour être classée et archivée puis les données sont inscrites dans la base de donnée de la CITES au niveau national. Ensuite un contrôle est fait aux différents postes de sortie.
Commerce Illégal de l'Espèce	Les données sur le commerce illégal de l'espèce au niveau national n'existent pas.
Renforcement des Capacités pour Améliorer la Gestion Nationale de l'Espèce *description de tous les efforts, les processus pour les agents et les autres acteurs*	- Les dérives dans les sources des spécimens exportés - Système de suivi concernant les réexportations au sein de la sous-région par les autorités CITES - Biologie de reproduction de l'espèce - formation sur les systèmes d'élevage - Formation des agents de contrôle (douane, police et forêt) sur les mesures et système de contrôle au niveau des frontières (port, aéroport, terrestre) - Formation sur l'identification des espèces menacée (vivant, trophée etc..) - Formation sur l'application de la CITES - Formation sur la lutte anti braconnage
Taxes, Frais, et Autres Financement pour la Gestion Continue du Commerce *par ex., frais de permis CITES, frais de licence de récolte, frais d'exportation, la quarantaine, les certificats d'inspection sanitaire, etc.*	*frais de permis CITES :* déterminé en fonction de la loi des finances en cour de l'année d'exercice. *frais de licence de récolte :* déterminé en fonction de la loi des finances en cours de l'année d'exercice *frais d'exportation :* déterminé en fonction de la loi des finances en cour de l'année d'exercice
Recherches Supplémentaires Nécessaires pour cette Espèce et la Gestion du Commerce dans votre Pays	➢ Ecologie de l'espèce, ➢ Abondance en élevage et dans la nature ➢ Bio-monitoring des populations de l'espèce ➢ Traçabilité des Spécimens Commercialisés ➢ Monitoring de la Commerce formel et informel
Littérature Cité	

Pandinus, 2009
Ross, 2009;

«Emperor Scorpion (*Pandinus imperator*)», 2009

Casper, 1985

- Harwood, J. 2003. West African reptiles: species status and management guidelines for reptiles in international trade from Benin and Togo. Cambridge, UK: UNEP-WCMC.

Tableau 01 : Quantité exportées de spécimen de *Chamaeleo senegalensis* de 2006 à 2015 au Bénin

Year	2006	2006	2007	2007	2008	2008	2009	2010	2011	2011	2012	2012	2013	2014	2015	2015	2015	2015
Importer quantity	10677	200	6305	100	4165	50	2135	1875		150	1800	1000	1200	2000	2300			
Exporter quantity			9500		5900		1950	1725	950	910		700			2300			
Source	R	W	R	C	R	C	R	R	W	R	R	W	R	R	W	W	W	W

Tableau 01 : Quantité exportées de spécimen de pandinus imperator au cours de 19961 à 2001 au Bénin

Année		1996	1997	1998	1999	2000	2001	2002	2003	2004
Quota	R	? ? ?	34000	34000	30000	25000	42781	22000	16000	16000
/source	W	/	/	/	/	/	/	/	/	/
	U	/	/	/	325	/	/	/	/	?
Export	C	1045	2450	1780	800	/	630	/	/	?
/source	R	391	16355	32395	22670	22140	12080	7645	4988	?
	W	2861	3040	9322	4398	4300	3826	6276	1400	?

Avis de commerce non-préjudiciable/ statut au Bénin

N°	Préoccupations du Secrétariat CITES	**Eléments de réponse**
1	Dans la section Aperçu Général de l'Abondance/Densité de la population, la fiche d'information pour *K. homeana* rapporte que l'OG CITES du Bénin (*in litt.* à l'UNEP-WCMC, 2013) a confirmé la tendance au déclin de la population. Pourriez-vous confirmer si la tendance de la population de *K. homeana* est toujours considérée comme étant au déclin ?	**En l'absence d'une étude écologique sur l'abondance et la dynamique des populations de K. homeana, nous nous sommes limités aux résultats d'enquêtes auprès des chasseurs, des populations locales et des ranchs. De plus, les contacts directs en milieu naturel avec l'espèce sont réduits. Cependant, le suivi des spécimens sauvages dans les ranchs effectué en 2021 a révélé la présence de cette espèce dans plusieurs élevages dont les parents reproducteurs ont été prélevés dans la nature**
2	Pourriez-vous préciser si, étant donné les informations fournies, vous considérez que des avis de commerce non-préjudiciables pour *C. gracilis, C. senegalensis* et *K. homeana* peuvent désormais être établis en conformité avec l'Article IV de la Convention ? Pouvez-vous aussi confirmer si le Bénin prévoit des exportations futures de ces espèces ?	**Oui le Bénin pense qu'il est possible d'établir des avis de commerce non-préjudiciables pour *C. gracilis, C. senegalensis* et *K. homeana.*** **Cependant par mesure de précaution et en attendant que la nouvelle autorité scientifique établie par la loi 2021-04 du 8 juillet 2021 portant protection et règles relatives au commerce international des espèces de faune et de flore sauvages menacées d'extinction en République du Bénin ne fournisse des informations précises sur l'abondance, la dynamique de la population de chacune des espèce et l'état de conservation des espèces en milieu naturel, seuls des quota d'exportation de spécimens élevés en captivité seront envisagés.**
3	Pourriez-vous fournir plus de détails sur l'établissement de quotas de récolte et d'exportation et de systèmes de permis qui sont proposés être mis en place pour les	**L'établissement des quotas pour les espèces issues du ranching et élevés en captivité se fait sur la base du suivi des sites d'élevage et de détention. Ainsi, tenant compte**

	spécimens sauvages, issus de ranching et élevés en captivité ?	**des quantités disponibles au moment de l'évaluation, des compétences acquises lors de la formation délivrée par le secrétariat CITES sur la détermination de production des ranchs d'élevage, nous établirons la quantité probable de production à partir de laquelle les quotas seront définis.**
4	Nous remarquons que la Loi No. 2002-16 du 18 Octobre 2004 définit le régime de protection pour la faune du Bénin, et définit le régime de classification pour les espèces du Bénin, comprenant trois catégories : espèces intégralement protégées, espèces partiellement protégées et autres espèces. Le dernier décret d'application que nous avons pu trouver qui fixe les listes des espèces dans chaque catégorie est le décret No. 394-2011 du 28 Mai 2011. Pourriez-vous confirmer si ceci est le décret le plus à jour détaillant les espèces dans chaque catégorie, et qui demeure en vigueur ?	**Oui ce décret No. 394-2011 du 28 Mai 2011 est toujours en vigueur mais pour les espèces classées dans les annexes de la CITES, la loi N°2021-04 du 8 juillet 2021 portant protection et règles relatives au commerce international des espèces de faune et de flore sauvages menacées d'extinction en République du Bénin a repris les catégorisations en respectant les annexes. (Article 26 de la loi)** **Annexe1 CITES = Espèce de première catégorie** **Annexe2 CITES = Espèce de deuxième catégorie** **Annexe3 CITES = Espèce de troisième catégorie** **Egalement la loi précise qu'en cas d'amendements aux annexes I, II ou III de la CITES adoptés par la Conférence des Etats parties à la CITES postérieurement à l'entrée en vigueur de la loi, la liste des espèces de première, deuxième et troisième catégories est actualisée par décret pris en Conseil des ministres**
5	K. homeana semble être catégorisé comme espèce de l'Annexe III (espèce de "petit gibier" non protégée) dans le décret No. 394-2011 du 28 Mai 2011. Pourriez-vous clarifier si ceci implique que la chasse de cette espèce est autorisée dans toutes zones sauf les aires protégées ?	**La loi N°2021-04 du 8 juillet 2021 portant protection et règles relatives au commerce international des espèces de faune et de flore sauvages menacées d'extinction en République replace K. homeana dans sa catégorie CITES. En effet cette loi définit trois catégories mises en parallèle avec les annexes de la CITES. Ainsi une espèce comme K. homeana inscrite en annexe II de la CITES est systématiquement priss en compte dans les espèces de**

		deuxième catégorie au Bénin. Sur cette base les espèces de l'annexe II du décret No. 394-2011 du 28 Mai 2011 appartenant à l'annexe II de la CITES sont désormais considérées comme de la deuxième catégorie dans la législation béninoise. Egalement les espèces inscrites dans le décret No. 394-2011 du 28 Mai 2011 ne sont pas figées ; il est prévu leur actualisation comme il est prévu l'actualisation des espèces de première, deuxième et troisième catégorie de la loi CITES.
6	Les fiches d'information pour toutes les trois espèces notent que la collecte des femelles gravides est interdite. Pourriez-vous clarifier quel morceau de législation détaille cette restriction, et, si possible, nous fournir une copie de cette législation ? Nous remarquons que, d'après l'article 33 de la Loi No. 2002-16 du 18 Octobre 2004, les femelles et jeunes d'espèces partiellement protégées sont entièrement protégées, mais que cette protection semble être limitée aux espèces inscrites en catégorie B du décret No. 394-2011 du 28 Mai 2011.	**Il s'agit de l'article 70 de la loi 2002-16 du 18 Octobre 2004. Cet article interdit de chasser les femelles en gestation, les animaux suitées et les jeunes en plus des dispositions de l'article 33. Même si cette protection semble à priori être limitée aux espèces inscrites en catégorie B du décret No. 394-2011 du 28 Mai 2011, les autres espèces non listés bénéficient d'une protection au même titre lorsqu'il est question de leur commerce international.**
7	Pourriez-vous confirmer si la Loi No. 87-014 portant réglementation de la protection de la nature et de l'exercice de la chasse en République Populaire du Bénin reste en vigueur ?	**La loi est toujours en vigueur mais abrogée en ses dispositions contraires aux dispositions nouvelles des lois postérieures notamment la loi 93 sur les forêts, la loi 2002 sur la faune et la lai 2021 sur la CITES**
8	La fiche d'information pour C. senegalensis indique que la taille de la population pour cette espèce est estimée à "plus de 10000". Pourriez-vous préciser sur quelles données cette estimation est-elle basée ?	**Ce sont les données d'enquête auprès des chasseurs et des populations riveraines. En absence de données écologiques sur la taille de la population d'une espèce, nous nous basons, avec une marge d'erreur, sur l'estimation des populations locales qui sont souvent en contact avec l'espèce.**

		En 2022, nous allons initier et rechercher un financement pour une étude sur le dénombrement, la distribution et les facteurs de menaces des populations sauvages de 4 espèces de CITES
9	Les fiches d'information notent que les mesures de suivi de la récolte pour C. gracilis, C. senegalensis et K. homeana incluent l'adhérence à un système d'autorisations (voir la section sur le Monitoring de la récolte). Pourriez-vous clarifier si ce système d'autorisation s'applique seulement à la récolte pour l'exportation, ou si ceci inclut aussi la récolte pour le commerce et l'usage intérieur ?	**Le système d'autorisation s'applique pour la récolte quel que soit la destination des produits. Donc, même pour le commerce à usage interne, une autorisation est requise.**
10	La section détaillant le système de suivi de la récolte fait référence à des normes de récolte, y compris l'âge, le sexe et l'état des femelles. Pourriez-vous confirmer si ces normes de récolte sont actuellement appliquées, et fournir plus de détails sur quels individus sont permissibles d'être récoltés, y compris ceux qui peuvent être récoltés pour les opérations de ranching ? Les normes de récoltes incluent-elles des limites de taille ? Les normes sont-elles les mêmes pour les trois espèces ?	**Nous confirmons que les normes énoncées sont toujours en vigueur et bien appliquées au niveau Bénin.** **Les autorisations de récolte sont données au cas par cas, tenant compte de la destination des récoltes.** **S'agissant des normes par exemple, quel que soit la destination, il est interdit de récolter les femelles gravides.** **Toutes les espèces peuvent être récoltées sous des conditions spéciales**
11	Y a-t-il des estimations des taux actuels de prélèvement pour les trois espèces, y compris les individus récoltés pour le commerce intérieur, et/ou ceux récoltés pour le ranching ou les opérations d'élevage en captivité ?	**Les mesures strictes d'interdiction mises en place ne permettent pas les récoltes même pour des besoins de commerce intérieur. Les textes législatifs et règlementaires permettent de réprimer les contrevenants.**
	Étant donné qu'aucune étude sur la population n'a été effectuée pour ces espèces au Bénin, y a-t-il des plans pour effectuer de telles études de terrain dans un future proche ?	• **L'université d'Abomey Calavi à travers le Laboratoire d'Ecologie Appliquée et l'Institut National de Recherche Agronomique s'engagent à accompagner pour la réalisation de cette étude.**

	Oui, il existe des plans	**Bien évidemment, il faudra assurer de façon conjointe la mobilisation des ressources.** • **le Secrétariat de la CITES a ouvert un appel à candidature pour conduire de telles études dans les pays de l'Afrique de l'Ouest et du Centre**
12	Les fiches d'information pour C. gracilis et C. senegalensis notent que le Décret No. 90-366 (1990) spécifie que des permis sont nécessaires pour détenir des caméléons en captivité, et détaille la documentation nécessaire pour les établissements d'élevage. Pourriez-vous confirmer si ce décret est encore en vigueur, et le cas échéant, fournir plus de détails sur la manière dont les permis sont délivrés ?	**Les conditions d'élevage et de détention des espèces protégées ont été affinées avec la prise de la N°2021-04 du 8 juillet 2021 portant protection et règles relatives au commerce international des espèces de faune et de flore sauvages menacées d'extinction en République du Bénin. Actuellement les décrets d'application sont en cours d'élaboration.**
13	La plupart de l'information fournie concernant le ranching et l'élevage en captivité pour les trois espèces date de 2003 et 2006. Y a-t-il des informations plus récentes concernant le ranching et l'élevage en captivité de ces espèces (telles que le nombre d'établissements produisant chaque espèce, des chiffres d'inventaires, les niveaux de production, le taux de survie des spécimens femelles utilisés dans les opérations de ranching, le pourcentage de juvéniles relâchés dans la nature à la fin de la saison, et les systèmes utilisés pour réguler la capture de spécimens sauvages pour améliorer le stock de géniteurs), ainsi que l'impact de ces activités sur les populations sauvages ?	**En avril 2021, l'organe de gestion CITES a pu prendre part à la formation organisée par le secrétariat CITES sur l'application des codes sources et le suivi des ranchs d'élevage. Sur cette base une mission de suivi a été effectuée en août 2021 pour faire le point des sites de détention et évaluer le cheptel disponible en vue d'établir une situation dé référence. Les statistiques sur la biologie des espèces étant mal renseignées par les promoteurs aucune de ces données n'existe réellement permettant de faire un suivi assez rigoureux. Nous sommes cependant à pieds d'œuvre pour la mise en place d'une base de données permettant un suivi rigoureux.**

14	Si l'exportation de spécimens issus du ranching ou élevés en captivité est proposée, quelles mesures de contrôle sont prévues pour différencier entre des individus issus du ranching et des individus capturés dans la nature, pour garantir que les exportations autorisées de spécimens issus du ranching ne soient pas augmentées par des individus sauvages mal déclarés ?	**Un mécanisme de contrôle est préconisé :** **Primo : Seuls les éleveurs identifiés comme ayant les spécimens dans leur élevage seront autorisés** **Secundo : une fiche de prélèvement sera contresignée par l'agent forestier compétent avec un point du stock disponible** **Tertio : les éleveurs devront fournir un point mensuel de la situation de leur cheptel sous le contrôle d'un agent forestier**
15	En tant que gestionnaires de la Base de données sur le commerce CITES au nom du Secrétariat CITES, nous avons quelques questions concernant le rapport annuel CITES du Bénin pour 2012, pour lesquelles nous souhaiterions votre aide. Nous avons joint le rapport annuel original avec les entrées pertinentes surlignées en jaune pour référence : Chamaeleo senegalensis : dans les rapports annuels du Bénin, il semble que la colonne 'Total exporté sur quota' donne des sous-totaux sur chaque ligne pour le nombre de spécimens d'une espèce associés avec le numéro de permis. Nous remarquons que sur la page 11 du rapport annuel 2012, le sous-total du quota pour C. senegalensis donné sur la ligne pour le permis no. 071/12-P est 1980/4000. Le prochain permis pour l'espèce, permis no. 072/12-P, a la quantité 1100 en gras, mais le sous-total du quota donné est 2080/4000 (soit une augmentation de 100 seulement). Nous vous serions reconnaissants si vous pouviez nous confirmer la quantité pour le permis 072/12-P ?	**Nous confirmons que la quantité exportée est bien de 100 une erreur a dû se glisser sur le report de la quantité exportée. Nous en voulons pour preuve, l'évolution du quota exporté qui est passé de 1980 sur le permis 71/12-P à 2080 sur le permis 72-12 et de 2180 sur le permis 073/12-P ; et ainsi de suite pour les autres permis relatifs à l'espèce**

	Permis marqués 'renouvellement' : il y a plusieurs permis sur la page 14 du rapport annuel de 2012 avec 'Renouvellement' dans la colonne 'Remarques'. Nous remarquons que lorsque cette remarque est présente, ces transactions semblent ne pas être inclues dans les sous-totaux des quotas pour l'espèce pour chaque entrée. Pourriez-vous confirmer si ce commerce a eu lieu ?	**Le renouvellement ne porte pas sur de nouvelles espèces mais sur les mêmes espèces inscrites sur le permis renouvelé. Donc les quantités sur les permis renouvelés ne sont pas comptabilisées dans les sous totaux. Le commerce a bien eu lieu mais une fois que la quantité est prise en compte en cas de renouvellement cela ne change pas les sous totaux pour éviter le double comptage.**
16	Nous notons qu'il y a une Liste rouge nationale pour le Bénin produite en 2011 – pourriez-vous nous en fournir une copie ? ?	**Oui, une Liste rouge nationale pour le Bénin produite en 2011. Il s'agit de https://www.nationalredlist.org/protection-de-la-nature-en-afrique-de-louest-une-liste-rouge-pour-le-benin-nature-conservation-in-west-africa-red-list-for-benin-2011/** **Une nouvelle version de la Liste rouge est en préparation par le Laboratoire d'Ecologie Appliquée**

REPUBLIQUE DU BENIN

MINISTERE DU CADRE DE VIE ET DU DEVELOPPEMENT DURABLE

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RAPPORT

MISSION DE SUIVI ET D'INSPECTION DES ETABLISSEMENTS D'ELEVAGE EN RANCHS ET EN CAPTIVITE DES SPECIMENS REGIS PAR LA CONVENTION SUR LE COMMERCE INTERNATIONAL DES ESPECES DE FAUNE ET DE FLORE SAUVAGES MENACEEES D'EXTINCTION (CITES)

2021

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1- OBJECTIFS ET DEROULEMENT DE LA MISSION

1.1 - JUSTIFICATION ET COURT HISTORIQUE DE LA PROBLEMATIQUE

Le Bénin a adhéré à la Convention CITES le 28/02/1984 et l'a ratifiée le 28/05/1984. En tant qu'organe de gestion de la CITES, la DGEFC est chargée de la mise en œuvre de la convention au niveau national et du suivi rigoureux des sites élevages.

La vente de spécimens CITES vivants sur le marché international est une activité lucrative et l'ampleur de ce commerce a engendré des interactions qui dépassent largement le cadre des frontières du pays.

Plutôt que d'être prélevés directement dans la nature, les animaux commercialisés en vertude la Convention sur le commerce international des espèces de faune et de flore sauvagesmenacées d'extinction (CITES) proviennent de plus en plus souvent des sites dans lesquelsces animaux élévé, même si les parents des spécimens commercialisés avaient été prélevésdans la nature.

Les animaux reproduits ou élevés dans un milieu captif contrôlé indépendants des populations sauvages à l'exception de l'acquisition occasionnelle de spécimens sauvages aux fins d'éviter la consanguinité, peuvent faire l'objet d'un commerce qui ne porte pas préjudice aux populations sauvages. Dans le cas des espèces menacées, le commerce d'espèces reproduites en captivité, du fait qu'il réduit les prélèvements de spécimens sauvages, peut se révéler bénéfique pour le rétablissement et la conservation de populations sauvages fortement amoindries. De même, l'élevage en ranch d'espècesdestinées au commerce, à partir d'œufs ou de juvéniles qui auraient de très faibles chances de survie dans la nature et qui, après prélèvement, sont élevés en captivité, constitue un système de production sûr du point de vue biologique et susceptible de bénéficier à la conservation des populations sauvages.

Toutefois, si les sites d'élevage en captivité ou en ranch ne font pas l'objet de contrôles adéquats, il existe une possibilité réelle qu'ils reçoivent et "blanchissent" des spécimens prélevés illégalement dans la nature. Pour prévenir ce phénomène, il est important que l'organe de gestion CITES conduise des inspections régulières et efficaces de tous les sitesqui, produisent des spécimens à des fins commerciales et de conservation.

L'équipe de l'Organe de gestion qui conduit ladite inspection a été accompagnée d'un représentant de l'inspection forestière en fonction de chaque zone où a été identifié le site.Ainsi donc la liste des sites identifiés est établie de même que le point des espèces élevé par ses sites.

1.2- DEROULEMENT DE LA MISSION

La mission de suivi des sites d'élevage des spécimens CITES a été effectué en deux phasesd'une durée de 5 jours chacune qui ont permis de parcourir les sites présentés dans le tableau ci-joint.

Inspection Forestière	Sites à visiter
Ouémé/Plateau	Site touristique du commandant Faurax Ferme DAREF Maison DEGBEDJI Complexe scolaire la Rosette TGF/Bénin
Zou (Zagnanando et Zakpota)	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
Zou (Abomey et Bohicon)	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
Mono Couffo	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
Atlantique Littoral	WAAP reptiles Credi ONG GMC SARL Ferme AGOUA
Collines	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
Borgou	IF Borgou ; Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
DONGA	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation
ATACORA	Ferme des autruches

Inspection Forestière	Sites à visiter
	Installations privées de détention d'espèces sauvages à but de tourisme et de conservation

1.3- COMPOSITION DE LA MISSION

La composition de l'équipe de la mission est la suivante :

- Lieutenant-colonel SOSSA Barnabé, Directeur Technique (DPCEFC), il est le chef de mission.
- Capitaine KOROGONE Sinagabé Ulysse, Point Focal CITES/Bénin; Chef service politique Accord et convention ; il est chargé de l'identification des spécimens et de l'analyse des sites d'élevage et de l'état des espèces identifié sur les sites au cour de la mission
- Sous-lieutenant VIGNIKIN Valentin, Chef Division Accord et convention ; il est chargé de la prise de note et du comptage des spécimens au cour de la mission

1.4- OBJECTIFS DE LA MISSION

L'objectif global de cette mission était de faire le suivi et l'inspection des sites d'élevage des spécimens régis par la convention sur le commerce International des espèces de fauneet de flore sauvages menacées d'extinction (CITES).

Spécifiquement, il s'agissait de :

- Recenser les sites fonctionnels d'élevage des spécimens CITES ;
- Mettre à jour la liste des différentes espèces faisant l'objet d'élevage ;
- Inspecter les conditions d'élevage des spécimens CITES par les sites ;
- Echanger sur les enjeux et le rôle des différents éleveurs de spécimens CITES dans le respect des normes internationales régissant le commerce des animauxsauvages ;

2- RESULTATS

Avant le démarrage de la mission un contact a été pris avec responsables des sites d'élevage des espèces sauvage à travers les inspections forestières respectives afin de s'assurer de l'accessibilité des sites et de la présence des différents acteurs.

2.1- PRESENTATION DES SITES DE PRODUCTION AU BENIN

Les sites d'élevage de spécimen CITES au Bénin sont pour la plupart localisés au sud du pays et assez loin de la capitale, ce qui rend les opérations de contrôle par les autorités CITES plus difficiles par manque de moyens matériels.

Plusieurs structures ou site d'élevage ont été recensé, au total 21 site sur toute l'étendue du territoire national dont 17 au sud et 04 au Nord. Ces sites d'élevage fonctionnent en fonction des objectifs qui se sont fixé, répartir comme un élevage à but commercial, de conservation, et du tourisme.

En ce qui concerne le personnel de ses sites d'élevage, retenons que tous les sites font appel à de la main d'œuvre occasionnelle pour le suivi des espèces.

Les productions les plus importantes, en terme de nombre d'individus exportés (commercialisé) selon les éleveurs, concernent le Python royal, *Kinixys belliana*, K*. erosa*, *K. homeana, Varanus exanthematicus, V. niloticus, Calabaria reinhardtii, et P. sebae.*

2.1.1- SITE DU SUD AU BENIN

a- *Site de CREDI – ONG*

Le Centre Régional de Recherche et d'Education pour un Développement Intégré (CREDI- ONG) est une association béninoise née officiellement en 2005. Il a pour mission decontribuer à l'émergence d'une génération de "citoyennes du monde" aptes à proposer et/ou mettre en œuvre des solutions locales et durables pour un développement humain respectueux de la Nature.

Cette organisation dispose d'un site d'élevage d'espèces sauvage dont le but premier est la conservation et le tourisme. Ce site d'élevage dispose des espèces CITES de mammifèreet reptile dont la liste est précisée dans le tableau en dessous.

Nom scientifique de l'espèce	**Code source**	**Atlantique**				
		CREDI-ONG				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Tantale ibis (*Mycteria ibis*)	R	prélevé dans la nature	conservation	adultes	BONNE	1
Patas *(Erythrocebus patas)*	R	prélevé dans la nature	conservation	adultes	BONNE	1

Python des rocher *(python sebae)*	R	prélevé dans la nature	conservation	couple	bonne	1
crocodile du Nil (*Crocodylus niloticus*)	R	prélevé dans la nature	conservation	couple		2
crocodile nain (*Osteolaemus tetraspis*)	R	prélevé dans la nature	conservation	couple	bonne	2
Varan (varnus)	R	prélevé dans la nature	conservation	couple		2
Vipère (*Bitis arietans*)	R	prélevé dans la nature	conservation		BONNE	1
Cobra cracheur (*Naja nigricollis)*	R	prélevé dans la nature	conservation	adultes	BONNE	2
Cobra mordeur (Naje haje)	R	prélevé dans la nature	conservation	adultes	BONNE	2
Phyloptane tacheté	R	prélevé dans la nature	conservation	adultes	BONNE	1
Mamba vert *(Dendroaspis angusticeps)*	R	prélevé dans la nature	conservation	adultes	BONNE	1
Hepsidoptris	R	prélevé dans la nature	conservation	adultes	BONNE	3
Tragelaphus (*Tragelaphus spekii)*	R	prélevé dans la nature	conservation	adultes	BONNE	1
Civette (civetta civetta)	R	prélevé dans la nature	conservation	adultes	BONNE	3
Tortue molle	R	prélevé dans la nature	conservation	adultes	BONNE	4

b- *Site d'AGOUALAND*

Le site d'AGOULAND est un parc zoologique et de divertissement qui compte plusieurs espèces animales et qui est situé dans la ville d'Abomey Calavi au BENIN. On y retrouve desmammifères et bien aussi des reptile et oiseaux de différentes espèces. Le tableau ci- dessous présent la liste des espèces présente sur ce site.

Nom scientifique de l'espèce	**Code source**	**Atlantique**				
		AGOUALAND				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Autriche	W	ranching	conservation/tourisme	adulte	bonne	4
Babouin *(Papio anubis)*	W	ranching	conservation/tourisme	adulte	bonne	3
Python royal (*Python regius*)	W	ranching	conservation/tourisme	adulte	bonne	4

Tortue (*Geochelone sulcata*)	W	ranching	conservation/tourisme	couple	bonne	5
Vipère (*Bitis arietans*)	W	ranching	conservation/tourisme	adulte	bonne	5
Cobra mordeur (*Naje haje*)	W	ranching	conservation/tourisme	adulte	bonne	2
Pelican	W	ranching	conservation/tourisme	adulte	bonne	13
Perroquet youyou	W	ranching	conservation/tourisme	couple	bonne	2
Aigle noir	W	ranching	conservation/tourisme	adulte	bonne	1
Marabout d'afrique	W	ranching	conservation/tourisme	adulte	bonne	5
Lion	W	captivité	conservation/tourisme	couple blanc et couple fauve	bonne	4
Hyenne tacheté	W	ranching	conservation/tourisme	couple	bonne	1
Cigogne	W	ranching	conservation/tourisme	adulte	bonne	1
Lynx	W	ranching	conservation/tourisme	adulte	bonne	1
Gris couronne	W	ranching	conservation/tourisme	adulte	bonne	2
Civette (*Civetta civetta*)	W	ranching	conservation/tourisme	adulte	bonne	1
Charognard	W	ranching	conservation/tourisme	adulte	bonne	1
Perroquet gris	W	ranching	conservation/tourisme	couple	bonne	4
Scorpion	W	ranching	conservation/tourisme	adulte	bonne	15
Phacochère	W	ranching	conservation/tourisme	adulte	bonne	1
Couleuvre	W	ranching	conservation/tourisme	adulte	bonne	1

c- *Site de la société WAPP Reptiles*

Situé dans la commune de Sèmé Podji, le centre de la société WAPP REPTILES est un site d'élevage à vocation commercial. La liste des espèces commercialisées au niveau de ce site sont dans le tableau ci-dessous. Cet exportateur est également un partenaire de l'organe de gestion pour la conservation et la gestion de spécimens saisis.

Nom scientifique de l'espèce	**Code source**	**Ouémé**				
		WAPP Reptiles : AZANKPO : 99542378				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Patas (*Erythrocebus patas*)	W	captivité	commerce	femelle et mâle	bonne	2
Mona (*Cercopithecus mona*)	W	captivité	commerce	femelle et mâle	bonne	5

Python royal (Python regius)	R	Ranching	commerce	femelle et mâle	bonne	4
Geochelone sulcata	W	captivité	commerce	femelle et mâle et des petits	passable	30
Taline sultane	W	Ranching	commerce	femelle et mâle	bonne	6
Pelican	W	captivité	commerce	femelle et mâle	bonne	5
Platalea leucorochia	W	captivité	commerce	femelle et mâle	bonne	2
Plectropterus gambensis	W	captivité	commerce	femelle et mâle	bonne	13
ratel (*Mellivora capensis*)	W	captivité	commerce	femelle et mâle	bonne	6
Theratopius ecaudatus	W	captivité	commerce	femelle et mâle	bonne	9
Perroquet youyou	W	captivité	commerce	femelle et mâle	bonne	5
Vervet (cercopithèques)	W	captivité	commerce	femelle et mâle	bonne	3
Potto (potto perodicticus)	W	captivité	commerce	femelle et mâle	bonne	8
Aigle noir	W	captivité	commerce	femelle et mâle	bonne	2
Marabout d'afrique	W	captivité	commerce	femelle et mâle	bonne	10
Tortue (*Kinixys homeana*)	W	captivité	commerce	femelle et mâle	bonne	14
Porc epic	W	captivité	commerce	femelle et mâle	bonne	1
Tortue (Kinixys belliana)	W	captivité	commerce	femelle et mâle	bonne	5
Varan orné (Varan ornatus)	R	ranching	commerce	femelle et mâle	bonne	3

d- *Site BOTON*

Le site de monsieur BOTON Germain est installé dans la commune de Bonou. Il s'agit d'un un site personnel à vocation non commercial mais par la passion de vivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique. Le centre est à proximité d'un site touristique lié à la tombe d'un capitaine français tombé lors d'une bataille avec les amazones.

	Code source	**ouémé**
		BOTON GERMAIN : 97939315

Nom scientifique de l'espèce		provenance	Destination	Description du spécimen	condition de détention	Quantité
Mona (*Cercopithecus mona*)	W	prélevé dans la nature	conservation/tourisme	mâle	bonne	1
crocodile du nil (*Crocodylus niloticus*)	W	prélevé dans la nature	conservation/tourisme	besoin de soin	passable	9

e- SITE DAREF

Le site de DAREF est un site personnel à vocation non commercial mais par la passion de vivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique

Nom scientifique de l'espèce	Code source	Ouémé				
		DAREF : 62004044				
		provenance	Destination	Description du spécimen	condition de détention	Quantité
Grocodile	W	Prélevé dans la nature	conservation	L'un a deux membres cotés gauche amputé	bonne	2

f- SITE DAH AHONLIHOSSOU

Le site de DAH AHONLIHOSSOU est un site personnel à vocation non commercial mais parla passion de vivre en compagnie avec les espèces sauvage a été installé dans la communede Zagnanando. Il est donc à but domestique.

Nom scientifique de l'espèce	Code source	Ouémé			
		DAH AHONLIHOSSOU			
		provenance	Description du spécimen	condition de détention	Quantité
crocodile du nil (*Crocodylus niloticus*)	W	Prélèvement dans la nature	bien portant	Bonne	1

g- SITE DE OREKAN

Le site de OREKAN est un site personnel à vocation non commercial mais par la passion devivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique.

Nom scientifique de l'espèce	Code source	Ouémé				
		Ms OREKAN : 97414780				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
crocodile du nil (Crocodylus niloticus)	W	Prélevé dans la nature	Conservation	animaux vigoureux	Bassin étroit	5

h- SITE CAFOZA

Le site de CAFOZA est un site personnel à vocation non commercial mais par la passion devivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique.

Nom scientifique de l'espèce	**Code source**	**Ouémé**				
		CAFOZA				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
crocodile du nil (*Crocodylus niloticus*)	W	Prélevé dans la nature	Tourisme/conservation	Pas de contact visuel	bassin mal entretenu, médiocre	Aucun contact visuel

i- SITE HOTEL MANEL LOKOSSA

Le site de L'hôtel Manel Lokossa est un site touristique à vocation non commercial. Il estdonc à but touristique.

Nom scientifique de l'espèce	**Code source**	**Mono**				
		Hotel manel lokossa				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Géochelone sulcata	W	Prélevé dans la nature	Tourisme	adultes	Bonne	9

j- *Site GNIMADJI*

Le site de Monsieur Gnimadi est situé dans la ville de Bohicon. Il s'agit d'un site personnel à vocation non commercial mais par la passion de vivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique.

Nom scientifique de l'espèce	zou				
	GNIMADJI Dominique :97285156				
	provenance	Description du spécimen	Destination	condition de détention	Quantité
crocodile du nil (*Crocodylus niloticus*)	prélevé dans la nature	en couple	Conservation	bassin comblé	2

k- *Site zoo club*

Le site de ZOO CLUB est un site d'élevage à vocation commercial. Il est donc à but commercial.

La liste des espèces commercialisées au niveau de ce site sont dans le tableauci-dessous.

Nom scientifique de l'espèce	Code source	ZOU				
		ZOO CLUB				
		provenance	destination	Description du spécimen	condition de détention	Quantité
Patas *(Erythrocebus patas)*	w	ranching	conservation	specimen vivant	bonne	4
Python royal (python regius)	R	prélevé dans la nature (ranching)	commerce	juvenile	bonne	40
Geochelone sulcata	W	Repropducteur prélevé dans la nature	commerce	en bonne forme	Bonne	140
Hibou	W	ranching	conservation	bonne	couple	2
Tortue molle	W	captivité	commerce		Bonne	720

I- SITE MAHUGNON FILS

Le site de Mahugnon et fils est un site d'élevage à vocation commercial. Il est donc à but commercial. La liste des espèces commercialisées au niveau de ce site sont dans le tableauci-dessous.

nom scientifique de l'espèce	Code source	zou				
		MAHOUGNON FILS/ 95862974				
		provenance	Destination	Description du spécimen	condition de détention	Quantité
Python royal (python regius)	R	Ranching	commerce	reproducteur en nombre important	Bonne	35
Python des rocher (python sebae)	W	captivité	commerce	rien que des bébés	bonne	20

Geochelone sulcata	W	Ranching	commerce	plus de mâle que femelle		32
Varan orné (varanus ornatus	R	Ranching	commerce	adultes et juvéniles	bonne	14
Geco de brousse	W	Prélevé dans la nature	commerce	sexe indéterminé	bonne	5

m- *Site DAKO WEGBE*

Le site de DAKO WEGBE est un site personnel à vocation non commercial mais par la passion de vivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique.

nom scientifique de l'espèce	**Code source**	**zou**				
		DAKO WEGBE				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Geochelone sulcata	W	ranching	conservation		bonne	1
Cynocephale	W	ranching	conservation	mâle	bonne	1
Ecuireil fouisseur	W	ranching	conservation	mâle	bonne	1
Perroquet youyou	W	acquis en bordure de route à cotonou	conservation	sexe indéterminé	bonne	3
Vervet (cercopithèques)	W	ranching	conservation	femelle	bonne	1
Patas *(Erythrocebus patas)*	W	ranching	conservation	femelle	bonne	4
crocodile du nil (*Crocodylus niloticus*)	W	ranching	conservation	adultes et juveniles	bonne	10

n- SITE AZARTH

Le site d'AZARTH FARM est un site d'élevage à vocation commercial. Il est donc à but commercial. La liste des espèces commercialisées au niveau de ce site sont dans le tableauci-dessous.

Nom scientifique de l'espèce	Code source	zou				
		AZARTH				
		provenance	Destination	Description du specimen	condition de detention	Quantité
Python royal (Python regius)	R	RANCHING	commerce	FEMELLES	TRES BONNE	5
Kinixys belliana	W	CAPTIVITE	COMMERCE	PLUS D'ADULTES	BONNE	403
Geco de brousse	W	PRELEVEE DANS LA NATURE	commerce	sexe indeterminé	bonne	60
Lamprophis fuliginosus	W	PRELEVEE DANS LA NATURE	commerce			60
Mehelya poensis	W					6
Causus maculatus	W	PRELEVEE DANS LA NATURE	COMMERCE			1
Scabra/dasypeltis	W	PRELEVEE DANS LA NATURE				60

o- SITE GMC SARL

Le site de GMC SARL est un site d'élevage à vocation commercial. Il est donc à but commercial.

La liste des espèces commercialisées au niveau de ce site sont dans le tableauci-dessous.

Nom scientifique de l'espèce	Code source	ZOU				
		GMC SARL				
		provenance	Desination	Description du specimen	condition de detention	Quantité
Python royal *(Python regius)*	R	captivité	commerce	géniteur	bonne	1700
Geochelone sulcata	W	captivité	commerce	adultes et petits	bonne	25
Kinixys belliana	W	capivié	commerce	en bonne santé	passable	20
Varanus ornatus	R	ranching	commerce	bien portant	bonnes	1
Geco de brousse	W	ranching	commerce	bien portant	bonne	200
Serpent mangeur d'oeuf (*Dasypeltis scabra)*	W	ranching	commerce		bonne	40
Syncopus	W	ranching	commerce	importé	bonne	40
Uromastyx	W		commerce		bonne	150
Varanus niloticus	R	captivité	commerce	femelle et mâles bien portant	bonne	15
Tortue molle	W	captivité	commerce	aménagement nécéssaire	bonne	400

Kinixys homeana	W	ranching	commerce	en couple	bonnes	2
Varanus exanthematicus	R	ranching	commerce	bien portant	bonnes	42
Couleuve	W	ranching	commerce		BONNE	50
Serpent d'eau	W	ranching	commerce	bonne condition	bonne	15
Serpent de maison	W	ranching	commerce	sex indéterminé	bonne	30

2.1.2- SITE DU NORD AU BENIN

a- SITE IF BORGOU

Le site de l'Inspection Forestière est un site Etatique à vocation non commercial mais pourla conservation. La plupart des espèces présentes sont à but de conservation.

Nom scientifique de l'espèce	**Code source**	**Borgou**				
		IF -Borgou				
		provenance	**Destination**	**Description du specimen**	**condition de detention**	**Quantité**
Patas *(Erythrocebus patas)*	W	ranching	conservation	adulte	passable	1
crocodile du nil (*Crocodylus niloticus*)	W	ranching	conservation	adulte	bonne	12
Geochelone sulcata	W	ranching	conservation	adulte	bonne	9

b- *SITE TESSIER Véronique*

Le site de Tessier est un site personnel à vocation non commercial mais pour la conservation. La plupart des espèces présentes sont récupérer auprès des citoyens (détenteur non agréer) en vue de procéder aux lâcher après un apport de soin adéquat. Les espèces présentes sont listées dans le tableau ci-dessous.

Nom scientifique de l'espèce	**Code source**	**Donga**				
		TESSIER Véronique				
		provenance	**Destination**	**Description du specimen**	**condition de detention**	**Quantité**
Tantale ibis (*Mycteria ibis*)	W	ranching	conservation	femelle et mâle adulte	bonne	12
Patas *(Erythrocebus patas)*	W	ranching	conservation	femelle et mâle adulte	bonne	41
Mona (*Cercopithecus mona*)	W	ranching	conservation	femelle et mâle adulte	bonne	6
Cephalophe	W	ranching	conservation	femelle et mâle adulte	bonne	3
Papio anibus	W	ranching	conservation	Femelle et mâle adulte	bonne	18

c- *SITE EMPIRE D'Autriche*

Le site de EMPIRE Autriche est un site personnel à vocation non commercial mais pour la conservation. La plupart des espèces présentes sont à but de conservation et touristique.

Nom scientifique de l'espèce	**Code source**	**Atacora**				
		EMPIRE D'Autriche				
		provenance	**Destination**	**Description du specimen**	**condition de detention**	**Quantité**
Autriche	R	Elevage en captivité	conservation	adulte et petits	bonne	48

d- SITE PANDA DEGAULE

Le site de PANDA DEGAULE est un site personnel à vocation non commercial mais par la passion de vivre en compagnie avec les espèces sauvage a été installé. Il est donc à but domestique

Nom scientifique de l'espèce	**Code source**	**ATACORA**				
		PANDA DEGAULLE				
		provenance	**Destination**	**Description du spécimen**	**condition de détention**	**Quantité**
Patas *(Erythrocebus patas)*	W	ranching	conservation	adulte et petits	bonne	1
Papio anibus	W	ranching	conservation	adulte et petits	bonne	2
Python royal (Python regius)	W	ranching	conservation	adulte et petits	bonne	2
Python sebae	W	ranching	conservation	adulte et petits	bonne	1
Cobra	W	ranching	conservation	adulte et petits	bonne	1

La plupart des sites visités, leur état est moins acceptable ; néanmoins le besoin d'une formation est requis en ce qui concerne la présentation d'un site d'élevage d'espèces CITEScar la plupart des sites ne renferment pas les normes d'installation d'un site d'élevage CITES.

2- RECOMMANDATION

A l'issue de la mission, et suite aux différentes observations faites sur le terrain, l'équipe recommande :

- Il faudrait impérativement organiser des séances de formation des responsables de site d'élevage afin de les initier à la biologie des espèces qu'ils détiennent, leurs

besoins sanitaires en captivité, la disposition adéquate d'un site d'élevage, lagestion des stocks, les techniques de marquage, etc,

- La réorganisation et le suivi rigoureux des établissements d'élevage des spécimensCITES,
- la mise en place de l'autorité scientifique de la CITES au Bénin pour améliorer la collaboration avec l'organe de gestion et une mise en œuvre efficace des recommandations faites par le secrétariat de la convention,
- la mise en place du cadre législatif et juridique de la CITES au Bénin,
- l'accompagnement des Inspections Forestières dans le recensement à la base des éleveurs d'animaux sauvages et d'espèces CITES
- La Vulgarisation de la loi 2002-16 du 18 octobre 2004, portant régime de la faune enRépublique du Bénin et le décret n°2011-394 du 28 mai 2011 fixant les modalités de conservation, de développement et de gestion durable de la faune et de ses habitats en République du Bénin.
- L'implication des Inspection forestière dans la stratégie de contrôle en vue de réduire le commerce illégal des espèces prélevées dans la nature.

3- Conclusion

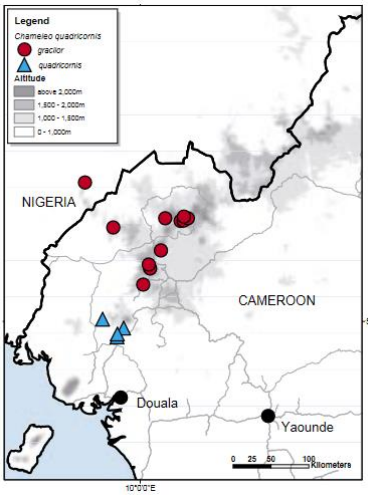
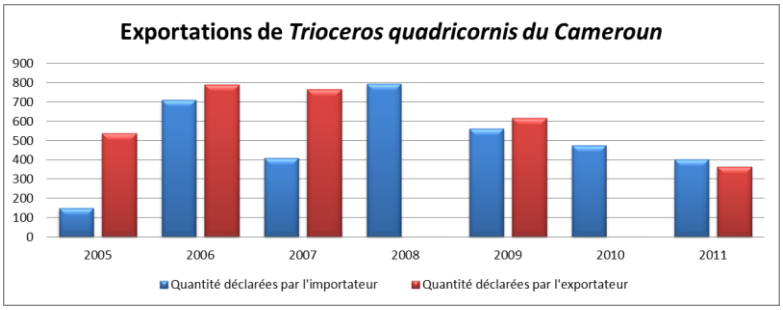
En définitif, la mission s'est déroulée d'une manière participative. Les différents acteurs rencontrés ont approuvé les objectifs visés par cette mission. Leur implication dans la mission a permis à l'équipe de recueillir le maximum d'informations et de s'imprég
d'élevage de spécimen CITES.

Le rapporteur

KOROGONE Sinagabé Ulysse

Cameroon

1. <u>Mises à jour des informations sur l'espèce et les avis de commerce non-préjudiciables</u>
   - **Veuillez fournir des informations relatives à l'espèce dans votre pays, y compris la répartition, la taille de la population, son statut et ses tendances, les menaces, les statistiques de commerce (y compris toute preuve de commerce illégal), la gestion et la surveillance des espèces et des populations, la réglementation de la récolte et du commerce des spécimens sauvages et la protection juridique, ou clarifier s'il n'y a aucune mise à jour.**

Répartition géographique	 Le *Trioceros quadricornis* est présent dans les régions du Sud-Ouest et du Nord-Ouest du Cameroun. Le Cameroun abrite 03 sous-espèces : - *Trioceros q. quadricornis* est présent dans sur les Mts Kupé, Manengouba, les collines Bakossi et au sud du sanctuaire à Faune de Banyang-Mbo à une altitude allant de 1800 à 2250 m. - *Trioceros q. gracilor* est présent sur les Mts Lefo, Bamboutos, Oku et les collines Mbulu de l'Ouest à une altitude allant de 1800 à 2400m. - *Trioceros q. eisentrauti* est une espèce endémique au Cameroun, uniquement rencontrée dans les collines Rumpi de la Région du Sud-Ouest à une altitude supérieure à 1000m.
Taille de la population, statut et tendances	Des études menées sur l'espèce, il ressort que les effectifs subissent une diminution drastique avec un taux de rencontre de : - 6 ind/hr dans les Mt Manengouba pour le *Trioceros q.quadricornis*, - 12 ind/hr dans les Mt Oku pour le *Trioceros q. gracilor* - Moins de 2 ind/hr pour le *Trioceros q. eisentrauti* (Source : Gonwouo, 2014)
Menaces	Les principales menaces qui pèsent sur l'espèce sont : - Destruction de l'habitat pour la mise en place des cultures - Pression démographique - Collecte comme animal de compagnie
Statistiques de commerce	

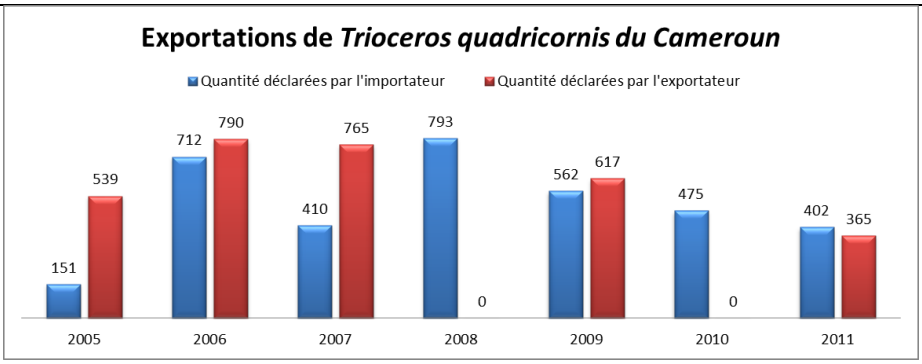
	Le tableau ci-dessus représente les données disponibles que le Cameroun à mise à la disposition du secrétariat CITES. En effet, depuis 2012 le *T. quadricornis* n'a pas fait l'objet de commerce international.
La réglementation de la récolte et du commerce des spécimens sauvages et la protection juridique	Le *T. quadricornis* est inscrit en Classe A « Espèce intégralement protégées » au Cameroun ce qui lui confère une protection maximale. Sa capture est assujettie à l'obtention préalable d'une Autorisation Spéciale du Ministère des Forêts et de la Faune.

- **Si vous considérez qu'un avis de commerce non-préjudiciable (ACNP) pour l'espèce peut à présent être fait conformément à l'Article IV, veuillez fournir des détails complets.**

A ce jour, un Avis de Commerce Non-Préjudiciable (ACNP) ne peut pas être émis pour l'espèce *Trioceros quadricornis*.

2. <u>Progrès sur les recommandations</u>
   - **Y a-t-il eu des progrès dans la mise en œuvre des recommandations adressées au Cameroun par le Comité pour les animaux ? Si oui, veuillez fournir tous les détails.**

Recommandations	
Dans les 90 jours, (avant le 31 août 2014), l'organe de gestion devrait fournir les informations suivantes au Secrétariat pour transmission au Comité pour les animaux, aux fins d'examen lors de sa 28e session : a) protection juridique dont bénéficie cette espèce au CM, et éclaircissements sur les circonstances dans lesquelles la politique actuelle autorise l'exportation de l'espèce ;	Le *Trioceros quadricornis* est inscrit en Classe A « Espèce intégralement protégées » au Cameroun par arreté n°0053/MINFOF du 1er avril 2020 fixant les modalités de répartition des espèces animales en classe de protection. Ce statut lui confère à cet effet protection maximale au niveau de la législation camerounaise. Sa capture est assujettie à l'obtention préalable d'une Autorisation Spéciale du Ministère des Forêts et de la Faune.
b) éclaircissements sur le commerce attesté de spécimens sauvages (selon les rapports du CM en 2005, 2006, 2007 et 2009, et selon les pays	

importateurs de 2005 à 2011) ;	 ….

- **Veuillez préciser si vous estimez que des progrès suffisants ont été réalisés pour envisager la levée de la recommandation de suspension du commerce et en fournir la justification.**

3. <u>Intérêt pour le commerce futur de l'espèce</u>
   - **Veuillez confirmer si le Cameroun a un intérêt dans le commerce international de l'espèce à l'avenir, ou confirmer que les exportations ne sont plus prévues, et en donner les raisons.**

   Au vu des dernières études sur l'espèce menées en 2016, le Cameroun ne souhaite pas pour l'instant ouvrir cette espèce au commerce international.

   Ce n'est qu'à la suite d'un nouvel état des lieux des populations de *Trioceros quadricornis* et la rédaction d'un ACNP que le Cameroun pourra penser à l'ouverture du commerce de ladite espèce.

4. <u>Difficultés à se conformer aux recommandations et identification des besoins</u>
   - Veuillez décrire toute difficulté rencontrée dans la mise en œuvre des recommandations du Comité pour les animaux, ainsi que les raisons sous-jacentes de ces difficultés.

     RAS

   - Veuillez identifier quel type de soutien (le cas échéant) serait nécessaire pour que le Cameroun puisse donner suite à l'ensemble des recommandations.

     N/A

Ghana

FORESTRY COMMISSION
(WILDLIFE DIVISION)

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Our Ref: WD/A.244/V01.18/59

Your Ref:.....

27TH APRIL, 2021

THE SPECIES PROGRAMME
UN ENVIRONMENT PROGRAMME
WORLD CONSERVATION MONITORING CENTRE
219 HUNTINGDON ROAD, CAMBRIDGE CB3 0DL,
UNITED KINGDOM

Dear Sir/Madam,

RE: REQUEST FOR INFORMATION ON SPECIES SUBJECT TO SUSPENSIONS

We refer to your letter dated March 26th, 2021 requesting for new information on species under trade suspensions from Ghana for inclusion into report to be reviewed by SC 74. Specifically, the letter requested for information on *C. gracilis* and *C. senegalensis*. However, given that *P. imperator* has also been under trade suspension since 2014, we provide information for all the three species. Our response is contained in the attached report as follows;

First, the report provides information and non-detriment findings on the three species under trade suspension (i.e. *C. gracilis, C. senegalensis and P. imperator*). For each of the species, the report provides information relating to the distribution, populations size, status and trends, threats, trade statistics (including evidence of illegal trade, species management and population monitoring, regulations of wild harvest and trade and legal protection in Ghana.

Second, it provides updates on progress made towards the implementation of the recommendation that were directed to Ghana by the Animals Committee. Ghana has proposed a comprehensive set of programs to ensure that the species survival is not threaten by international commercial trade should the recommendation to suspend species trade is lifted.

Third, it is the kind plead of Ghana for the CITES Standing Committee to lift the recommendation to suspend trade in the three species (*C. gracilis, C. senegalensis and P. imperator*) such that Ghana can restart international trade in the species. This time under strict population monitoring programs and tighter trade controls (quota systems, ranching and consignment monitoring).

Finally, the lack of adequate funding for wildlife trade monitoring and CITES implementation and low capacity of staff to conduct Non-Detriment Finding on species in international trade has been a major setback to the implementation of recommendations by the Animals Committee. We therefore appreciate the support received from the CITES secretariat in building the capacity of local team to conduct the Non-Detriment Finding for the species under trade suspension. We believe these types of capacity building program will support the Scientific and Management Authorities in the effective execution of their mandate under CITES. It is our strongest belief that the report will aid the CITES Standing Committee pass a favourable review of trade suspension of the three species from Ghana.

Thank you.

Yours faithfully,

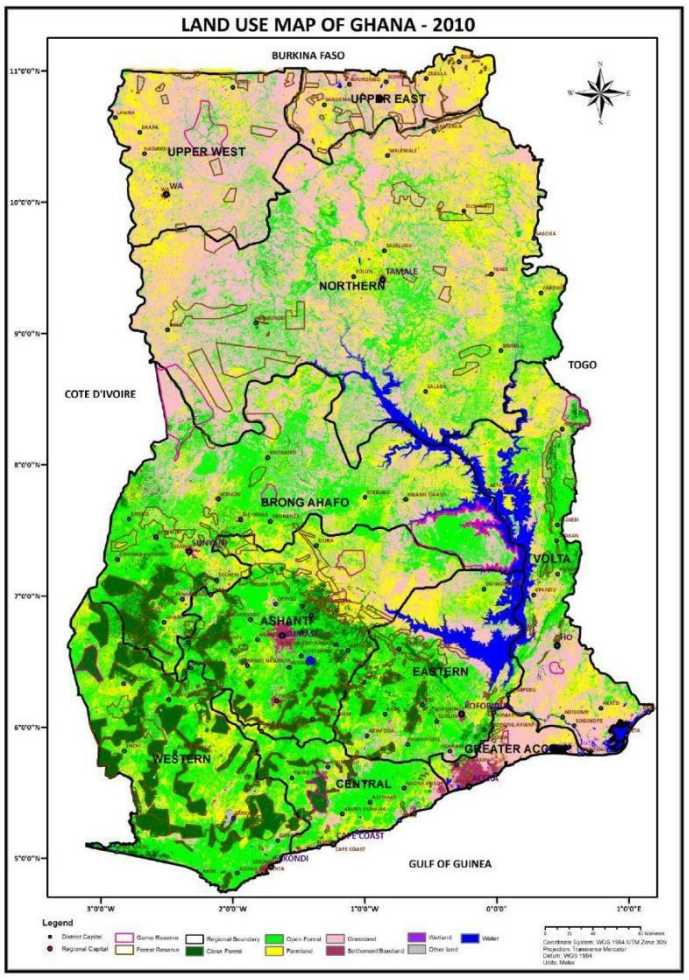
BERNARD ASAMOAH-BOATENG
(EXECUTIVE DIRECTOR)

VISION: To leave future generation and their communities with richer, better, more valuable forestry and wildlife endowments than we inherited.

Non-Detriment Finding Report for Species in International Tradefrom Ghana

(Chameleo gracilis, Chameleo senegalensis and Pandinus imperator)





Wildlife Division

April 2021

Acknowledgement

The CITES special training on Review of Significant Trade and conducting Non-Detriment Findingprovided by Dr. Daniel Natusch (IUCN Boa and Python Specialist Group) and Dr. Matthew Shirley(IUCN Crocodile Specialist Group) inspired the development of this report.

The team is particularly grateful to the Executive Director of the Wildlife Division Mr. Bernard Asamoah-Boateng for commissioning this work, and his unflinching support throughout the preparation of this report.

The team is also thankful to all the Wildlife Division staff and local hunters and traders used in thesurvey especially Mr. Jacob Oman for his unending support to the team in the preparation of this report. Special thanks to Mr. James Oppong. the Business Planning Manager at the Wildlife Division and Dr. Bright Kumordzi, Managing Consultant at Viridis Environmental Consult, Accrafor contributing immensely to developing this report.

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1.0 Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. Ghana rectified the convention in November 1975.

CITES works by subjecting international trade in specimens of selected species to certain controls. All import, export, re-export and introduction from the sea of species covered by the convention has to be authorized through a licensing system. According to Article IX of the convention, each party to the convention must designate one or more Management Authorities in charge of administering the licenses system and one or more Scientific Authority to advise them on the effects of trade on the status of CITES-listed species. The CITES Review of Significant Trade procedure (defined in Resolution Conf. 12.8 (Rev. CoP17)) was designed to identify species that may be subject to unsustainable levels of international trade, and to identify problems and solutions concerning effective implementation of the Convention.

In relation to the CITES Review of Significant Trade process (as detailed in Resolution Conf. 12.8 (Rev Cop18), the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) has been mandated by the CITES secretariat to consult with Parties that are subject to recommendations to suspend trade in cases where species suspension have been in place for longer than two years. In the case of Ghana, a trade suspension has been in place for emperor scorpion *Pandinus imperator* (since 2014)[1] and chameleons (*Chamaeleo gracilis* and *Chamaeleo senegalensis*) since 2016. A review of these species was completed by the UNEP-WCMC in 2014 and the original recommendations directed to Ghana by the Animals Committee was upheld. It is expected that the suspension in place for the species (*P. imperator*, *C. gracilis* and *C. senegalensis*) from Ghana will be reviewed at the 74th meeting of the Standing Committee provisionally scheduled for September 2021.

In the light of this development, WCMC contacted the Wildlife Division of the Forestry Commission of Ghana in late March 2021, to request for information on these species in Ghana. The information could include report on any difficulties that Ghana has faced in implementing the recommendations by the Animals Committee. It could also include an expression of the desire by Ghana to resume trade in *C. gracilis* and *C. senegalensis* and suggestions on what support would be needed in order for the recommendations to be fulfilled. Ghana response to the request for species information was expected to be received by WCMC. April 23rd, 2021 for inclusion in the report to Standing Committee 74th meeting.

Specifically, Ghana is expected to structure its response along four points. First, species information and non-detriment findings; that is provide information relating to the species in your country including the distribution, populations size, status and trends, threats, trade statistics (including evidence of illegal trade, species management and population monitoring, regulations

[1] Implementation of Resolution Conf. 12.8 (Rev. CoP18) on Review of Significant Trade in specimens of Appendix-II species

of wild harvest and trade and legal protection or clarify if there are no updates. As well consider if non-detrimental finding (NDF) for the suspended species can be made in compliance with Article IV. Second, report on progress on recommendations; report on progress made towards the implementation of the recommendation that were directed to Ghana by the Animals Committee. It is expected that Ghana response will clarify whether sufficient programs has now been achieved to consider lifting the recommendation to suspend species trade. Third, expression of interest in future trade in the species; that is, a confirmation whether Ghana has an interest in the international trade of this species in the future or confirm that exports are no longer anticipated and prove the reasons. Finally, provide information on difficulties in complying with the recommendation and identification of needs. That is outlining challenges faced in implementing the recommendations directed by the Animals Committee and any underlying reasons for these challenges. In addition, it is expected that the response will identify the type of support that will needed in order for Ghana to completely address the recommendations. A report responding to these points above will submitted to the CITES Standing Committee for review to assess whether the current trade suspensions remain appropriate.

This report provides progress on the implementation of recommendation by the Animals Committee. It provides detailed information on population dynamics of the three species (*C. gracilis, C. senegalensis, P. imperator*) currently on trade suspension from Ghana and outlines management effort information aimed at sustainable exploitation of species. These new information set is expected to aid the CITES Standing Committees pass a favourable review of trade suspension of the three species from Ghana.

2.0 Species Profile

2.1. *Chamaeleo Senegalensis* and *C. gracilis*

2.1.1 Nomenclature

Two species of Chameleons (*C. senegalensis and C. gracilis*) are discussed in the section;

Kingdom: Animalia
Phylum:Chordata
Class: Reptilia
Order: Squamata
Suborder: Iguania

Family Chamaeleonidae
Genus: Chamaeleo

Chamaeleo senegalensis DAUDIN, 1802 & TILBURY 2010 (syn. *Chamaeleon subcroseus*) is commonly known as Senegal-Kameleon (Dutch), Senegal Chameleon (English), Caméléon du Sénégal (French), Camaleón del Senegal (Spanish), senegalkameleont (Swedish).

Chameleo gracilis HALLOWELL 1844 (syn. *Chamaeleo burchelli, Chamaeleo granulosus*: *Chamaeleon granulosus, Chamaeleon burchelli, Chamaeleo simoni*)

Kingdom: Animalia
Phylum:Chordata
Class: Reptilia
Order: Squamata
Suborder: Iguania

Family Chamaeleonidae
Genus: Chamaeleo

is also commonly called the Graceful Chameleon or the Slender chameleon. It is also called Fersenspornchamäleon/Zierliches Chamäleon (German)

2.1.2 Global and National Distribution

Globally, *C. senegalensis* occurs in tropical West Africa from Senegal to Cameroon (Figure 1A); Guinea-Bissau, Guinea (Conakry), Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Mali, Gambia (HÅKANSSON 1981), Central African Republic, Mauritania (UNEP-WCMC 2008). The Graceful chameleon (*C. gracilis*) follow the same global distribution as the Senegal chameleon but extents further (Figure 1 B). The northern limits of *C. gracilis* range extend from Senegal in the west, eastwards through most of the countries bordering the Gulf of Guinea and through Central Africa to Sudan and Ethiopia. The southern limits run from Angola in the west to Tanzania in the east (IUCN 2014, CITES, 2021).

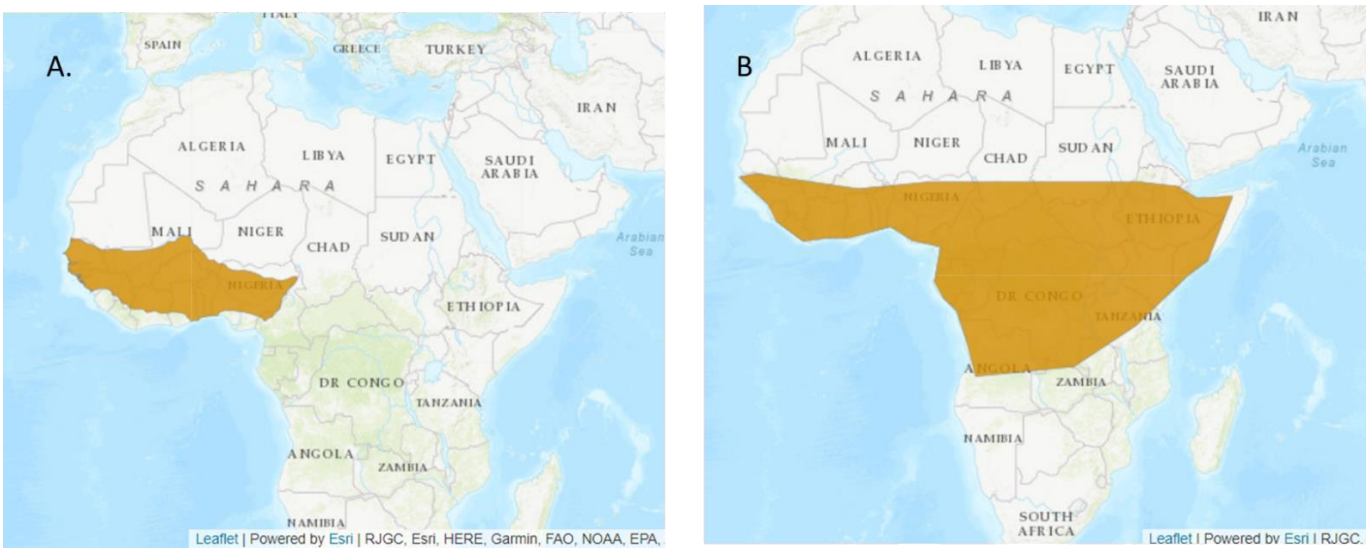

Figure 1. Global distribution of *C. senegalensis (A)* and *C. gracilis* (B) (IUCN 2014)

Within Ghana, *C. senegalensis* has been widely collected in all regions of the Ghana (Figure 2). However, significant populations are found in the Sudanese, Guinean and coastal savannah, and forest-savanna transition zones of Ghana[2] (Figure 2). (Leaché 2006). While *C. gracilis* is also found in the savannah zones, populations of the Graceful chameleon are also found in both dry and humid mature forest, forests that have undergone degradation, bushy areas surrounding farmland and plantations (Figure 2, Leaché 2006). The range of the species in Ghana is estimated conservatively to be between 100,000-121,000 Km^2 and includes several of Ghana's protected areas and forest reserves have been observed to host significant populations of these two species (The range of the *C. gracilis* covers even larger area). These species ranges include about 12,000 Km^2 are of wholly protected areas (National parks) and more than 80,000 Km^2 of forest reserves.

[2] https://arctos.database.museum/SpecimenResults.cfm accessed on April 11, 2021

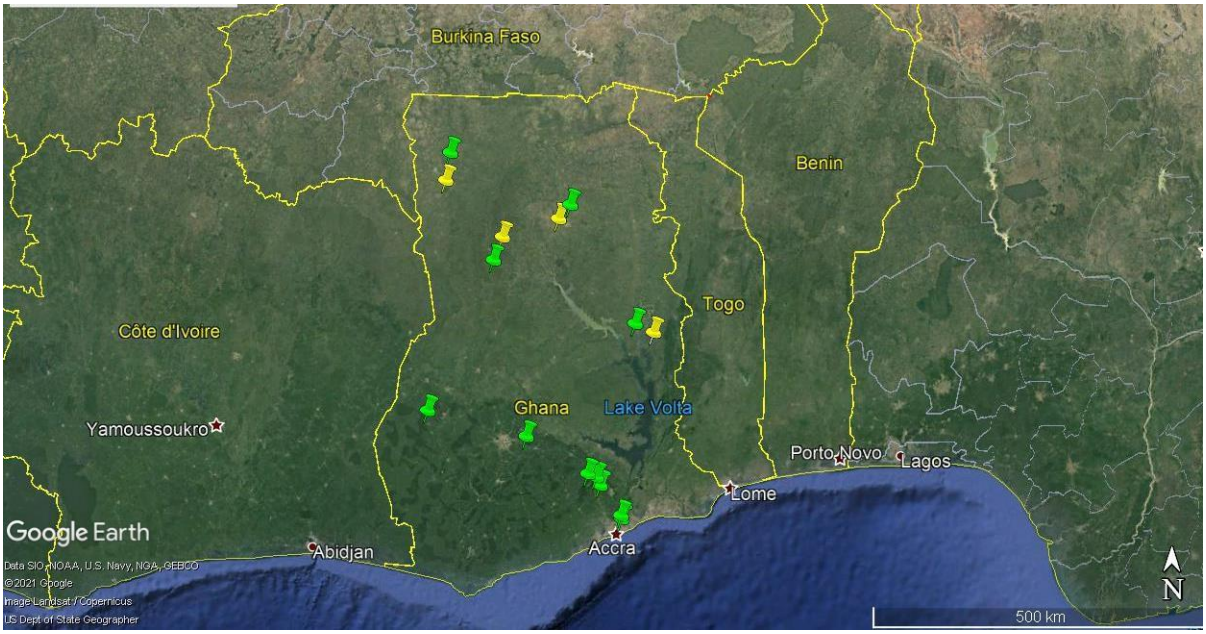

Figure 2. *The distribution of C. senegalensis (Yellow) and C. gracilis (Green) in Ghana based on survey of species collection point.*

2.1.3 Morphological Description

Chameleo. senegalensis (Figure 3) is a medium size (about 25cm in total length) green arboreal chameleon with a long-curled tail, zygodactylous feet (two toes facing forward and two toes facing backward), with a slightly raised casque at the back of the head and a prehensile tail (Leache et al. 2006, Briggs 2020). A cubed head with bulging eyes with a tiny neck flap sets them apart from other chameleon species (Briggs 2020). The species does not have the flashy colours like other species and its base colour is plain, light brown, but depending on the mood and situation, *C. senegalensis* could display subtle colour changes. For example, at rest, this chameleon species appears green with blackish spots, when basking, it appears light brown with darker brown spots and patterns. Colour changes also occurs during mating, roosting, hunting and other activities.

Figure 3*. C. senegalensis identified during field work in Northern Ghana.*

Chameleo gracilis is also a medium-sized (about 40 cm in length) with a basic body colour anywhere from green, yellow, or a light brown (Figure 4). Dark vertical bands may appear on the body and tail. Pale-green band runs along the flanks and a number of spots and blotches which can vary in colour and brightness (Bartlett and Bartlett 1995, Pianka and Vitt, 2003). The head extends at the rear into a small, bony prominence (casque) and two small crests composed of large conical scales run down the midline of the upper and lower surfaces of the body (AdCham.com, 2009). Males have a slightly higher casque (cranial crest) than females, but are smaller in average size and can beidentified by the brilliant yellow-orange skin between the scales ofthe throat pouch, which is exposed when the pouch is inflated during threat displays (Bartlett and Bartlett 1995). When a female is receptive to breeding, it shows yellow or orange spots. Older females can grow to as larger sizes (Total length > 40cm).

***Figure 4**. C. gracilis observed during field work in Aburi*

2.1.4 Habitat Use and Spatial Ecology

Chameleo senegalensis inhabits dry forest, sudanese and sudanese-sahelian savanna vegetation types (Trape et al. 2012). It ranges extents into the Guinean moist savanna, but is less common in this habitat than *C. gracilis* (Trape et al. 2012). The *C. gracilis* occupies a range of habitats, including both dry and humid mature forest, degraded forests, bushy areas surrounding farmland and plantations, and even savannah (Leaché, 2006) . *C. gracilis* have been identified to be prevalent on Neem and shea trees along roads and paths (Trape et al. 2012).

***Figure 5**. C. senegalensis observed in a Neem tree during field work)*

2.1.5 Longevity and Reproductive Characteristics

Both species of chameleons live fast and die young, with 2-5 years being the average lifespan even for those receiving excellent care. Like most creatures with this life history strategy, they mature quickly and reproduce often. Males are highly territorial and will aggressively compete with other males. Initially, rivals engage in elaborate threat displays, becoming bright green with dark-olive or black spots, arching their backs, expanding their throat pouches, and raising their tails to give the impression of greater size (Bartlett and Bartlett 1995, Pianka and Vitt, 2003). If neither male back down, they will make lunges for the other's throat, often inflicting severe and even fatal injuries (AdCham.com, 2009). Female chameleon species can breed at the tender age of 6 months, and even with a less-than-ideal diet can produce 2-3 clutches of 15-75 eggs each year (one between the end of the wet season and onset of the dry season, and the other in the middle of the dry season). The species are also quite durable – in the short term – and often feed well and develop eggs even when stressed by collection from the wild and even under substandard care conditions (Briggs 2020).

2.1.6 Diet

These two species of chameleons like some other species are omnivorous. They can feed on diets of crickets, mealworms, dubia cockroaches and hornworms. Chameleons in their natural habitat have been observed to eat a mixture of meat and veggies to obtain all the nutrients they require for survival (Briggs 2020).

2.1.7. General Overview of Population Abundance / Density

Globally, the population abundance and density of *C. senegalensis* and *C. gracilis* is unknown. Till 2020, the population of the species in Ghana was not known. Leache (2006) encountered some populations in the Herpetofauna of Kyabobo National park in South east Ghana. In the *Arctos collective Research Management Solution* database[3], several contributing authors have reported some animal populations around parts of the country (see Figure 6). In discussions with a select group of wild collectors and exporters on the populations abundance/densities of the species, they suggested that at the peak of trading, effort/catch rates were stable and believed that the suspension of the of the trade since 2016 will contribute to recovery of populations in depleted areas and an increase in areas especially forest reserves and conservation areas where collection in not allowed. Encounter (sightings) rates of 4-9 Chameleons per a km walks have been reported in the at hunting locations outside conservation areas in northern and south eastern parts of the country.

The WD through a joint team effort of its staff and local hunters conducted a rapid assessment survey of the species in it reported range. Based on exporters and hunters' interviews, and collection permits issued over the years, the ranges of the species were stratified into low, mediumand high population density areas (Figure 6). Wildlife Division staff and local hunters walked transects simultaneously within known hunting areas across selected regions of Ghana. Species were collected, identified and counted. The species were then released back to the wild.

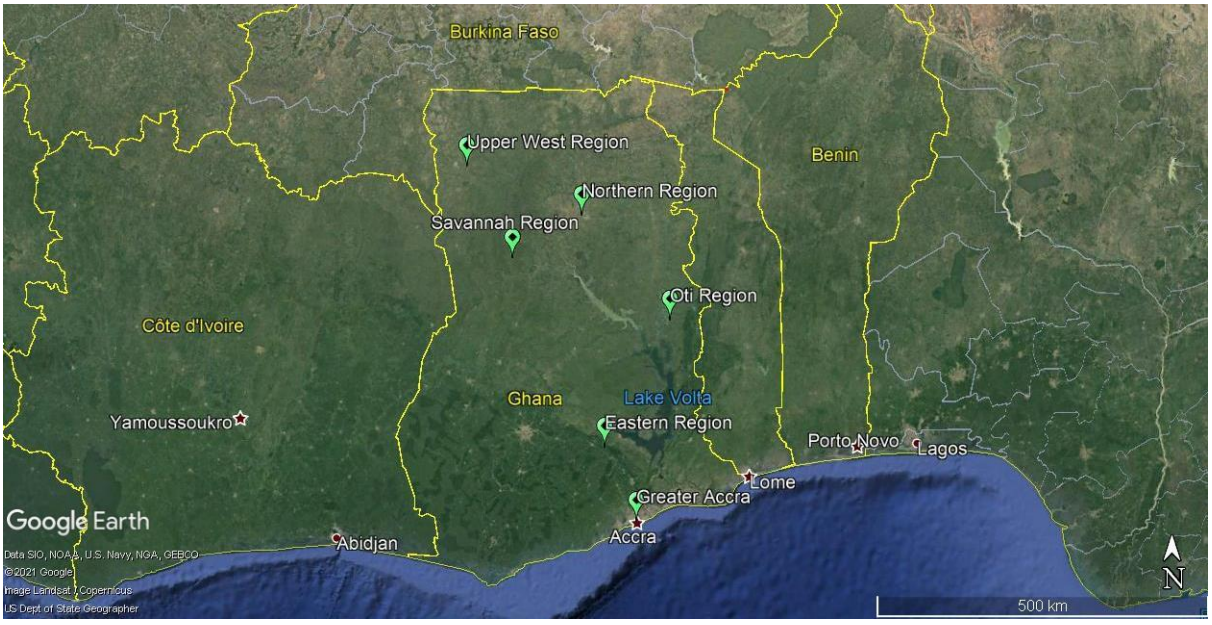

***Figure 6**. The distribution of sampling locations for C. senegalensis and C. gracilis across Ghana.*

[3] https://arctosdb.org/

In total, sampling was conducted in 27 locations in 6 regions distributed across the major vegetation zones (i.e. Forest, Savannah, Forest-Savannah transition belt) in Ghana (Figure 6, Table 1). A total of 259 of *C. senegalensis* and 182 of *C. gracilis* were recorded during the sampling period (Table 1). We observed that *C. senegalensis* was more distributed in northern Ghana which is predominately Savannah with the highest density found in the Oti Region, while *C. gracilis* was more distributed in the south Ghana. Greatest densities of *C. senegalensis* were found in the Oti region, followed by Northern and Savanna regions of Ghana. Although the survey found population of *C. gracilis* in the savannah dominated vegetations of northern Ghana, higher densities occurred in forested areas south of Ghana (Greater Accra and Eastern regions). Given an average population density of 42.7 and 34.7 individuals/Km^2 of *C. senegalensis and C. gracilis* respectively, the national population of *C. senegalensis* is estimated at 4,168,252 and *C. gracilis,* 3,390,960.

Table 1. Summary of the data collected on the rapid population assessment survey of two Chameleon species intrade in Ghana

Region/Sampling location	Date	Time Spent (Hrs)	Distance travelled (Km)	Survey area(km2)	No. individuals identified	
					C. S	*C. Gs*
Oti						
Kunindi	April 2, 2021	5	7	0.28	14	0
Chingiri	April 2, 2021	6	5	0.2	8	5
Nmandu	April 3, 2021	7	6.5	0.26	11	7
Baturi	April 3, 2021	5	6	0.24	14	3
Wirinya	April 2, 2021	4.5	7	0.28	9	5
Kyabobo National Park*		5	7	0.28	10	11
Total					**66**	**31**
Savannah						
Bole	April 2, 2021	5	6	0.24	8	7
Banakwanta	April 2, 2021	5	6.8	0.272	9	3
Bui*	April 3, 2021	5	5	0.2	10	12
Mole National Park*	April 3, 2021	5	6	0.24	10	5
Total					**37**	**27**
Eastern						
Atewa	April 2, 2021	5	5	0.2	10	15
Afram plains	April 2, 2021	5	6	0.24	13	12
Kwahu	April 4, 2021	6	5	0.2	9	16
Intomere	April 4, 2021	5	5.4	0.216	12	13
Total					**44**	**56**
Greater Accra						
Legon	April 2, 2021	5	5	0.2	5	10
Dodowa	April 2, 2021	5	6.1	0.244	2	11
Aburi	April 3, 2021	5	5.2	0.208	3	12
Apedwa	April 3, 2021	5	5.8	0.232	1	10
Suhum	April 3, 2021	5	5	0.2	4	15
Total					**15**	**58**
Upper West						
Wa	April 2, 2021	5	5	0.2	14	0
Yaala Easter	April 4, 2021	5	6	0.24	13	2
Weechaiu	April 4, 2021	5	5	0.2	8	1
Sankana	April 6, 2021	5	6	0.24	13	0
Naha	April 7, 2021	5	5	0.2	11	3
Total					**59**	**6**
Northern						
Chereponi	April 6, 2021	5	5.4	0.216	13	2
Ando	April 6, 2021	5	5	0.2	10	2
Andonyami	April 7, 2021	5	5	0.2	15	0
Total					**38**	**4**

Table 2. The estimated encounter rate, Density and National population of *C. senegalensis* and *C. gracilis* in Ghana

	Encounter rate/transect (Km)		Density/Km^2	
Region/Sampling location	*C. S*	*C. G*	*C. S*	*C. G*
Oti				
Kunindi	2.0	0.0	50.0	0.0
Chingiri	1.6	1.0	40.0	15.6
Nmandu	1.7	1.1	42.3	15.9
Baturi	2.3	0.5	58.3	5.4
Wirinya	1.3	0.7	32.1	13.9
Kyabobo National Park*	1.4	1.6	35.7	27.5
Savannah				
Bole	1.3	1.2	33.3	21.9
Banakwanta	1.3	0.4	33.1	8.3
Bui*	2.0	2.4	50.0	30.0
Mole National Park*	1.7	0.8	41.7	12.5
Eastern				
Atewa	2.0	3.0	50.0	37.5
Afram plains	2.2	2.0	54.2	23.1
Kwahu	1.8	3.2	45.0	44.4
Intomere	2.2	2.4	55.6	27.1
Greater Accra				
Legon	1	2	25	50.0
Dodowa	0.3	1.8	8.2	137.5
Aburi	0.6	2.3	14.4	100.0
Apedwa	0.2	1.7	4.3	250.0
Suhum	0.8	3.0	20.0	93.8
Upper West				
Wa	2.8	0.0	70.0	0.0
Yaala Easter	2.2	0.3	54.2	3.8
Weechaiu	1.6	0.2	40.0	3.1
Sankana	2.2	0.0	54.2	0.0
Naha	2.2	0.6	55.0	6.8
Northern				
Chereponi	2.4	0.4	60.2	3.8
Ando	2.0	0.4	50.0	5.0
Andonyami	3.0	0.0	75.0	0.0
National average (individuals/km^2)			42.7	34.7
National Population Estimate			**4,168,252**	**3,390,960**

2.1.8 Susceptibility to Anthropogenic Disturbance

Although species trade and habitat loss through expansion in human settlements and Agricultureactivities continue to increase, large areas of suitable habitat still exist for the species.

2.1.9 Threats Unrelated to Harvest

This species is of value to the pet trade industry and is also used as medicine and sold in alternative markets (UNEP-WCMC 2010) To date, there are no known or observed effects of harvesting on natural populations. Although completely harmless, chameleons are much feared by local people in parts of West Africa (Trape et al. 2012), and there may therefore be some degree of persecution. Habitat loss through human settlement and agriculture activities continues to pose major threat to the species.

2.1.10 Global Conservation Status

Although listed as 'least concerned (CN)' in the IUCN Red List (Wilms et al. 2013, Tolley et al. 2014), the *C. gracilis* and *C. senegalensis* are listed in Appendix II by CITES. Species listed in Appendix II are not threatened, but trade is limited to prevent endangerment by human exploitation.

2.2 *Pandinus imperator*

2.2.1 Nomenclature

The scientific name for the species is ***Pandinus imperator*** (C. L. Koch, 1841) (syn. *Pandinus africanus)*. Commonly referred to as the emperor scorpion (English), Emperor Scorpion, Escorpión emperador (Spanish), Kejsarskorpion (Swedish), Scorpion empereur (French).

Kingdom: Animalia **Phylum**: Arthropoda **Class**: Arachnida **Order**: Scorpiones **Family** Scorpionidae **Genus**: Pandinus

2.2.2 Global and National Distribution

Emperor scorpions, *Pandinus imperator*, are native to west Africa and are predominantly found in forests but also of savannahs of Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Togo, Liberia, Mali, Nigeria, Senegal, Sierra Leone and Cameroon. Nigeria, Togo, Sierra Leone, Ghana and the Congo region. (Figure 7, Preston-Mafham 1993, Pandinus, 2009).

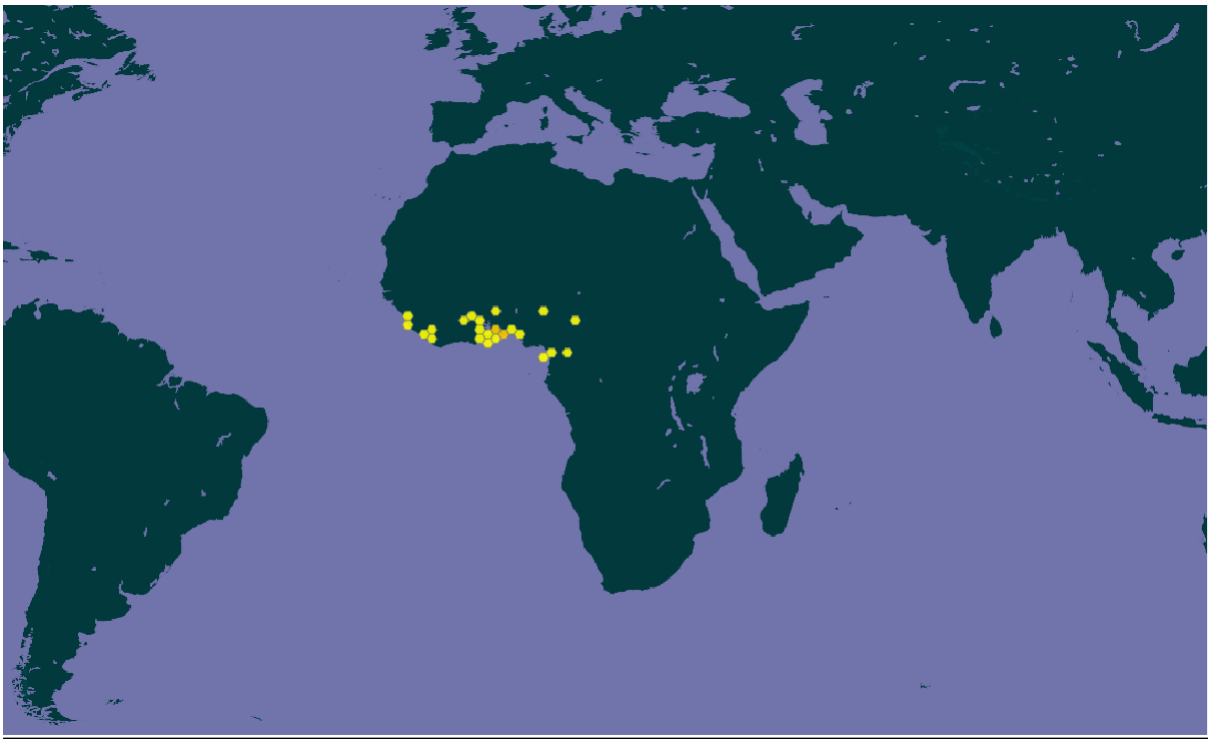

Figure 7*. The distribution of P. imperator across West African (Source: GBIF 2020)*

Within Ghana, the species occurs widely across the country and has been collected by hunters across the major vegetation zones in across Ghana. Significant populations are found in the forested areas in south western Ghana. The species occurs in the rainforest, gallery forest near rivers and other woodlands in savanna habitats. The range of the species in Ghana is estimated conservatively to be between 130,000-150,000 Km^2 and includes several of Ghana's protected areas and forest reserves have been observed to host significant populations of the species. This species ranges includes about 13,000 Km^2 are of wholly protected areas (National parks) and more than 80,000 Km^2 of forest reserves.

2.2.3 Morphological Description

Emperor scorpions are one of the largest species of scorpions in the world (Figure 8), measuring an average of 20 cm in length (Li and Parikh, 2011). They also tend to be heavier than other scorpions, and pregnant females can weigh more than 28g (Li and Parikh, 2011). The body of the emperor scorpion is shiny black in colour with two huge pedipalps (pincers) in the front, four legs and long tail (telson) ending in a stinger. Emperor scorpions have special sensory structures called pectines behind their limbs for sensing features of the terrain. Males usually have larger pectines than females. Like other arthropods, emperor scorpions undergo multiple molts. Their venom is mild and mainly used for defensive purposes; they generally use their huge claws to kill prey. Like other scorpions, emperor scorpions give off a fluorescent bluish green appearance under UV light. (Rein, ed. 2009; Ross, 2009; Li and Parikh, 2011). Emperor scorpions are social and have been observed living in colonies of up to 15 individuals. Cannibalism has been observed in this species, but it is rare. (Mahsberg, 1990, Shultz, 1992).

***Figure 8**. The Emperor scorpion identified during the field work in Aburi, Southern Ghana.*

2.2.4 Habitat Use and Spatial Ecology

Emperor scorpions are typically found in hot and humid forests although have been reported to habit savanna grass and woodlands (Li and Parikh, 2011). Scorpions are largely nocturnal and hide during the day in the confines of their burrows, in natural cracks, or under rocks and bark. Individuals become active after darkness has fallen and cease activity sometime before dawn (Li and Parikh, 2011). They reside in burrows and prefer to live under leaf litter, forest debris, stream banks and also in mounds of termites, their main prey. Emperor scorpions tend to live communally and are found in large numbers in regions of human habitation. (Rein, ed. 2009; Li and Parikh, 2011). They are also found in estuaries. The eyesight of emperor scorpions is very poor. Their other senses are well developed, with adaptations like the use of body hairs and pectines to detect the surrounding environment and prey (Li and Parikh, 2011).

2.2.5 Longevity and Reproductive Characteristics

Emperor scorpions usually live 5 to 8 years in captivity although lifespan is likely shorter in the wild (Oregon Zoo Animals: Emperor Scorpion, 2005). Emperor scorpions breed throughout the year. After a gestation period of averagely 9 months, females give live birth to 10 to 25 young. Emperor scorpions reach sexual maturity by 4 years of age. (Oregon Zoo Animals: Emperor Scorpion, 2005 Rubio, 2008).

The female Emperor scorpion invests a great amount of time and energy in her offspring. Unlike most nonmammalian animals, scorpions are viviparous, giving birth to live young instead of laying eggs. Once fertilized, the eggs are retained in the female's body, where the embryos are nourished in utero for periods varying from several months to a year. The birth process itself may last from several hours to several days.

At birth a young scorpion is white and enveloped in a membrane, or chorion. After freeing itself, the immature scorpion crawls onto the mother's back, where it remains for a period ranging from 1 to 50 days. Females are generally more aggressive after giving birth. (Rubio, 2008). During this time the young scorpions are defenseless and utilize food reserves in their bodies while receiving water transpired through the mother's cuticle taken up through their own. The young molt their soft embryonic cuticle for one that is fully functional when they assume independence. This early mother-young association is obligatory for newborns. Without it, they do not molt successfully and usually die. The young generally leave the mother soon after this first molt (Britannica, 2018).

2.2.6 Diet

In the wild, emperor scorpions primarily consume insects and other terrestrial invertebrates, although termites constitute a large portion of their diet. Other common preys include spiders and other arachnids (including and other scorpions) and larger vertebrates, such as rodents and lizards, are occasionally eaten. Emperor scorpions will burrow through termite mounds up to 6 feet deep in order to hunt prey. Their large claws help in tearing apart prey while their tail stinger injects venom at the same time for liquifying food. Juveniles rely on their venomous sting to paralyze prey while adults use their large claws to tear apart prey. (Casper, 1985; "Emperor Scorpion (Pandinus imperator)", 2009).

2.2.7 General Overview of Population Abundance / Density **(***globally, nationally, and/or anywhere that is known)*

Little is known about the population of the emperor scorpions in the range states however, the populations in neighbouring range state, the Republic of Togo has recently been accessed. The population ranges from 119-204 individuals/ha and distributed in fallow lands and abandoned manioc fields (Segniagbeto 2016). Although the population abundance and density in Ghana is unknown, it is believed that, international commercial trade of the species which presents a significant threat to the populations has been suspended for the past 9 years (since 2014).

Figure 9*. Local hunter helping with the Emperor Scorpion rap population survey in Southern Ghana*

Following a rapid assessment survey conducted by WD and local hunters in selected regions of Ghana (Figure 6 and 9). WD staff and local hunters collected samples in a three 10m radius quadrats within 1 ha plots across different sampling locations in six regions of Ghana (Table 3). *Pandinus Imperator* seem to be evenly distributed across the country. With an average population density of 146 individuals/ha, we estimated the total population of the species at 1,838,812,500 in Ghana.

***Table 3**. Population density and estimates for P. imperator across different sampling location in Ghana.*

Region/Sampling location	Date	Individuals/10 m radius quadrat	Individuals/10 m radius quadrat	Individuals/10 m radius quadrat	Estimated individuals/Ha
Oti		Q1	Q2	Q3	
Kunindi	April 2, 2021	45	35	71	151
Chingiri	April 2, 2021	29	67	54	150
Nmandu	April 3, 2021	47	57	34	138
Kyabobo National Park*	April 3, 2021	80	70	78	228
Total					**667**
Savannah					
Bole	April 2, 2021	43	60	50	153
Banakwanta	April 2, 2021	29	38	45	112
Mole national Park*	April 3, 2021	30	80	49	159
Total					**424**
Eastern					
Atewa	April 2, 2021	72	40	25	137
Afram plains	April 2, 2021	56	31	35	122
Total					**259**
Greater Accra					
Legon	April 2, 2021	50	45	18	113
Dodowa	April 2, 2021	29	35	20	84
Aburi	April 3, 2021	41	37	32	110
Total					**307**
Upper West					
Wa	April 2, 2021	30	50	40	120
Wechiau	April 4, 2021	17	70	58	145
Total					**265**
Northern					
Chereponi	April 6, 2021	41	80	56	177
Ando	April 6, 2021	80	67	89	236
Total					**413**
National Population density					**146/ha**
National population					**1,838,812,500**

With no reported illegal trade in the species, we believe that the populations in the wild might have increased and recovered in areas where populations have possibly decline due to excessive harvest. Our inference about the populations is supported by discussions with species collectors in communities in the northern Ghana who have reported that the species are commonly encountered/sighted in farms and farmers have complained abouts increases in scorpion stings during their farming seasons. It is important to note that the species population in national parks and conservation areas are protected from exploitation for commercial trade.

2.2.8 Susceptibility to Anthropogenic Disturbance

Although species trade and habitat loss through expansion in human settlements and agricultureactivities continue to increase, large areas of suitable habitat still exist for the species.

2.2.9 Threats Unrelated to Harvest

This species is of value to the pet trade industry and is also used as medicine and sold in alternative markets (UNEP-WCMC 2010). To date, there are no known or observed effects of harvesting on natural populations. Habitat loss through human settlement and agriculture activities continues to pose major threat to the species.

2.2.10 Global Conservation Status

Although listed as 'Not Evaluated' in the IUCN Red List, the Emperor scorpions are listed in AppendixII by CITES. Species listed in Appendix II are not threatened, but trade is limited to prevent endangerment by human exploitation. Emperor scorpions are collected for the pet trade and for scientific study. (Rubio, 2008).

3.0 Management Context

3.1. National History of Species Management

Prior to the year 1989, there was unregulated international trade in the three species despite CITES listings of the two chameleon species in 1977. Ghana's legislation did not recognise the species as protected because international trade in the species was minimal. International trade in *C. gracilis* and *C. senegalensis* however, picked up in 1989. Trade in emperor scorpions started in 1995 when it was listed in CITES Appendix II. International trade in the species brought much attention to the species and ensured their protection via implementing a quota-based system. A yearly quota of 1500 was allocated each to the *C. gracilis* and *C. senegalensis* but not *P. imperator*. The quota-based system granted permits for collection in specific geographical areas, preventing over collection from a specific population.

Traders have been urged to set up ranching and breeding operations and to replace wild-caught supply as well as return parental stocks to the wild. Prior to trade suspension of the species in 2014 and 2016, ranching and captive breeding programs which had been started by some traders but collapsed due to the trade suspension.

3.2. International Trade from Domestic Stock

3.2.1 *Chamaeleo senegalensis* and *Chamaeleo gracilis*

The main importers of the two chameleon species from Ghana are USA, Canada, Europe and some countries in Asia (Figure 10 and 11). Live animals exported to these destinations are mainly for the pet trade, however, some quantities are imported for the purposes of scientific research, circus and zoo keeping.

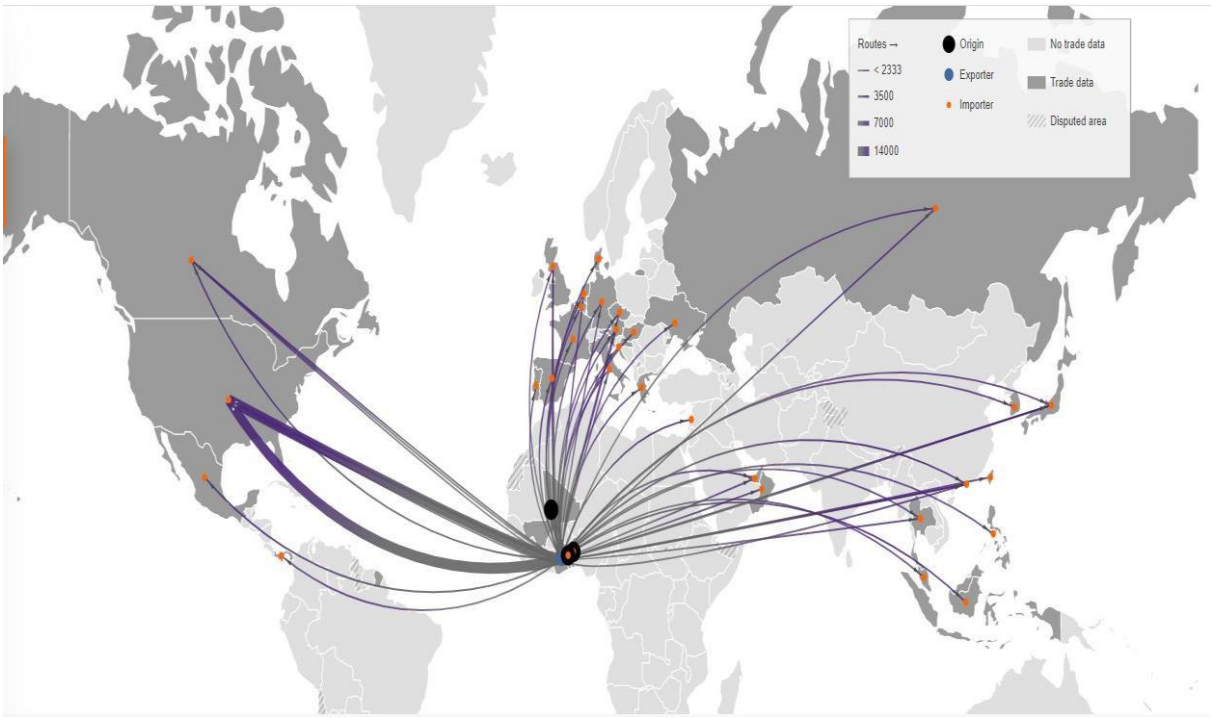

***Figure 10**. Trade routes of C. senegalensis from Ghana from 1995-2015 using TradeMapper Application (Data source: UNEP-WCMC CITES trade Database)*

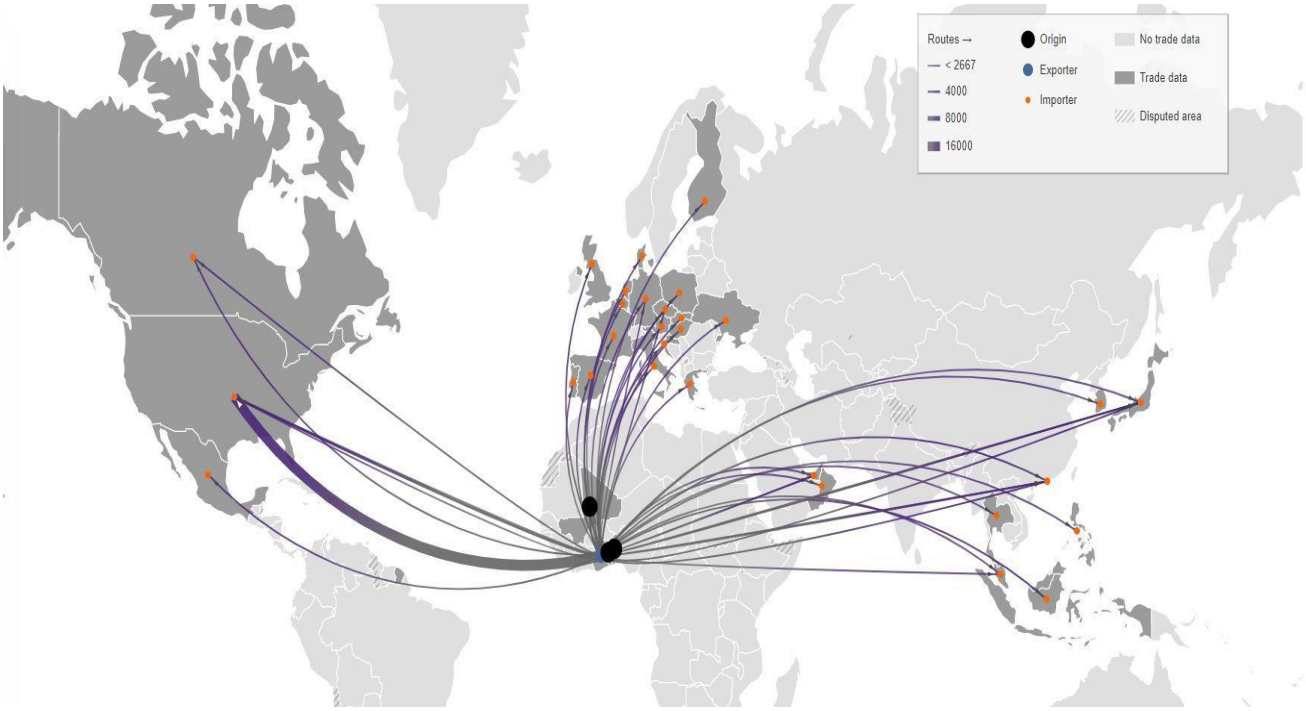

***Figure 11**. Trade route of C. gracilis from Ghana 1995-2015 using TradeMapper Application (Data source: UNEP-WCMC CITES trade Database)*

Exporter reported data from the UNEP-WCMC database indicate that Ghana started international trade in *C. senegalensis* and *C. gracilis* in 1989 and had relatively controlled trade volumes of the species steadily. Ghana exported 24,540 *C. senegalensis* and 17,679 *C. gracilis* between 1994 and 2015 with annual average of 1,116 and 804 individuals respectively (Figure 12 and 13).

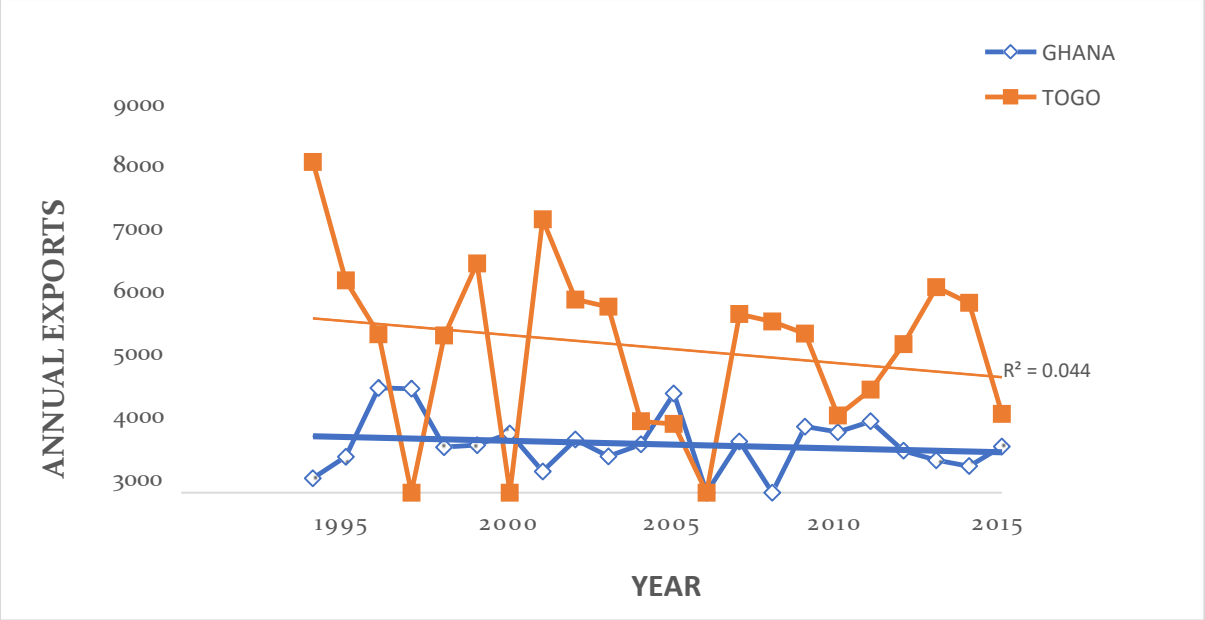

***Figure 12**. exports of C. senegalensis from 1994 to 2015 for Ghana and Togo*

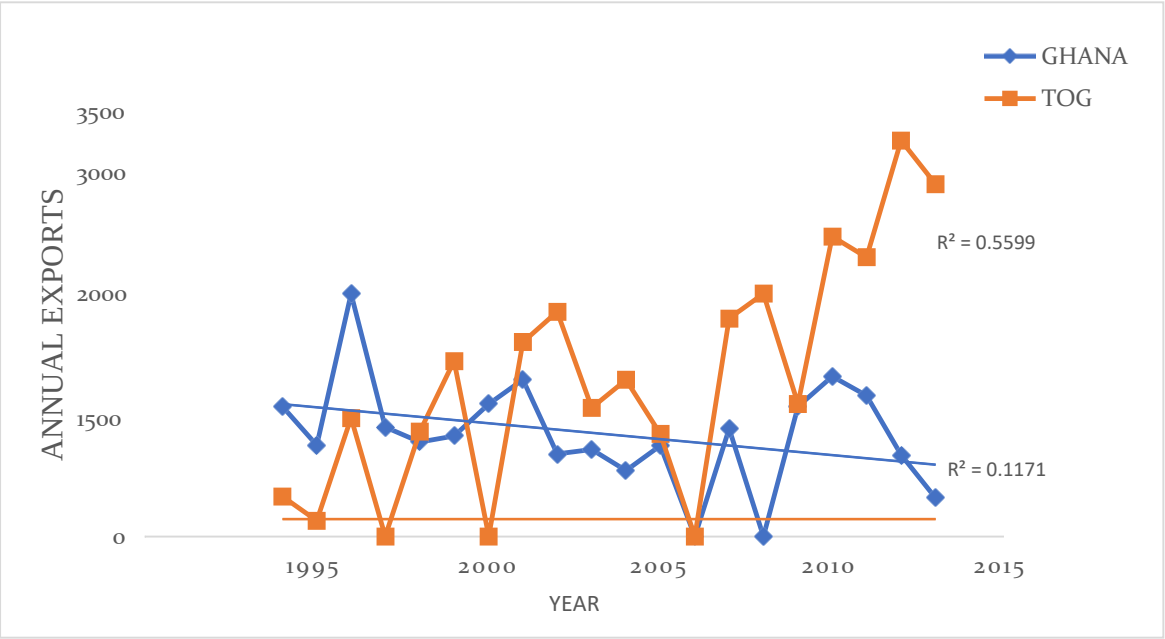

***Figure 13**. Annual exports of C. gracilis from 1994 to 2015 for Ghana and Togo*

3.2.2 Domestic, Utilization and Trade

Both species of chameleons are known to be locally used for traditional medicine in Ghana although difficult to identify the species that is most preferred (Figure 14). Locally, it is believed that chameleon drives evil spirits away and also cure some ailments. In this regard, chameleons aretied to the hands of infants to prevent early death (Gbogbo & Daniels 2019). Averagely, local use of the species is low and limited to few remote locations in Ghana. While there is no data on illegaltrade of the species locally, information provided by the local people shows that collections are made for traditional medicines at few homes whiles some of the collections end up in some marketsin the city.

***Figure 14**. Dried chameleons for sale at Timber Market Accra. Source: www.traveladventures.org*

3.3.1. *P. imperator*

***Figure 15**. Trade routes of p. imperator from 1995 to 2013 using TradeMapper Application (Data source: UNEP-WCMC CITES trade Database)*

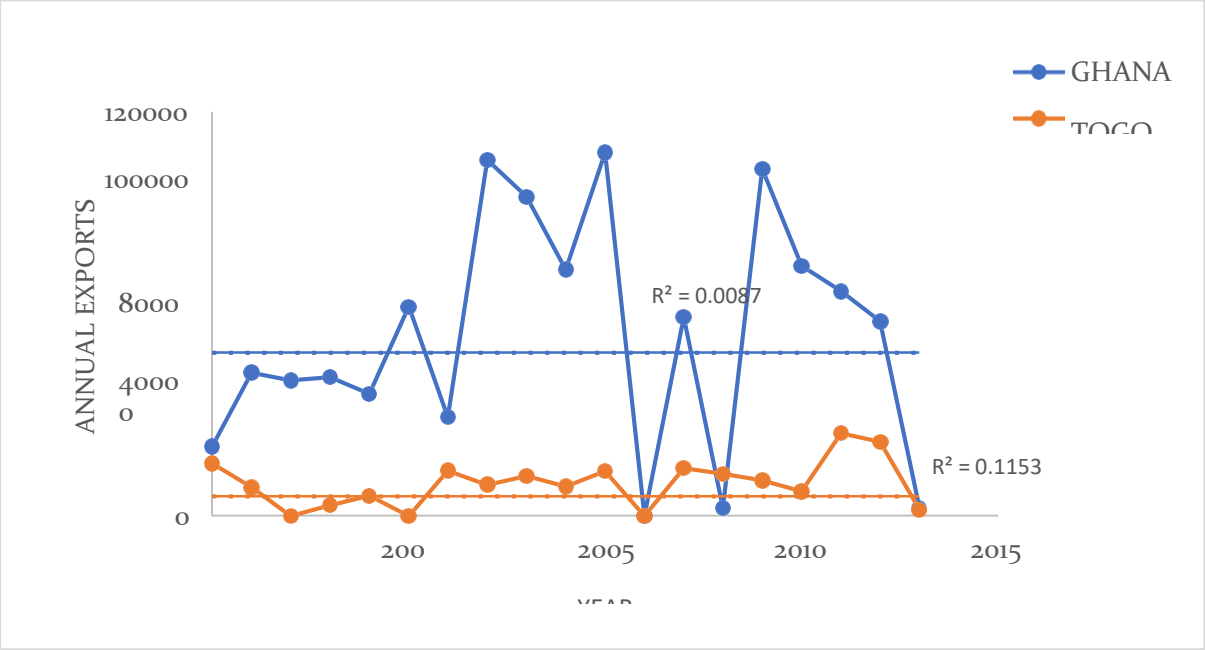

Figure 16. *Annual Export of P. imperator from 1995 to 2013*

3.3.2 Domestic, Utilization and Trade

There is no known usage of emperor scorpion locally. The species is in abundance in many local communities and has become threat to local people especially farmers possibly because they are not consumed or used for any other purpose locally. Complaints are occasionally received from farmers and collectors about the high numbers of the species and the risk the species pose to the indigenous people including stings and invasion of their homes. In such situation, permits are issued for more collection to be done in areas that they are considered pest. Increase collection are also to prevent the use of pesticides and other chemicals by farmers and local people to exterminate the local population. This accounts for the reason Ghana did not set quotas for the species during the period of trading. High density areas where *P. imperator* are; Assin Fosu, Otinibi, Appolonia, Katamanso, Ayikuma, Ayimensa, Dodowa and Agomeda.

3.4. International and Domestic Legal Framework

All the three species under review are listed as CITES Appendix II species, *C. senegalensis* and *C. gracilis* were listed on the CITES Appendix II in 1977 whiles *P. imperator* was listed in 1995. This status obliges all range states to comply with Article IV of the text of the CITES to ensure that trade is conducted legally and sustainably.

Article IV requires countries trading in species listed on Appendix II to ensure;

a) *export is not detrimental to the species in the wild*
b) that the specimen was not obtained in contravention of the laws of that State for the protection of fauna and flora
c) *export of specimens should be limited in order to maintain species throughout its range at a level consistent with its role in the ecosystems in which it occurs*
d) the population should be kept *well above the level at which that species might become eligible for inclusion in Appendix I*

Ghana undertakes sustainable management and trade in the species to ensure that conditions in article IV are met. The CITES Management Authority performs the following functions to ensure better implementation of Article IV of the convention.

i. Management of harvests and Exports through permitting system.
ii. Monitoring trade and sustainably wild population
iii. Compliance with various legislation and regulations to ensure sustainable offtake from the wild.

In the domestic scene, although Ghana has not been able to enact specific legislation for CITES implementation since acceding to CITES, the country however has legal provisions for implementation of the Convention. For instance, the Wild Animal Preservation Act 1971, Act 43, Wildlife Conservation Regulation LI 685 and other legislations for management and conservation of wildlife in the country provide the main legal framework for the protection, sustainable utilization and conservation of wildlife resources in Ghana. These legislative instruments mandate the establishment of national system of Protected areas to ensure among others that a viable network of sites representative of the natural ecosystems that occur in Ghana, are maintained in an undisturbed state. It ensures that viable populations of all indigenous wild species including passage migrants are adequately conserved and that rare, endangered and endemic species are specially protected.

The legal framework also regulates harvest, exports, re-exports import, and local trade of wildlife. The Wildlife Conservation Regulations, 1971 (LI 685) prohibits the utilisation of wildlife resources without user rights. That is no person shall engage in the hunting or capturing of wild animal without first, obtaining a licence or a permit for the purpose. Further, permits are required to export or import wildlife and wildlife products, hold, keep and breed animals in captivity. The laws make specific provisions for the grant of a licence/permit, and suggest that a licence shall be given for a specific animal, valid for a period of six months, from the date of grant of the licence. The legislation requires that only species listed on the licence can be hunted, captured or harvested and numbers shall not be in excess of what has been specified on the licence.

Further, the laws make it impossible for licence be transferable and allow for revocation or suspension of a licence or permit if the person does anything contrary to the conditions of the licence or permit. For instance, if the holder of the suspended licence or permit does not remedy the default within the time stipulated in the notice given.

Additionally, the legislative instruments, makes it an offense, for any person to hunt, capture or destroy animals without a valid licence/permit granted by the Chief Game and Wildlife Officer (now Executive Director) in accordance with the Regulation.

Some provisions of Wildlife Conservation Regulations, 1971 (LI 685) are highlighted below;

1. *No person shall at any time hunt, capture or destroy any of the species mentioned in the First Schedule to these Regulations.*

2 *No person shall at any time hunt, capture or destroy*

(a) young animals; or
(b) animals accompanied by their young,
of any of the species mentioned in the Second Schedule to these Regulations

3. *No person shall between the 1st day of August-and the 1st-day of December in any year hunt, capture or destroy any of the speciesmentioned in the Second and Third Schedules to these Regulations*

4. *(1) No person shall manufacture, use or be in possession of any gin trap which may be used for the purpose of hunting, capturing or destroying any animal.*

(2) No person shall hunt, capture or destroy. any wild animal by using any artificial light or flare.

(3) No person shall hunt, capture or destroy any wild animal by using nets (except in the case of fish or poisonous snakes), unless authorised in writing to do so by the Chief Game and Wildlife Officer,

(4) No person shall hunt, capture or destroy any wild animal by using pitfalls, snares effective only in conjunction with pitfalls, poison or poisoned weapons.

(5). Any person who contravenes any provision of regulations 1 to 4 shall be guilty of an offence and liable on summary conviction to a fine not exceeding two hundred new Cedisor to imprisonment not exceeding six months or to both.

6. *(l) No person shall hunt, capture or destroy*
(a) any adult animal of the species mentioned in the Second Schedule to these Regulations when unaccompanied by its young; or

8. *(1) A game licence shall be in the form specified in the Fifth Schedule to these Regulations and shall—*
(a) be valid for a period of six months from the date of licence. the grant of the licence;

11. *(1) No person shall export or attempt to export from Ghana*
- *(a) any animal (whether living or dead) of any of the mentioned in the First, Second or Third Schedules to these Regulations; or*
- *(b) any elephant's tusk; or*
- *(c) any hides or skins in commercial quantities, of any of the species mentioned in the First, Second. or Third Schedules to these Regulations,*

unless he is the holder of a valid permit to do so (hereinafter called "a game and trophy export permit") granted by the Chief Game and Wildlife Officer in accordance with this Part of these Regulations.

(2) Any person who contravenes this regulation shall be guilty of an offence and liable onsummary conviction to a fine not exceeding two hundred new cedis.

13. *(4) A game and trophy export permit shall not be transferable and shall not authorise the export of the items to which it relates in more than one consignment*

3.5. National Species Management Goals

Individual species management plans will be developed for the three species. The goal of the species management plan is to ensure viable population of these species are maintained throughout

the distribution range in Ghana and ensure that harvesting for international commercial trade does not cause a decline in the species population. Principal component of the management plan will include extensive systematic survey through the species geographical range (both known and potential range). The initial surveys will provide baseline data for a regular monitoring programme.

The survey will also identify potential threat to the species habitat (agriculture, human settlement expansion, wildfire etc) and assess it impact on the populations. The plan will include a threat assessment component for identified population, and needs and opportunities recognition for habitat management or restoration. Other national conservation activities will include enforcement of legal requirement of permit to harvest the species and a system of annual quota.

Determine the survey the distribution and abundance of species in the wild: *This provides the opportunity to assess the population status of the species in representative vegetation zones (harvesting locations) across Ghana. This baseline will support regular programme of monitoringlocal population monitoring to ascertain whether the population is increasing, stable or decreasing*.

4.0 Population Monitoring - The Basis for Sustainable Utilisation

4.1 Decision-Making Steps Taken by the Scientific and Management Authorities

To establish a level of offtake that is sustainable, based on extraction of 10% of the standing population, the Wildlife Division (Management Authority) will follow a series of 5 decision-making steps (Figure. 17).

1. Estimate the size of the harvestable *populations of P. imperator*, *C. senegalensis* and *C. gracilis* in Ghana.
2. Based on a harvest rate of 10%, establish a precautionary quota based on results of population field monitoring and density estimates for the regions and habitats in which harvesting occurs.
3. Conduct field surveys at harvested and unharvested sites to continually assess the area of occupancy, extent of area, and abundance of P. *imperator*, *C. senegalensis* and *C. gracilis* in Ghana. This is done to document whether the species are disappearing from some areas and/or whether abundance is remaining stable. It also generates additional data to improve density estimates in key habitats.
4. Conduct continuous monitoring of trade dynamics to ensure no major changes in population demographics or catch per unit effort (CPUE) are taking place.
5. Review results of monitoring activities and, if necessary, adapt harvest and trade regulations (permit numbers, harvesting areas, and quotas). Use results from field monitoring to recalibrate population size estimates.

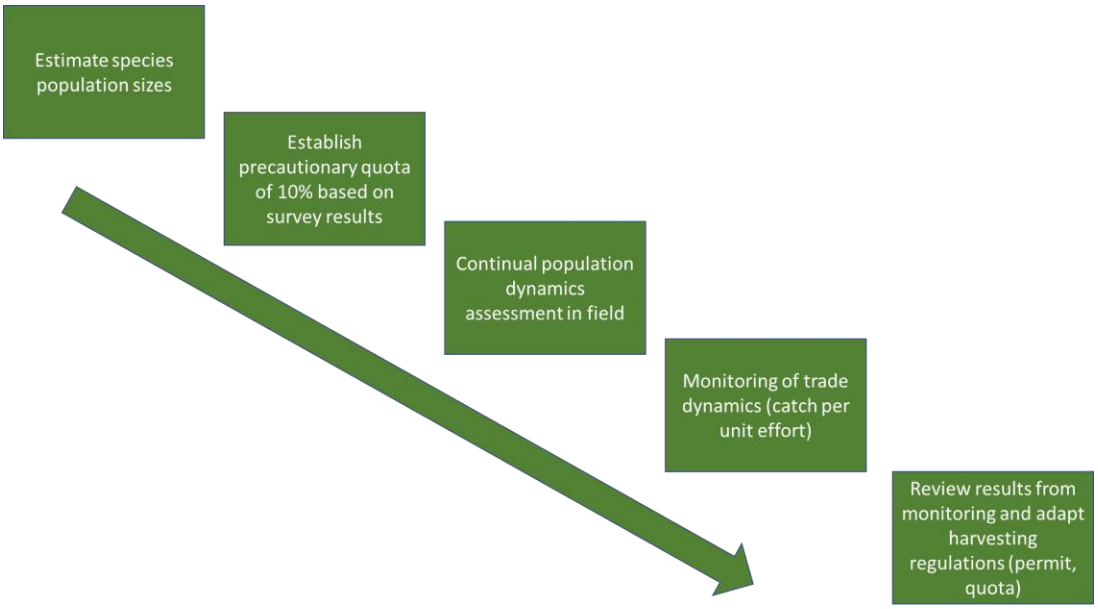

***Figure 17**. Decision making steps to be taken by scientific and management authorities towards conservation and sustainable utilization of the three species in international commercial trade (P. imperator, C. senegalensis and C. gracilis)*

4.2 National Monitoring of the Wild Population

Recently, a rapid survey of the three species was conducted in selected sites across the country (See Tables 1-3). The geographical range of the three species has been stratified into density zones (High, Medium, Low density) based on the history of harvesting permits issued and results from

recent rapid population survey of the species in Ghana. Permanent transacts and quadrats will be laid for population survey of each of the zones. With the support of local hunters, student team and staff of the Wildlife Division, data will be collected on these transect on yearly in other to understand the population dynamics of the species.

Data collection will focus on estimating population distribution, structure, density and dynamics using capture and recapture technique. The teams will collect data on species demographics and assesses changes in population demographic (sex, size and age classes). The teams will also assess the extent of threat to the population and the impact of species harvesting regime/quotas on population density across the species range in the country.

4.3 Extent of Suitable Habitat at National Level

The two chameleon species (i.e. *C. senegalensis and C. gracilis*) widely collected widely in all regions of the Ghana. However, significant populations are collected (also observed in rapid populations survey conducted) in the Sudanese, Guinean and Coastal savanna, as well as forest-savanna transition zones of Ghana. Greater densities of *C. gracilis* are found in the forest zones.
The Emperor scorpion species are typically found in hot and humid forests and have been reported to habit savanna grass and woodlands (Li and Parikh, 2011). As they reside in burrows and prefer to live under leaf litter, forest debris, stream banks and also in mounds of termites, their main prey. Emperor scorpions tend to live communally and are found in large numbers in regions of human habitation. (Rein, ed. 2009; "Emperor Scorpion (Pandinus imperator)", 2009). They are also found in estuaries. The specific habitat occurs across the country (Figure 18).

Ghana has a total land surface area of 234,540 Km^2 (MLNR 2016). Agriculture accounts for 17.44% (40,903 Km^2), savannah 46.7% (110,000 Km^2), forests 35% (140,724 Km^2), rural settlement 0.5% (1172.7 Km^2) and urban settlement 0.06% (140.72 Km^2).

For the Chameleon species (*C. gracilis* and *C. senegalensis*), we estimate conservatively that suitable habitat covers about 40% (16,361 Km^2) of agriculture lands, 70% (77,000 Km^2) of Savannah, 5% (4,104 Km^2) of forests, 20% (234.54 Km^2) of rural settlement and 10% (14.72 Km^2) of urban settlement. We estimate a conservatively a potential suitable range of 97,714 Km^2.

For the Emperor Scorpion, assuming that the suitable habitat savanna covers about agriculture occurs on 40% (16,361 Km^2), savannah 70% (77,000 Km^2), forests 40% (32,835 Km^2), rural settlement 20% (234.54 Km^2 m) and urban settlement 10% (14.72 Km^2). We estimate a conservative potential suitable habitat of 126,445 Km^2.

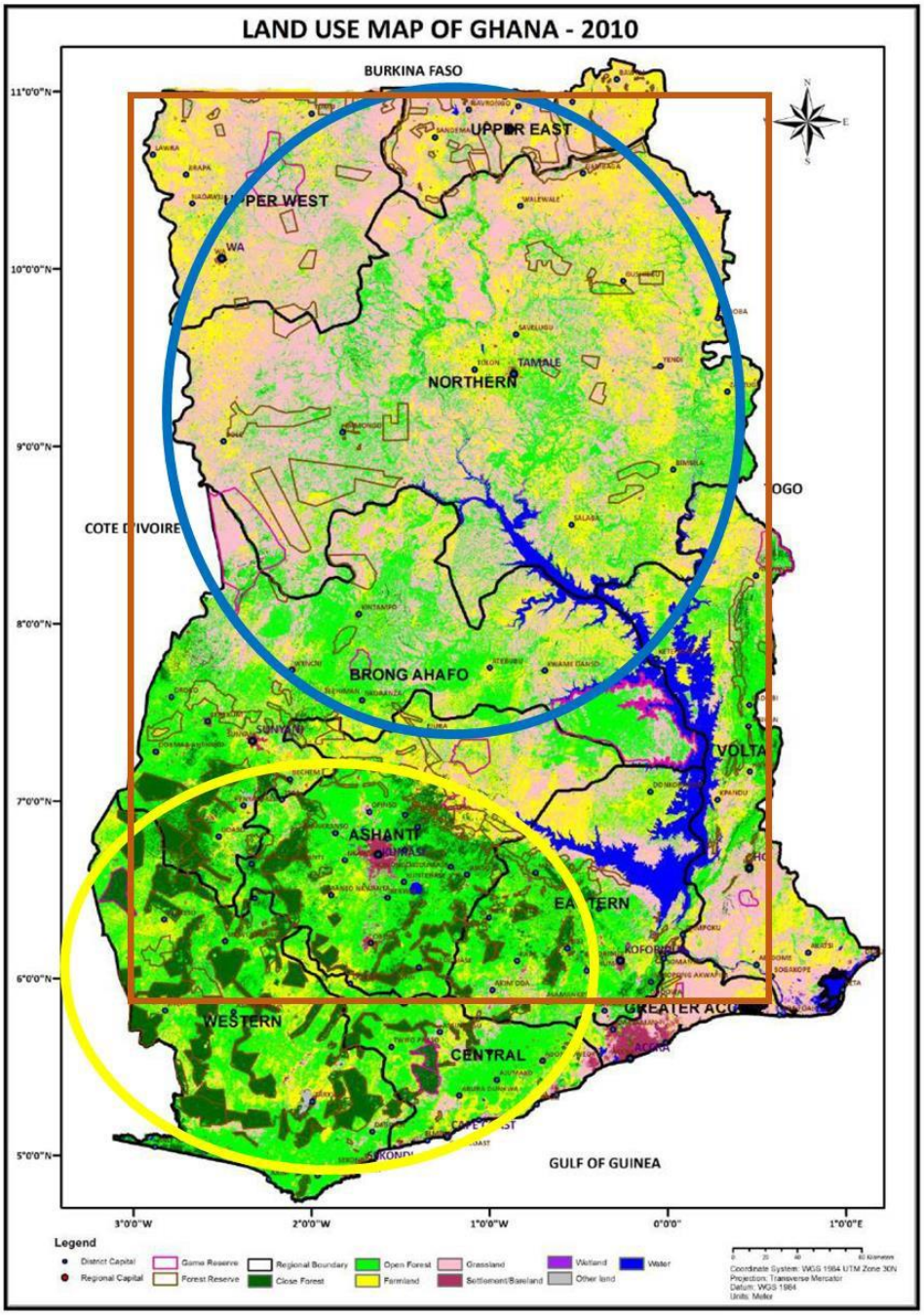

***Figure 18**. The observed distribution of the three species surveyed in Ghana. The area under different colours shows the distribution of significant population of the species (Yellow- C. gracilis, Blue- C. senegalensis; Red- P. imperator.*

4.4. Estimation of the Wild Population Size at National Level from Monitoring Data

For *C. senegalensis and C. gracilis*, following a rapid assessment survey conducted by WD and local hunters in selected regions of Ghana (Figure 6). WD staff and local hunters identified and collected chameleon species along a 40-meter fixed width transect of varying length. The team recorded the survey time (i.e time to work and collect samples) across different sampling locations in six regions of Ghana (Table 1 and 2). The team found significant population of *C. senegalensis*

in the northern part of the Ghana dominated Savannah vegetation and found higher density of *C. gracilis* in the southern part of Ghana dominated by forest vegetation. With an average national population density of 34.7 individuals/ Km^2 (*C. gracilis*) and 42.7 individuals/ Km^2 (*C. senegalensis)*, we estimated the total population of the species at 3,390,960 and 4,168,252 individuals respectively in Ghana.

For *P. imperator*, following a rapid assessment survey conducted by WD and local hunters in selected regions of Ghana (Figure 6, Table 3). WD staff and local hunters collected samples in a three 10m radius quadrats within 1ha plots across different sampling locations in six regions of Ghana (Table 3). The team searched for *P. imperator* under leaves, in burrows and under large rocks. *Pandinus Imperator* seem to be evenly distributed across the country. With an average population density of 146 individuals/ha, we estimated the total population of the species at 1,838,812,500 individuals in Ghana.

4.5. Estimated Sustainable Offtake Rate and Offtake at National Level

Establishing offtake rate is important to adaptive management of species. Several factors must be considered in establishing these offtake including species specific demographic parameters. While species-specific demographic parameters requirement differs across species, other factors such as uncontrollable environmental variation, uncertainties about the appropriate characterization of resource dynamics, limitations on the controllability of harvest rates, and uncertainties as to population status, expressed as sampling variation in the monitoring of populations and habitats Williams (1996). Given that these parameters need are difficult to determine especially over large areas, most studies on species off take adopt general guides from other areas.

A 10% harvest rate is widespread and accepted within harvest rates of other wildlife utilized for commercial purposes (Sinclair et al. 2006). For example, sustainable offtake rates of European hares are 20-40% (Marboutin et al. 2003); saltwater crocodiles are 40-60% (Bradshaw et al. 2006), wild pigs are 20-40% (Gentle and Pople 2013) and red deer are 10-40% (Milner-Gulland et al. 2000). This holds true especially for species with r-selected life history strategy. Biological attributes of the species include maturing rapidly and have an early age of first reproduction, a relatively short lifespan, have a large number of offspring at a time, and few reproductive events, or are semelparous, have a high mortality rate and a low offspring survival rate and relatively have minimal parental care/investment. Given that the species under consideration are have life history strategies reflecting of r-selected, the 10% harvest rate is appropriate. This is also on grounds that the species suitable rates are widespread across the country. Further, species harvests are not allowed in protected/conservation areas with has significant proportion of the species suitable ranges.

***Table 4**. Estimated offtake of the different species in international trade*

Species	National Density	Estimated Population	Offtake rate (10%)/Year	Min-Max Quantity Exported (1994-2015)
C. senegalensis	42.7 individual/ Km^2	4,168,252	416,825.23	*0- 2415*
C. gracilis	34.7 ind/ Km^2	3,390,960	339,096.04	*0- -2000*
P. imperator	146ind/Ha	1,838,812,500	183,881,250	*0-107,923*

4.6. Harvest and Trader Monitoring

The Wildlife Division maintains a program of regular visits to the trader facilities to inspect species in stock. Random checks are conducted with local hunters to ensure that they do not over harvest populations. The Wildlife laws make it illegal to harvest species in conservation areas. The conservation areas are actively manned by park rangers to prevent species harvest. Local hunters also implement size class limitation on species and also do not harvest all species observed at location (especially for the scorpion) protected area staff.

Traders are also encouraged to ensure that species are collected from specific geographic location for which the permit has been issued. The Wildlife Division declines application for permits if a trader fails comply with the provision of the permit**.** The wildlife Division has closed season (September -December yearly) where some key wildlife cannot be harvested. Traders who bring in wild stock for ranching are expected to release 10-30% of the offspring and the parental stock back to the wild.

Exported consignments are checked and certificates issued prior to exportation.

5.0 Trade Controls and Management

5.1 Quotas in Place

Ghana has an established system of issuing quotas for collection and export of Chameleon species although not for scorpions. Based on the three species life history strategies, we adopted a 10% harvest rates which is widely used for r-selected species. This amounts to possible offtake of 416,825.23 for *C. senegalensis, for* 339,096.04 for *C. gracilis* and 183,881,250 for *P. imperator.* However, Ghana proposes to maintain export quota of 1500 individual/ year for the Chameleon species and 120,000 individuals/year for the *P. imperator.* It is worth noting that apart from 1996, and 1997 (*C. senegalensis*
) where exported quantities exceeded quota allowed, Ghana's exports in the species for the past periods were below the established quota.

Table 5. Quota and numbers of *C. senegalensis* and *C gracilis* exported from Ghana from 1995-2015

		Quantity of Chameleon species Exported	
Year	**Quota**	***C. gracilis***	***C. senegalensis***
1995	1500	752	825
1996	1500	2000	2415
1997	1500	902	2396
1998	1500	779	1048
1999	1500	830	1093
2000	1500	1093	1365
2001	1500	1293	485
2002	1500	680	1222
2003	1500	719	833
2004	1500	545	1113
2005	1500	750	2285
2006	1500	0	0
2007	1500	890	1180
2008	1500	0	0
2009	1500	1070	1520
2010	1500	1320	1397
2011	1500	1160	1645
2012	1500	673	965
2013	1500	320	745
2014	1500	370	610
2015	1500	460	1065

5.2 National Licencing System

The Wildlife Conservation Regulations, 1971 (LI 685) prohibit the utilisation of wildlife resources without user rights. That is no person shall engage in the hunting or capturing of wild animal without first obtaining a licence or a permit for the purpose (see section 3.4). Further, permits are required to export or import wildlife and wildlife products, hold, keep and breed animals in captivity. The laws make specific provisions for the grant of a licence/permit, and suggest that a licence shall be given for a specific animal, valid for a period of six months, from the date of grant of the licence. The legislation requires that only species listed on the licence can be hunted, captured or harvested and numbers shall not be in excess of what has been specified on the licence. These legislative instruments, makes it an offense, for any person to hunt, capture or destroy animals without a valid licence/permit granted by the Chief Game and Wildlife Officer in accordance with the Regulation.

Further, the laws make it impossible for licence be transferable and allow for revocation or suspension of a licence or permit if the person does anything contrary to the conditions of the licence or permit. For instance, if the holder of the suspended licence or permit does not remedy the default within the time stipulated in the notice given.

Trade have been encouraged to establish breeding facilities. The Wildlife Division has initiated discussions on developing policy guidelines ranching and captive breeding facilities.

5.3 Illegal Trade of the Species

No illegal trade in the species has been reported in any of the three species.

5.3.1 Penalties for Non-compliance/illegal Trade

Generally, penalties prescribed by various wildlife laws for non-compliance have lower penalties (Maximum of six months' imprisonment-**see 3.4**). However, other environmental and custom legislations which is used with the Wildlife Legislation in prosecuting offenders, provides higher punitive penalties. For instance, section 21 of the Ghana Customs Act 2015 Act 891, provides maximum fine of 300% international value of the item and/or 5 years' imprisonment for illegal export or import of wildlife.

Additionally, Ghana has promulgated a Wildlife Resource Management Bill which will provide stiffer penalties for non-compliance when passed into law.

5.4 Capacity Development to Improve National Species Management

The Wildlife Division maintains a well-trained staff and ensures their regular participation in CITES related trainings. The Wildlife Division provide adequate identification guides and trainings to local hunters as well as regularly offers capacity building workshop for traders and enforcement officers especially judges, custom and police officers. Training opportunities are also provided for undergraduate students and staff of survey technical and measurement of species parameters.

Figure 19. Capacity building programmes for Judges, Prosecutors, Wildlife officers and staff of other agencies at the airport

5.6 Traceability for Traded Specimens, CITES Export Permits and NationalTraceability Verification Process.

Although, specific traceability systems are not available, the WD maintains record keeping system that can provide information on trade consignments. Harvest permits are issued for collection of species in the wild after an application has been received and vetted. CITES Export permits are issued to applicants to export the species after it has been established that the species was legally obtained. Inspections are usually carried out by wildlife officers at the exporters' warehouse before packaging of the specimen. Wildlife and Custom Officers at the International Airport (Kotoka) also inspect the consignment to check the species type and reconcile numbers presented by exporters with approved numbers. The team of Wildlife and Custom officers also ensure that packaging of live animals conforms to the International Air Transport Association (IATA) regulations.

The Wildlife Division keeps a simplify database at the Headquarters and the Kotoka International Airport. Details of all exports are recorded and quantities recorded at the Kotoka International Airport are reconciled with approved numbers at the headquarters

5.7 Levies and Funding for Ongoing Trade Management

Dedicated source of funding is required for sustainable monitoring and management of the species as well as effective implementation of CITES. Levies charged on harvests and exports are generally low and are paid into a statutory account. The Government allocates funds quarterly to the Wildlife Division for general management of wildlife resources in the country, which is inadequate.

Currently, the Wildlife Division charges fees to register wildlife traders, issue harvesting licence and permits, conduct quarantine inspection and issue CITES permit fees. The average cost of collection and exporting chameleon or a scorpion is GH¢103 (USD $17.76). The cost may be lower depending on the number of individuals in a consignment. Fees charge on inspection depends on the distance to the facility.

Though the Government does not earn much from harvest and export fees, trade of the species create employment for the local collectors and exporters and also provide some foreign exchange to the country. Additionally, species like scorpions are considered a pest in many of the collection areas within its range, trade therefore minimise the risk pose to farmers and local people.

Table 6. Cost of Permit for Chameleon and scorpions in Ghana

Levy	Unit cost/ (Gh¢)	Permit processing fee	Total cost of permit	
			GH¢	USD $
Capture/Harvesting Permit	2.00	50.00	52.00	8.97
CITES Certificate/Export Permit	1.00	50.00	51.00	8.79
TOTAL	3.00	100	103.00	17.76

5.8 Further Research Needed for this Species and Trade Management

Further research is needed to understand species population dynamics and impact of trade of the species in the wild. Efforts will focus on population sizes, densities, size classes, reproduction, biology of the species, habitat condition and threat to the species.

6.0. Conclusion

Ghana is signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**, a multilatera**l agreement between governments. The agreement aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.

Following the CITES Review of Significant Trade procedure (defined in Resolution Conf. 12.8 (Rev. CoP17)) for Ghana, *P. imperator*, *C. gracilis* and *C. senegalensis* were identified as species that may be subject to unsustainable levels of international trade. With no reasonable response provided by Ghana, the CITES Standing Committee ultimately, suspended international commercial trade in these species from Ghana. This report provides progress on the implementation of recommendation by the Animals Committee. It provides detailed information on population dynamics of the three species (*C. gracilis, C. senegalensis, P. imperator*) currently on trade suspension from Ghana and outlines management effort information aimed at sustainable exploitation of species. These new information set is expected to aid the CITES Standing Committees pass a positive review of trade suspension of the three species from Ghana.

Following a rapid population survey across the country by local hunters and staff of the Wildlife Division, the distribution, population density and population estimate was provided for the three species (*P. imperator*, *C. gracilis* and *C. senegalensis*) in trade suspension. The rapid population survey revealed that *C. senegalensis* was more distributed in northern Ghana which is predominately Savannah with the highest density found in the Oti Region, while *C. gracilis* was dominant in the southern Ghana with greatest densities found in the High population density were *C. senegalensis* were found in the Oti region, followed by Northern and Savanna regions of Ghana. Although the survey found population of *C. gracilis* in the savannah dominated vegetations of northern Ghana, higher density occurred in forested areas south of Ghana (Greater Accra and Eastern regions). Given an average population density of 42.7 and 34.7 individuals/Km^2 of *C. senegalensis and C. gracilis* respectively, the national population of species is estimated as 4,168,252 of *C. senegalensis and C. gracilis of* 3,390,960.

Following a rapid assessment survey conducted by Wildlife Division and local hunters in selected regions of Ghana. Wildlife Division staff and local hunters collected samples in a three 10m radius quadrats within I ha plots across different sampling locations in six regions of Ghana. *Pandinus Imperator* seem to be evenly distributed across the country. With an average population density of 146 individuals/ha, we estimated the total population of the species at 1,838,812,500 in Ghana.

Based on the three species life history strategies, we adopted a 10% harvest rates which is widely used for r-selected species. This amounts to possible offtake of 416,825.23 for *C. senegalensis, for* 339,096.04 for *C. gracilis* and 183,881,250 for *P. imperator.* Ghana has proposed to maintain export quota of 1500 individual/ year for the Chameleon species and 120,000 individuals/year for the *P. imperator.*

It is our believe that international trade can be resumed in the species without threatening the survival of the species. National quota of 1500 each for the *C. gracilis* and *C. senegalensis* is provided and 120,000 for the scorpions.

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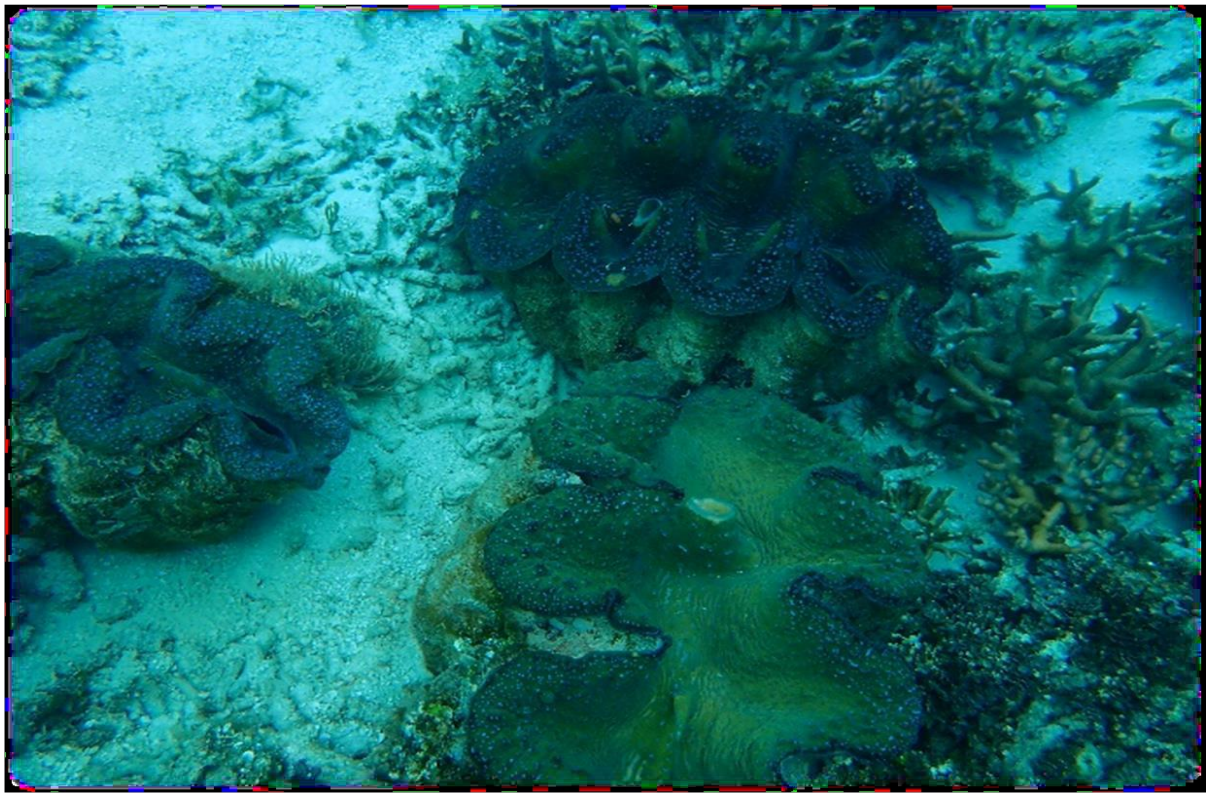
Solomon Islands

Solomon Islands non-detrimental finding for trade and dead clam shells



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1. INTRODUCTION

The coastal marine resources of Solomon Islands play a significant role as a source of livelihood and protein. Like other Pacific Islands Solomon Islanders have relatively high levels of fish consumption (Needham, S. et al. 2014). Six species of giant clams have been recorded in Solomon Islands. They are harvested for home consumption which was regarded as a traditional diet, an activity that is permitted under the Fisheries Management Act 2015.

The clam fisheries trade has contributed to the livelihood of the coastal communities and export revenue for the government of Solomon Islands. In 2007 Solomon Islands became signatory to the Convention on International Trade in Endangered Species (CITES). Clams were listed in CITES Appendix ll which requires the non-detrimental finding (NDF), and necessary management and monitoring measures in place before any export trade can take place.

There is concern that a ban on the export of dead clam shells is having a detrimental effect on income opportunities for some coastal communities and us a lost opportunity for the countries revenue and domestic income opportunities (Tua, J.P. 2019). Currently clam products have zero quota for export from Solomon Islands, by CITES. Now the obligation is on Solomon Islands to establish management measures as well as show that the trade will not be detrimental to the fishery. Refer to Appendix 2 for the flow chart of executing the NDF requirements.

1.1. Scope

This NDF is based on historical data and a clam survey done in 2019 in six provinces of Solomon Islands (Tua, J.P. 2019). Data includes density status, size structure and historical exports, management measures enforced by the Ministry of Fisheries and Marine Resources (MFMR). The information presented in this NDF is used to determine if export of dead clams' shells will pose a threat to the survival of the clam fisheries. In this NDF, words and phrases used have the same meanings as defined in the Fisheries Management Act 2015, Fisheries Management (Prohibited Activities) Regulation 2018 and the Fisheries Management Plan (Tridacna and Hippopus Clams) 2020.

For the purpose of this NDF, the CITES Management Authority of Solomon Islands is the Environment and Conservation Division within the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM) and the Scientific Authority is the Ministry of Fisheries and Marine Resources (MFMR).

2. BIOLOGICAL INFORMATION

2.1. Scientific and common names

The classification of giant clams is as follows:

Phylum	Mollusca
Class	Bivalvia
Order	Veneroida
Superfamily	Cardiacea
Family	Tridacnidae

2.2. Species present

All the six species in table 1 were recorded in the survey though some of them were not present in some of the provincial surveyed sites. *Tridacna crocea* has the highest abundance across all the sites. Refer to table 1, for more details of species individual counts.

Table 1. The total clam species individual counts recorded in the entire survey in the six provinces.

Species	Total individual counts
Tridacna crocea	1376
Tridacna maxima	1272
Tridacna squamosa	206
Tridacna derasa	109
Tridacna gigas	50
Hippopus hippopus	21

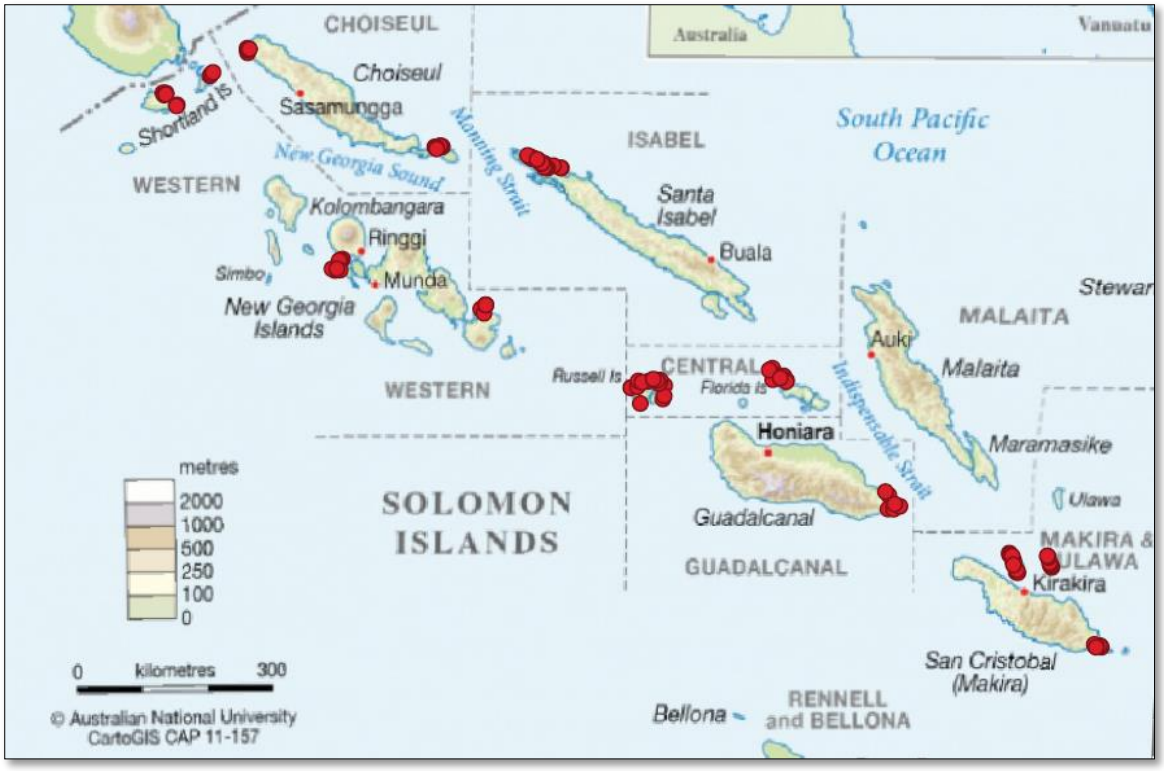

Figure 1. The map of sites (red dots) where the 2019 surveys were completed in six provinces.

2.3. Density and abundance

There were differences in all the density of all species from the survey ranging from an average of 2 to 104 individual per hectare (Table 2).

Of the surveyed stations, *Tridacna maxima* was observed most frequently at 62% of the 303 surveyed stations (Table 2) and the least was *Hippopus hippopus* with 6%. Generally the density of all the species were below the healthy density reference point in which the fisheries is said to be in a healthy status. The most common species, *Tridacna crocea* is well below the healthy density reference with an overall density of 92 individuals per hectare and 493 individuals per hectare for the present mean density (Table 2). Despite the overall low density, the present mean density showed that there are stations where *Hippopus hippopus* and *Tridacna squamosa* were present in healthy densities above their reference point.

Table 2. The giant clam species density of the surveyed sites base on the overall and present mean analysis. Healthy density reference point extracts from SPC, and insufficient data for *Tridacna derasa* and *Tridacna gigas* to determine the density reference points.

Species	Overall mean (ind.ha^{-1})	SE	Present mean (ind.ha^{-1})	SE	Healthy density reference point (ind. ha^{-1})	Number of stations observed of 303 stations)
Hippopus hippopus	2	0	157	26	25-34	17 (6 %)
Tridacna crocea	92	9	493	39	5000	114 (38 %)
Tridacna derasa	4	1	87	14		45 (15 %)
Tridacna gigas	2	1	104	20		23 (8 %)
Tridacna maxima	104	6	325	14	750	189 (62 %)
Tridacna squamosa	17	2	260	23	20-30	62 (20 %)

*Overall mean is the density of a species for all stations and transects for the same survey type conducted at the site, including stations/transects without zero records,

*Present mean is the density of a species calculated using only stations and transects of the same survey type where that species was recorded,

*Mean density in number per hectare (ind.ha^{-1}).

Three of the six provinces were surveyed in both 2006 and 2019. In figure 2, the overall mean density of the species is compared. All the species were recorded in 2019 but in 2006 *Tridacna gigas* was not observed. *Tridacna crocea* and *Hippopus hippopus* had lower densities in 2019. For example, in 2006 *Tridacna crocea* had a mean density of 188 individual per hectare whereas in 2019 it was 92 individual per hectare. The other 4 species had higher densities in 2019 compare to 2006.

Tridacna crocea and *Hippopus hippopus* are accessible species, tending to be found in shallower water, and are consumed as local food source.

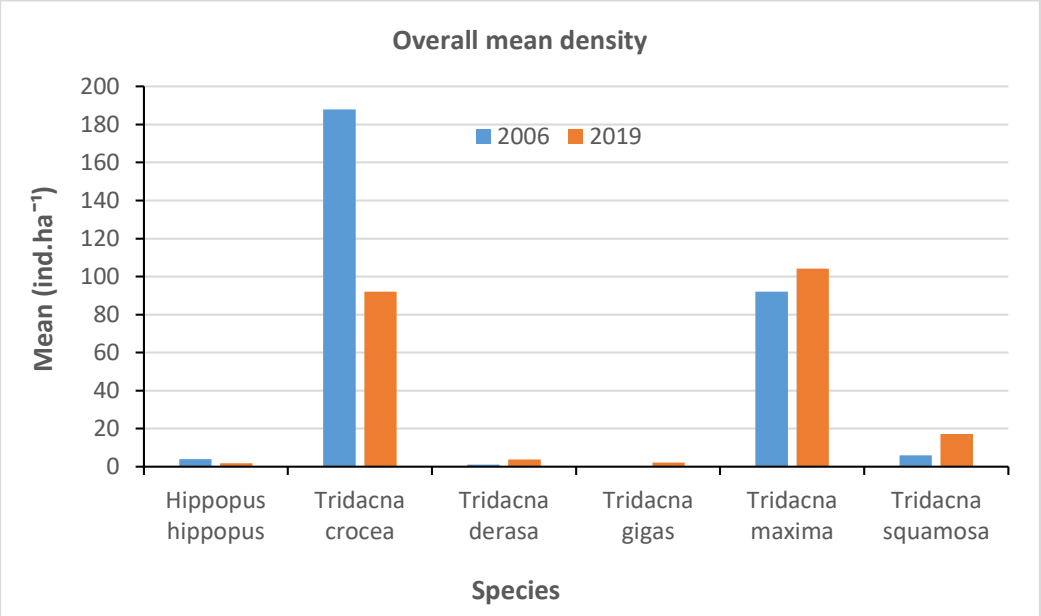

Figure 2. The comparison between the 3 surveyed provinces (Guadalcanal, Central Islands and Western Provinces) of the same survey sites in 2006 and 2019.

2.4. Size class frequency

With the low density of species from the 2019 survey, size class frequencies were only able to be plotted for only three species (*T. crocea, T. maxima* and *T. squamosa*). The others were at such a low densities that plotting them resulted in uninformative patterns.

The maximum size for *Tridacna crocea* is 195mm (SPC, 2014) and figure 3 below shows that most specimens were between 96-100mm. For *Tridacna maxima,* the maximum size is 380mm (SPC, 2014) and in 2019 survey shows the highest counts were between 166-170mm whilst, *Tridacna squamosa* (maximum length 435mm) was dominant between 246-250mm. Overall there were declines in sizes (lengths) between the two surveys, signifying that populations are not keeping up with the fishing pressure from the coastal communities.

Despite, these low lengths in 2019, *Tridacna maxima* some longer specimens were recorded in comparison to 2006 survey (166-170mm in 2019 compared to 96-100mm in 2006). There was no change in the longest individuals recorded for *Tridacna crocea* between years.

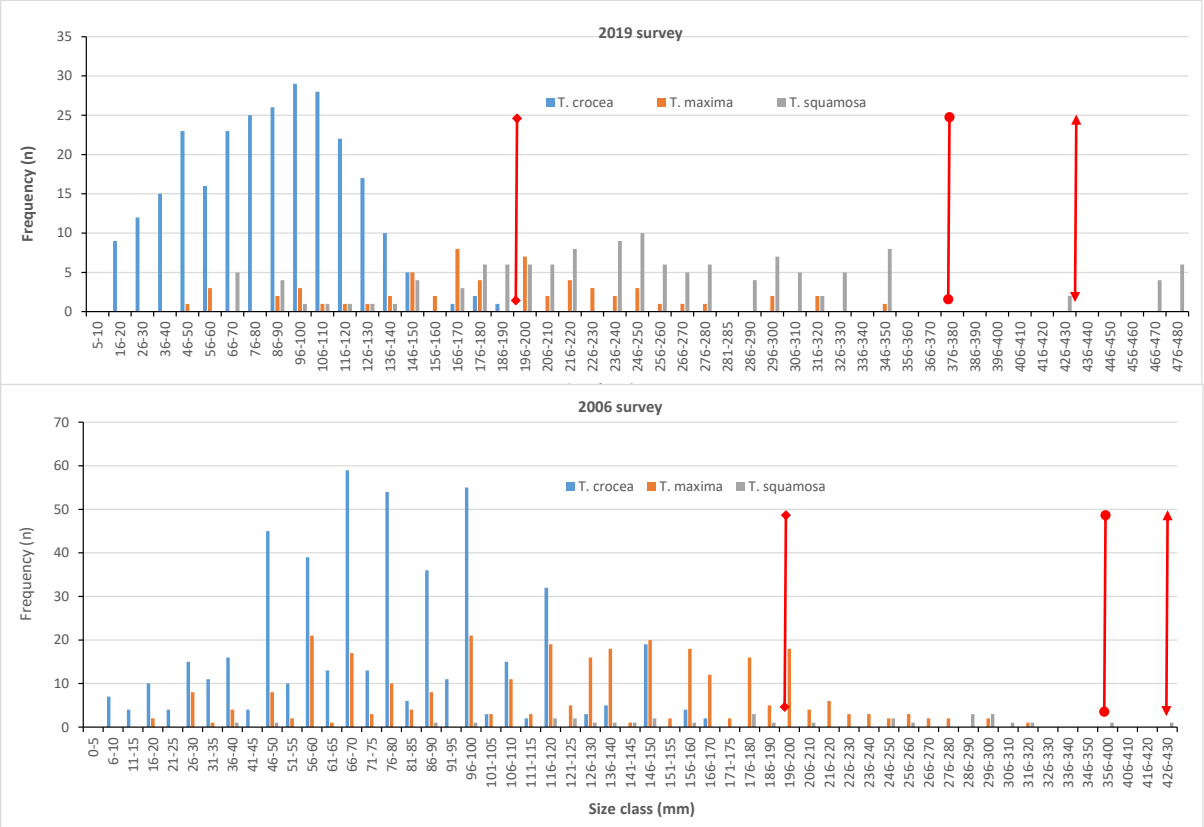

Figure 3. The size class frequency for the most common species of the six species across the 3 provinces surveyed in 2019 and 2006 for the same sites. Red arrows

denotes the maximum size ranges for *Tridacna crocea* (diamond arrow), *Tridacna maxima* (circle arrow) and *Tridacna squamosa* (Sharp triangle arrow).

2.5. Habitat and species distribution

Solomon Islands is one of the few countries in the Pacific region with all species of tridacnidae clams (with the exception of *Hippopus porcellanus*). There is also a great diversity of coastal marine habitats, ranging from deep inlets to atolls and from coastal shelves to lagoon systems (Govan, et al., 1988). The marine habitats diversity is favourable and suitable for the diversity of clams' species across the country.

Tridacnidae clams are distributed across the island provinces although Govan, et al., (1988) stated that *Tridacna derasa* had only been observed in Marau Sound, in Guadalcanal and the northern Marovo lagoon in Western Province but they noted it was reputedly present in other areas. This has since been confirmed (**table 3**). Despite, the low species density reported in 2019 survey, species diversity across the provinces is still maintained.

The 2019 survey, shows that the six species of giant clams are found in the six provinces. Observations from the 2019 survey showed that *Tridacna gigas* had a wide distribution in Western province and was particularly abundant in Shortland Islands.

Table 3. Three different surveys conducted in the provinces, only few sites (or provinces) are the same (Guadalcanal, Central and Western) whilst most are different sites from the provinces.

	Provinces								
Years	**Guadalcanal**	**Malaita**	**Western**	**Isabel**	**Makira Ulawa**	**Temotu**	**Central Islands**	**Rennel Bellona**	**Choiseul**
1988	*T. gigas*	*T. gigas*	*T. gigas*	*T. squamosa*	*T. squamosa*	*T. gigas*	*T. gigas*	*T. gigas*	*T. gigas*
	T. squamosa	*T. squamosa*	*T. squamosa*	*T. maxima*	*T. maxima*	*T. squamosa*	*T. squamosa*	*T. squamosa*	*T. squamosa*
	T. maxima	*T. maxima*	*T. maxima*	*T. crocea*	*T. crocea*	*T. maxima*	*T. maxima*	*T. maxima*	*T. maxima*
	T. crocea	*T. crocea*	*T. crocea*	*H. hippopus*	*H. hippopus*	*T. crocea*	*T. crocea*	*T. crocea*	*T. crocea*
	T. derasa	*H. hippopus*	*T.derasa*				*H. hippopus*		*H. hippopus*
	H. hippopus		*H. hippopus*						
	6 species	**5 species**	**6 species**	**4 species**	**4 species**	**4 species**	**4 species**	**4 species**	**5 species**
2006	*H. hippopus*		*H. hippopus*				*H. hippopus*		
	T. crocea		*T. crocea*				*T. crocea*		
	T. maxima		*T. maxima*				*T. maxima*		
	T. derasa		*T. derasa*				*T. derasa*		
	T. gigas		*T. squamosa*				*T. squamosa*		
	T. squamosa								
	6 species		**5 species**				**5 species**		
2019	*H. hippopus*		*H. hippopus*	*H. hippopus*	*H. hippopus*		*H. hippopus*		*H. hippopus*
	T. crocea		*T. crocea*	*T. crocea*	*T. crocea*		*T. crocea*		*T. crocea*
	T. derasa		*T. derasa*	*T. derasa*	*T. derasa*		*T. derasa*		*T. derasa*
	T. maxima		*T. maxima*	*T. maxima*	*T. maxima*		*T. maxima*		*T. maxima*
	T. gigas		*T. gigas*	*T. gigas*	*T. gigas*		*T. gigas*		*T. gigas*
	T. squamosa		*T. squamosa*	*T. squamosa*	*T. squamosa*		*T. squamosa*		*T. squamosa*
	6 species		**6 species**	**6 species**	**6 species**		**6 species**		**6 species**

*Empty spaces (columns/rows), are not surveyed provinces in that year
*1988 data extracted from Govan et al, 1988; the surveys a conducted by the Coastal Aquaculture Centre, Solomon Islands office.

3. UTILISATION AND TRADE

3.1. Type of use and destinations

The meat of all giant clam species that are found in Solomon Islands is widely eaten throughout the country except for the religious believers of the Seventh - day Adventist (SDA) Church. In a number of coastal communities clams are a highly important source of food and form a significant part of the local diet. Empty shells are used to some extent in the local carving and jewellery domestic trades. Cultured clams for the aquarium trade are able to be exported to a range of markets including the USA, and empty shells to the Asian and European markets.

3.2. Domestic (subsistence) harvesting control

The practice of traditional marine taboo over certain portion of a reef (temporary closure for some months or years, and then open again for harvesting) had some conservation benefits and it works better in some areas than others. This supports the purpose of stock improvement. Where taboos or Community Based Fisheries Management rules are in place, harvesting for subsistence, as exempted in the Fisheries Management Act 2015 can be sustainable for the wild population.

3.3. National harvest management control

Prior to become party to CITES, a ban (regulations under Fisheries Act 1998) for export of wild clams was imposed except for aquaculture clams. This is the only means for controlling the harvest of clam species for export. This regulatory regime except, harvesting by the coastal communities for subsistence.

3.4. Exports

Solomon Islands has historical traded in clam products although a lack of proper records of has caused inconsistencies with data. Between 1976 and 1987 a total of 36,273 kg of clam products (predominantly shell plus some meat) were recorded as being exported overseas, with a total value of SBD$74, 486. Clam products therefore represented less than 1 % of the value of total non-fin fish exports for this period (Govan et al. 1988)

From 2006 to 2015 a few companies were permitted to trade clam products (dead shells) under the discretionary power of the MFMR Director (Scientific Authority) and with precautionary measures put in place (i.e. quota system). Consignments were permitted according to the number of shell pieces regardless of their species. Export data for dead clam shells shows that the value (tax revenue) (see figure 4) has generally tracked the exported quantity by pieces. There was an export peak in exports in 2009.

Generally the quantity of clam shells exported decline from 2009 onwards and there have been no exports approved since 2015.

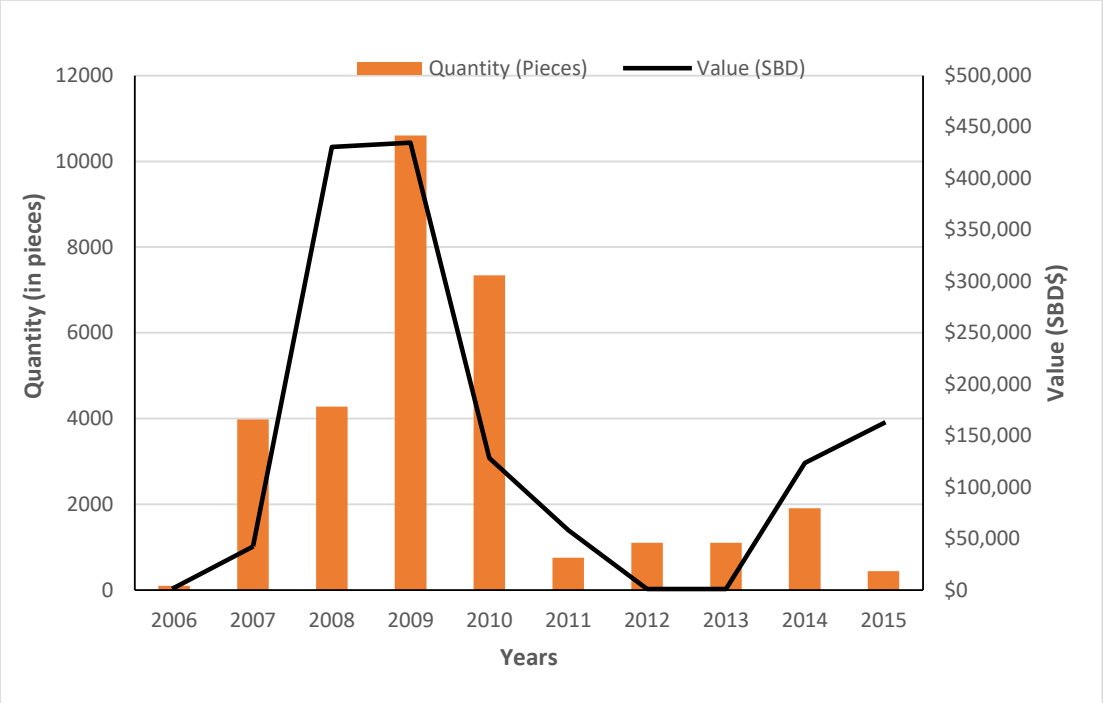

Figure 4. Export of empty dead clams' shells exported from 2006 to 2015. It shows the quantity by pieces exported and the value of the product.

4. FISHERIES THREATS

4.1. Climate Change

4.2. Developments (logging, mining, etc)

4.3. Natural disasters

5. MANAGEMENT MEASURES

5.1. Management measures

Since Solomon Islands became a party to CITES, the trade of both cultured clams and empty shells has been tightened, adhering to the trade requirements.

Currently, it is prohibited to sell, buy or export clam meat or clam products of the genus Tridacna and Hippopus not under a management plan (Fisheries Management (Prohibited Activities and Amendments) Regulations 2018) any person who engages

in these, commits an offence (refer to section 4.4). Also strict measures to limit the number of export licences to 3 and a non-detrimental findings requirement for the clam species have to be met (refer to section 4.4).

5.2. Management history

In the past, Solomon Islanders practiced local and traditional management measures such as the establishment of clam gardens close to the vicinity of the community and the traditional practise of taboos in areas of customary marine tenure. Legal approaches to management came into place after Solomon Islands became a signatory to CITES in 2007, and more recently two relevant legal instruments have been developed (see section 4.4) to safeguard and manage the clam fisheries and other key fisheries.

5.3. Management plan and its contents

The management plan (cited as Fisheries Management Plan (Tridacna and Hippopus Clams) 2020), clearly states that to enable trade of clams under a licensing system, the management plan must have two broad measures: a) limitation on issuance of export licences and, b) an assessment conducted by the scientific authority complying with non-detrimental findings.

5.4. Legal instruments and enforcement

Solomon Islands is progressively meeting its CITES requirement for clams trading and the following legal instruments were put in place and enforced by the relevant mandated authorities. Both the Management and Scientific Authorities work together in executing these legal instruments and requirements when it comes to international trade.

Table xx: The legal instruments in place for or part of for the management of clam fisheries by the specified authorities

Legal instruments	Authority responsible
Protected Areas Act 2010	Ministry of Environment and Conservation, Climate Change, Disaster Management and Meteorology
Fisheries Management Act 2015	Ministry of Fisheries and Marine Resources
Fisheries Management (Prohibited Activities and Amendments) Regulations 2018	Ministry of Fisheries and Marine Resources
Fisheries Management Plan (TRIDACNA AND HIPPOPUS CLAMS) 2020	Ministry of Fisheries and Marine Resources

The Ministry of Fisheries and Marine Resources are active in enforcing the fisheries legal instruments as they have sufficient responsible compliance officers stationed in Honiara, the capital of Solomon Islands and Noro town in Western Province. In addition, fisheries officers in each Province carry out surveillance and community

education. Apart from MFMR, the Environment and Conservation Authority (Management Authority) use the local rangers association to be on watch under the Protected Areas Act 2010. The Protected Area is required to protect fauna and flora from illegal harvesting and trade.

5.4.1. Legal and illegal trade

There has been some trade in the clam fisheries despite being party to the CITES, prior to the award of the zero quota. Since 2015, however then has been no trade from Solomon Islands. The current implementation of the Fisheries Management (Prohibited Activities and Amendments) Regulations 2018 and the Fisheries Management Plan (TRIDACNA and HIPPOPUS CLAMS) 2020 by Scientific Authority is expected to improve wild clam stocks.

Coastal communities are now informed of fisheries regulations through public awareness campaigns and the erection of large billboards in the public areas especially in the provincial markets and coastal fishing communities across the country.

These awareness programs have focused on informing the communities of the importance of conservation and management of the clam fisheries. From the MFMR enforcement and compliance officers' office, data shows a decline in local sale of wild harvested clams (now a prohibited activity) by the coastal communities.

6. REVIEW OF THE NON-DETRIMENTAL FINDING

This Non-detrimental Finding shall be reviewed annually when new science (from data collection) and management information is available through the Scientific and Management Authorities in Solomon Islands and the CITES.

6.1. Non-detrimental finding

This report concludes that controlled trading of dead clam products (empty shells) will not detrimental or harmful to the survival of wild clam population. The existing management measures are deem to be satisfactory. They include a quota system and a limit of three export licenses that can be issued each year. These require an onsite assessment to verify the stock from the supplying individual, community or province by fisheries compliance officers. Ongoing awareness programmes about the inshore fisheries regulations and the importance of resource management by the Community Based Resource Management section of the MFMR is expected to continue to positively impact on coastal fishers.

7. CONCLUSION

The Ministry of Fisheries and Marine Resources as the CITES Scientific Authority for Solomon Islands concludes that based on current legal instruments and management strategies set for the proper management of the fishery and meeting this NDF that clam shell products can be traded without causing detrimental impact on the survivability of the wild populations of giant clams.

8. REFERENCES

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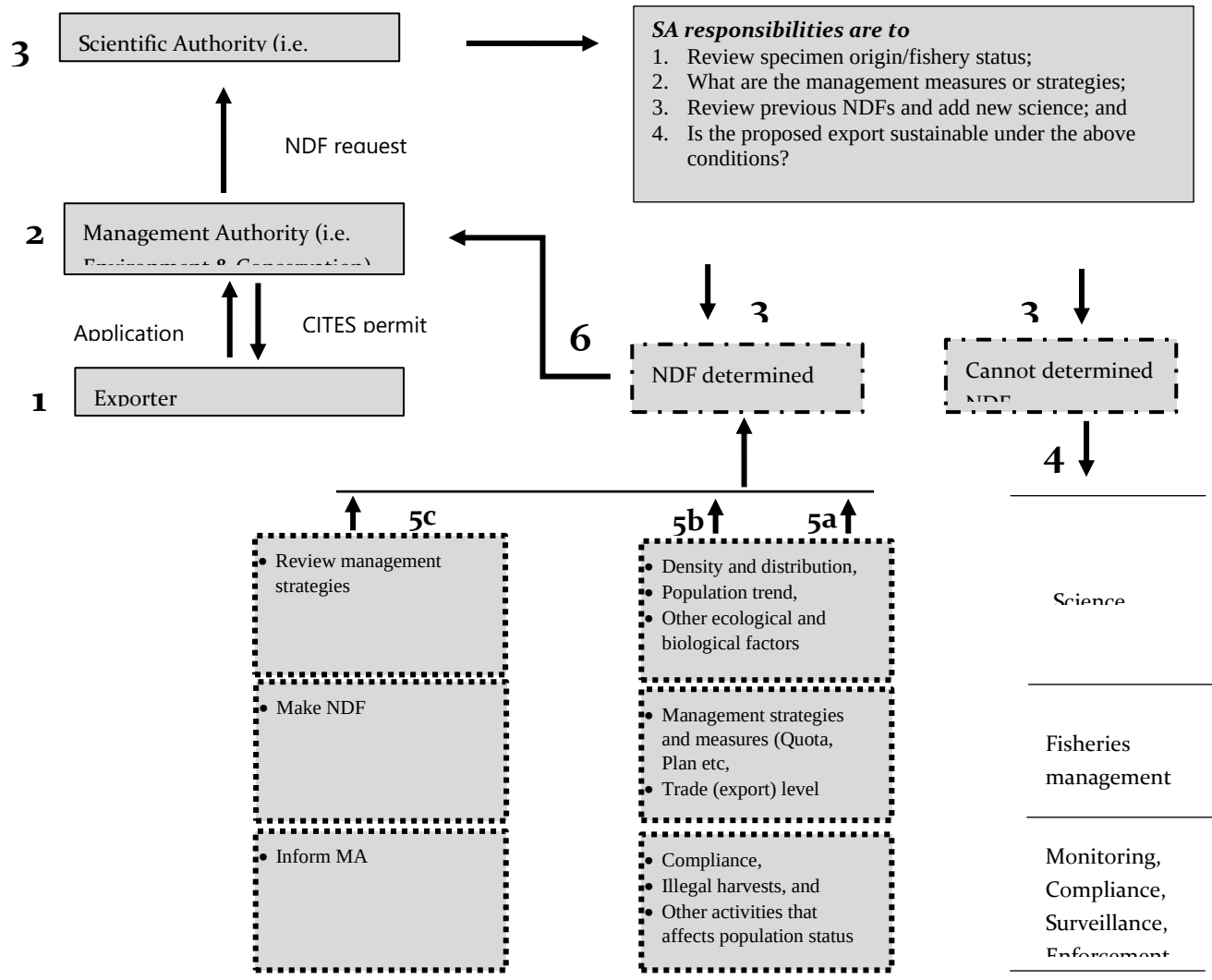
Appendix 1: CITES Permit

Environment will insert a copy of the permit here

Appendix 2: Solomon Islands flow-chart for decision making on an NDF



1. Exporter applies for CITES export permit
2. Management Authority (MA) requests an NDF from Scientific Authority (SA)
3. SA review the origin/status of specimen or fishery (biological, ecological, management and sustainability), to determine that international trade will detrimental to the survival of the specimen/fishery. If the information is sufficient to produce a NDF then proceed to **STEP 6**; if not then proceed to **STEP 4**
4. Improve the understanding of the species and fishery through the following: assessment undertaken, management measures developed and establishment of MCS protocols and strategies
5. After improving understanding of the fishery or management: **a**) SA determines trade **will not** be detrimental to the survival of the species; proceed to step 6; **b**) SA determines international trade **will** be detrimental to the survival of the species under current conditions; proceed to step 6 or 5c; **c**) SA review the management instruments to allow sustainable use of the fishery; proceed to Step 6.
6. SA provide NDF or inform MA of the outcome
7. MA issues an export permit of CITES

RST Long Standing Suspensions: Report on Standing Committee recommendations to suspend trade that were made more than two years ago through the Review of Significant Trade

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Executive Summary and Recommendations

This report provides an update on 19 species/country combinations that have been subject to trade suspensions established through the CITES Review of Significant Trade (RST) for more than two years. It aims to assist the Standing Committee, in consultation with the CITES Secretariat and the Chair of the Animals Committee (AC), in determining whether or not the trade suspensions remain warranted, and if appropriate measures are required to address the situation in accordance with paragraph 1p) of Resolution Conf. 12.8 (Rev. CoP18).

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) was asked by the CITES Secretariat to consult with eight selected Parties[1] that have been subject to trade suspensions established through the CITES Review of Significant Trade (RST) for more than two years. These eight Parties were contacted by UNEP-WCMC in March 2021, and were requested to provide updates firstly on the conservation and protection status of the relevant species within their country, and secondly on the Party's interest in resuming trade in these species in the future. If Parties indicated interest in future trade, they were asked to confirm whether they considered that non-detriment findings (NDFs) could now be made. Alternatively, if there was no interest in future trade, Parties were asked to confirm that exports are no longer anticipated. Parties were also asked to outline management actions in place for the relevant species, progress in implementing AC recommendations, and any challenges faced in implementing them, as well as the underlying reasons for these challenges and what type of support (if any) would be needed in order to fully address any outstanding recommendations.

Three Parties (**Guinea, Senegal** and the **United Republic of Tanzania** (hereafter Tanzania)) did not respond to the consultation; as a result it is recommended that the trade suspensions for *Hippocampus algiricus* from Guinea and Senegal, and *Kinyongia fischeri* and *K. tavetana* from Tanzania remain in place. **Fiji** confirmed that there was no intention to trade in live corals in future, and on this basis it is suggested that the current recommendations to suspend trade in *Plerogyra simplex* and *P. sinosa* could be lifted subject to the publication of zero export quotas. **Cameroon** noted that it did not currently wish to resume trade in *Trioceros quadricornis,* but explained that a species inventory and NDF could be a future possibility. It is recommended that the trade suspension for this species/country combination remain in place; however, this could be reviewed in future subject to Cameroon providing these elements.

The responses of the three remaining Parties (**Benin, Ghana** and the **Solomon Islands**) indicated that trade in the ten relevant suspended species may be anticipated in future (amounting to 12 species/country combinations, see Table i). For these three countries, it was decided in consultation with the Secretariat to compile updated species assessments to evaluate progress against the AC recommendations in detail; these can be found from page 5 onwards. On the basis of the responses provided by the three Parties, as well as further information identified through literature searches and in consultation with experts, it was concluded that the retention of the current trade suspensions may be appropriate for all 12 species/country combinations. This is largely on the basis that the majority of AC recommendations remain to be addressed, or on the basis of key weaknesses identified in draft NDFs provided in response to the consultation that, until addressed, may prevent range States from providing a robust demonstration that exports would be non-detrimental to the survival of the species in compliance with Article IV. A full summary of the basis of these recommendations is outlined in Table i.

[1] Benin, Cameroon, Fiji, Ghana, Guinea, Senegal, the Solomon Islands and the United Republic of Tanzania

Based on the species accounts, the following additional findings may also be appropriate for the Standing Committee to consider:

1. Trade in wild-sourced specimens for the following species/country combinations was reported in apparent **non-compliance with the Standing Committee recommendation to suspend trade**, either by the exporting Party or by countries of import: *Kinixys homeana*/Benin, *Chamaeleo gracilis*/Ghana, *C. senegalensis*/Ghana and *Tridacna* spp. (no species specified)/ Solomon Islands. Countries of import (according to importer-reported data, exporter-reported data, or both) were Australia, Benin, Japan, Canada, Indonesia, the Netherlands, New Zealand, Panama, Togo and the United States of America (hereafter United States). There is also some evidence that *K. homeana* may be being traded illegally across the Nigeria/Benin border.

2. Range States highlighted the **lack of funding** available in order to fully address AC recommendations. In particular, Benin highlighted that financial support would be required to undertake population surveys of the three species currently subject to trade suspensions, and that training of management/enforcement officials (e.g. border agents) in Benin and across the sub-region was a specific capacitybuilding need. Similarly, Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES in the country, and in particular that research was needed on species population dynamics and the impact of trade on wild populations. Finally, although not requested, the Solomon Islands may need technical support regarding the identification of newly accepted CITES clam species, and possibly population surveys.

3. A number of **gaps in capacity for compiling CITES annual reports** were identified. For example, data in a number of annual reports submitted by the Solomon Islands were reported in an aggregated format without export permit numbers for each shipment. Instead, total quantities and a list of countries of destination were given for each species/term/purpose/source combination, so for some years it was not possible to assign specific trade volumes to specific countries.

4. Of the Parties currently subject to a recommendation to suspend trade that has been in place for longer than two years, only the Solomon Islands have legislation that is Category 1 (legislation that is believed generally to meet the requirements for implementation of CITES). Benin is classified as a Category 2 Party and Ghana is classified as a Category 3 Party. Since these categorisations were made, however, both Benin and Ghana have since reported progress in the drafting and adoption of new CITES legislation. It is recommended that these countries could be reassessed **under the CITES legislation project** to determine whether any changes in categorisation are merited.

Table i: Recommendations relating to the twelve species/country combinations from Benin, Ghana and the Solomon Islands, subject to trade suspensions established through the RST for more than two years, for which a detailed species assessment has been conducted.

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
REPTILIA				
CHAMAELEONIDAE				
Chamaeleo gracilis (Slender chameleon)	Overview	Least Concern (2014)	*C. gracilis* was classified as Least Concern by the IUCN in 2014 on the basis that it has a very large extent of occurrence, is widespread and abundant, and seems to survive well in modified habitats. Its global population trend was considered stable.	
Suspension valid from: 15 March 2016	Benin		*C. gracilis* occurs in the southern departments of Zou, Plateau, Mono and Atlantique and in the north of Benin in the Pendiari National Park and in the Beninese part of the W Transfrontier Biosphere Reserve. No published information on the population status of *C. gracilis* in Benin was found, although anecdotal information based on surveys with local communities and expert opinion suggests that chameleon populations in general may be declining. A zero export quota for wild, ranched, and captive-bred *C. gracilis* from Benin was published 2018-2021, replacing an annual export quota of 200 wild specimens and 2500 ranched specimens published 2010-2017. CITES annual reports have been submitted by Benin for 2010-2019, with the exception of 2017. Direct exports of *C. gracilis* from Benin 2010-2016 consisted of 8910 live ranched individuals for commercial purposes as reported by Benin; importers reported 547 wild-sourced, 8487 ranched, 373 captive-bred, and 183 source I individuals over the same period. Trade in live, wild-sourced *C. gracilis* as reported by importers appeared to exceed the export quota in 2010, and the 2012 quota for ranched *C. gracilis* was exceeded according to both importing countries and Benin. In the three years following the introduction of the trade suspension (2017-2019), no trade was reported except for 340 live seized/confiscated chameleons imported by the United States in 2017. Benin responded to the consultation relating to the RST long-standing suspensions. *C. gracilis* was previously categorised as a 'fully protected' species, however a new law passed in July 2021 categorised *C. gracilis* as a 'Category II' species (this is thought to make it a 'partially protected' species - the hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected). It is unclear whether this means that *C. gracilis* has been transferred to a category affording less strict protection. Benin considered that it would be possible to establish a non-detriment finding for *C. gracilis*, but noted that, until precise information on wild populations could be ascertained by the new Scientific Authority, only exports of captive-bred specimens would be considered. However, no *C. gracilis* were recorded in a census of 21 captive-breeding and ranching facilities in the country carried out in August 2021. Given the species is assessed globally as Least Concern and is widespread at least in the south of Benin, some level of harvest and export is likely to be sustainable. However, key actions directed to Benin to determine sustainable export levels (such as a national status assessment) are yet to be completed. Noting that previous trade reported by Benin was predominantly in ranched specimens (which has a lower impact on wild populations), and only collection of eggs (not juveniles) is legally permitted, the SC could consider whether lifting the trade suspension would be appropriate provided that Benin: 1) publishes a zero export quota for wild sourced specimens, and 2) provides a	**Suspension may still be appropriate**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Chamaeleo gracilis (cont).	Benin (cont).		scientific justification for a conservative quota for ranched specimens for consideration by the Secretariat and AC Chair. This quota should be based on surveys by the new Scientific Authority and take into account recommendation f) issued at AC27 to impose a size restriction of a maximum snout to vent length of 8 cm. In the absence of a justification for a conservative quota for ranched specimens, however, **the suspension may still be appropriate.** Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) was a specific capacity building need. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if sufficient resources could be secured.	
	Ghana		*C. gracilis* occurs throughout Ghana and has been recorded in a range of forest types as well as degraded forests and managed lands. The CITES MA of Ghana estimated the population to be 3 390 960 individuals, based on extrapolation of an average density of 34.7 individuals/km^2 recorded during a rapid (one week) population survey conducted in 2021. No quantitative information on population trend was available; while the MA of Ghana suggested there was a population recovery following the trade suspension, expert opinion considered that the population was likely to have decreased. Ghana published annual export quotas for 1500 wild-sourced *C. gracilis* every year 2010-2015 with the exception of 2013; no quotas have been published since 2015. CITES annual reports have been submitted by Ghana for all years 2010-2019, with the exception of 2016. Direct exports of *C. gracilis* from Ghana 2010-2016 consisted of 4253 live wild-sourced chameleons and 50 ranched chameleons exported for commercial purposes as reported by Ghana; importers reported 2743 wild-sourced and 45 ranched chameleons over the same period. Trade remained within quota in every year according to both importers and exporters. Exports of 100 and 130 wild-sourced chameleons were reported by Ghana in 2018 and 2019, respectively, in apparent contravention of the trade suspension. Aside from international trade, use of chameleons for medicinal purposes was reported to be widespread in Ghana; the MA, however, considered this threat to be restricted to remote locations. The species is not listed under the Schedules of protected animals under Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971), but cannot be hunted within areas designated as reserves. Ghana responded to the consultation relating to the RST long-standing suspensions, and provided a draft NDF report that includes the results of a rapid population survey conducted in 2021 and details of a proposed quota and adaptive management plan. The draft NDF considered that a quota of up to 10% of the population (339 096 individuals based on the above estimate) could be sustainable; however, a more conservative quota of 1500 individuals was proposed identical to the quotas published during 2010-2015. The adaptive management plan outlined includes monitoring of the population at harvested and unharvested sites as well as monitoring of catch per unit effort (CPUE), but details were not provided regarding the scale or frequency of the planned surveys or the methodology proposed to monitor CPUE. Given the species is assessed globally as Least Concern and occurs throughout much of Ghana, including within modified habitats, some level of harvest and export is likely to be sustainable. Ghana appears to have completed or partially completed all of the recommendations issued at AC27. However, some uncertainties remain regarding the	**Suspension may still be appropriate**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Chamaeleo gracilis (cont).	Ghana (cont).		data that underpin the draft NDF; particularly the methodology used for the rapid national status assessment (six regions of the country in seven days, recording 182 specimens), including the calculation of suitable habitat available for the species and the methodology used to extrapolate encounter rates to form an estimated overall population size of >3 million. Acknowledging the progress made by Ghana, further details of the proposed management plan/NDF could be requested prior to lifting the trade suspension to ensure that the export quota is based on robust scientific data. These elements could include, (1) further details regarding the basis of the species range estimate used to calculate the national population; (2) how density estimates were calculated from encounter rates recorded in the national rapid survey, (3) details of the proposed system for monitoring populations (scale, frequency, locations) and (4) details of how CPUE rates are proposed to be monitored. In the meantime, the **trade suspension may still be appropriate.** The CITES MA of Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. The MA noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, but this was considered inadequate to manage the country's wildlife resources. In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations.	
Chamaeleo senegalensis (Senegal chameleon) Suspension valid from: 15 March 2016	Overview	Least Concern (2012)	*C. senegalensis* was classified as Least Concern by the IUCN in 2012 in view of its wide distribution and abundance. The species' global population trend is unknown.	
	Benin		*C. senegalensis* was reported to be widespread in Benin, with suitable habitat primarily found in the south of the country. The CITES MA of Benin estimated the population to be "over 10 000" based on unpublished survey data from hunters and local communities, however the species' population trend is unknown. Anecdotal information based on surveys with local communities and expert opinion suggested that chameleon populations in general may be declining. A zero export quota for wild, ranched, and captive-bred *C. senegalensis* has been in place since 2019, replacing annual export quotas of 4000 ranched specimens and 1000 wild-sourced live specimens 2010-2017. CITES annual reports have been submitted by Benin for 2010-2019, with the exception of 2017. Direct exports of *C. senegalensis* from Benin 2010-2016 consisted of 400 live wild-sourced individuals and 12 740 ranched individuals, exported for commercial purposes according to exporters. Trade in live ranched *C. senegalensis* appears to have exceeded the specified quota in 2012 according to countries of import. The United States reported importing 198 live confiscated *C. senegalensis* in 2017 (the year after trade in the species was suspended). Benin responded to the consultation relating to the RST long-standing suspensions. As of July 2021 *C. senegalensis* is categorised as a 'Category II' species, which is thought to make it partially protected; the hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected.	**Suspension may still be appropriate**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Chamaeleo senegalensis (cont.)	Benin (cont).		Benin considered that it would be possible to establish a non-detriment finding for *C. senegalensis*, but noted that, until precise information on wild populations could be ascertained by the new Scientific Authority, only quotas for captive-bred specimens would be considered. However, no *C. senegalensis* were recorded in a census of 21 captive-breeding and ranching facilities in the country carried out in August 2021. Given the species is assessed globally as Least Concern and is widespread in Benin, some level of harvest and export is likely to be sustainable. However, key actions directed to Benin to determine sustainable export levels (such as a national status assessment) are yet to be completed. Noting that previous trade reported by Benin was predominantly in ranched specimens (which has a lower impact on wild populations) and only collection of eggs (not juveniles) is legally permitted, the SC could consider whether lifting the trade suspension would be appropriate provided that Benin: 1) publishes a zero export quota for wild sourced specimens, and 2) provides a scientific justification for a conservative quota for ranched specimens for consideration by the Secretariat and AC Chair. This quota should be based on surveys by the new Scientific Authority and take into account recommendation f) issued at AC27 to impose a size restriction of a maximum snout to vent length of 6 cm. In the absence of a justification for a conservative quota for ranched specimens, however, **the suspension may still be appropriate.** Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) was a specific capacity building need. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if sufficient resources could be secured.	
	Ghana		*C. senegalensis* was noted to occur in all regions of Ghana according to the CITES MA of Ghana, although the IUCN range map suggests it does not occur in the southwest. The CITES MA estimated the population to be 4 168 252 individuals, based on extrapolation of an average density of 42.7 individuals/ km^2 calculated using the results of a rapid (one week) population survey conducted in 2021. It was noted that densities were higher in the north of the country. No quantitative information on population trend was available; while the MA of Ghana suggested there was a population recovery following the trade suspension, expert opinion considered that the population was likely to have decreased. Ghana published annual export quotas for 1500 wild-sourced *C. senegalensis* every year 2010-2015, apart from 2013, when no quotas were published. No quotas have been published since 2015. CITES annual reports have been submitted by Ghana for all years 2010-2019, with the exception of 2016. Direct exports of *C. senegalensis* from Ghana 2010-2016 predominantly consisted of 6221 live wild-sourced individuals as reported by Ghana, and 5067 wild-sourced individuals as reported by importers. Trade reported by Ghana appears to have exceeded the published quota in 2011. Trade was additionally reported in all years 2017-2019 by both Ghana (totalling 585 live wild-sourced and 400 live ranched) and by importers (83 live wild-sourced and 100 live captive-bred) in apparent contravention of the trade suspension. Aside from international trade, use of chameleons for medicinal purposes was also reported to be widespread in Ghana; the MA, however, considered this threat to be restricted to remote locations.	**Suspension may still be appropriate**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Chamaeleo senegalensis (cont.)	Ghana (cont).		The species is not listed under the Schedules of protected animals under Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971), but cannot be hunted within areas designated as reserves. Ghana responded to the consultation relating to the RST long-standing suspensions, and provided a draft NDF report for the species. This included the results of a rapid population survey conducted in 2021 and details of a proposed quota and adaptive management plan. The draft NDF considered that a quota of up to 10% of the population (416 825 individuals based on the above population estimate) could be sustainable; however, a more conservative quota of 1500 individuals was proposed that is identical to quotas published 2010-2015. The adaptive management plan outlined includes monitoring of the population at harvested and unharvested sites as well as monitoring of catch per unit effort (CPUE), but details were not provided regarding the scale or frequency of the planned surveys or the methodology proposed to monitor CPUE. Given the species is assessed globally as Least Concern and is relatively widespread, at least in the north of the country, some level of harvest and export is likely to be sustainable. Ghana appears to have completed or partially completed all of the recommendations issued at AC27. However, some uncertainties remain regarding the data that underpin the draft NDF; particularly the methodology used for the rapid national status assessment (six regions of the country in seven days, recording 259 specimens), including the calculation of suitable habitat available for the species and the methodology used to extrapolate encounter rates to form an estimated overall population size > 4 million. Acknowledging the progress made by Ghana, further details of the proposed management plan/ NDF could be requested prior to lifting the trade suspension to ensure that the export quota is based on robust scientific data. These elements could include (1) further details regarding the basis of the species range estimate used to calculate the national population; (2) how density estimates were calculated from encounter rates recorded in the national rapid survey; (3) details of the proposed system for monitoring populations (scale, frequency, locations); and (4) details of how CPUE rates are proposed to be monitored. In the meantime, **the trade suspension may still be appropriate**. The CITES MA of Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. The MA noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, but this was considered inadequate to manage the country's wildlife resources. In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations.	
TESTUDINIDAE				
Kinixys homeana (Home's hinge-back tortoise) Suspension valid from: 15 March 2016	Benin	Critically Endangered (2019)	The species' IUCN Red List status was revised from Vulnerable to Critically Endangered in 2019, based on an estimated 90% decline in suitable habitat over the past three generations, and past and projected population reductions of c. 30% per generation. Occurrence of *K. homeana* in Benin is limited to a relatively small area in the south east of the country; although no numerical estimates of in-country declines are available, interviews and surveys conducted in 2018 considered the species to be "almost extinct".	**Suspension may still be appropriate**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Kinixys homeana (cont).	Benin (cont).		Benin previously issued quotas for 50 wild taken, 800 ranched, and 30 captive-bred specimens in 2016 and 2017; zero export quotas for wild, ranched, and captive-bred specimens were issued in 2019, 2020 and 2021 (no quotas were issued in 2018). Benin has submitted CITES annual reports for all years 2010-2019 with the exception of 2017. Direct exports 2010-2016 consisted of 100 live wild-sourced, 2440 live ranched, 50 live captive-bred, and 110 live individuals without a source specified, as reported by Benin. Importers reported 125 wild-sourced specimens in 2017, with permit analysis suggesting that the export permit associated with this trade was issued by Benin in 2016. Export permits are valid for six months from the date on which they were granted (Resolution Conf. 12.3 (Rev. CoP18) paragraph 5g); therefore this trade appears to have occurred after the trade suspension was put in place in March 2016. No trade in the species from Benin has since been recorded. Illegal trade in the species has been reported to occur, with specimens originating from Nigeria being imported across the border to Benin without CITES permits. Benin responded to the consultation relating to the RST long-standing suspensions. While until recently *K. homeana* was categorised as an Annex III species (small game species that are not protected) as of July 2021 *K. homeana* is now a 'Category II' species. This is thought to make *K. homeana* a partially protected species; the hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected. Benin considered it possible to establish a non-detriment finding for *K. homeana* but explained that until precise information on wild abundance and population dynamics could be ascertained by the new Scientific Authority, only exports of captive-bred specimens would be considered. Noting that the species is Critically Endangered and declining with a presumed small population in Benin, **the suspension may still be appropriate** until such a time that a scientifically based NDF has been produced to demonstrate that the export of wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV. While the species has been recorded to be present in two captive breeding facilities in the country which both currently maintain a very limited number of specimens; given the worsening conservation status of the species, it is unlikely that a robust non-detriment finding could be made for the acquisition of any additional parental stock from the wild for breeding operations. Whilst no trade is currently occurring in captive-bred specimens, should trade from this production system resume and concerns remain, the AC could consider the inclusion of the species/country combination in Resolution Conf. 17.7 (Rev. CoP18). Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) in Benin and across the sub-region was a specific capacity building need. Addressing these capacity building needs would further assist Benin in fulfilling the AC recommendations directed to it.	

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
BIVALVIA				
TRIDACNIDAE				
Tridacna crocea, T. derasa, T. gigas, T. maxima T. squamosa, T. noae, T. ningaloo (Giant clams) Suspension valid from: 15 March 2016	Solomon Islands	Lower risk/LC (*T. crocea, T. maxima, T. squamosa*) (1996) VU (*T. derasa. T. gigas*) (1996) Not assessed (*T. noae, T. ningaloo*)	*Tridacna* spp. are large, slow growing, long-lived clams that have low natural recruitment rates and are globally declining due to harvest for export/subsistence. Five species have been assessed by the IUCN Red List: three are categorised as Lower risk/Least concern (*T. crocea, T. maxima* and *T. squamosa*) and two are Vulnerable (*T. derasa* and *T. gigas*). All assessments are from 1996 and need to be updated. Following inclusion in the RST, a genus-level zero quota for wild-taken *Tridacna* spp. specimens from the Solomon Islands was published in 2013, 2014 and 2015. The 2015 quota did not reflect a recommendation by AC27 (2014) to extend the zero export quota to include *Tridacna* spp. from all sources. No quotas have since been issued. CITES annual reports have been submitted by the Solomon Islands for some years, but not yet for 2011, 2012, 2017 or 2018. Direct trade in wild-sourced *Tridacna* species from the Solomon Islands 2010-2019 predominantly comprised 590 live clams, 639 bodies, and 3025 shells; importers reported corresponding imports of 638 live clams and 2276 shells. The quota for wild-sourced individuals appears to have been exceeded in 2014 and 2015 according to exporter-reported data only. Whilst the majority of the trade occurred prior to the trade suspension, 58 wild-sourced shells were reported to have been exported by Solomon Islands in 2019, in apparent contravention of the trade suspension. The Solomon Islands responded to the consultation relating to RST long standing suspensions, providing a draft NDF for trade in dead clam shells. *Tridacna* spp. were reported to remain widespread in the country and all species have generally persisted in historical locations. However, densities recorded in 2019 for all species were found to be below regional healthy population density reference points (where these are available); only *T. squamosa* was found above the healthy density reference point in some locations. The average size of individuals of *T. crocea*, *T. maxima* and *T. squamosa* was also found to have decreased since 2006, indicating that harvest pressure is affecting population structure. The response provided by the Solomon Islands did not contain any information relating to the two new species that occur in the country that were recognised at CoP17 (*T. noae* and *T. ningaloo*); it is assumed that these species are still considered as *T. maxima*. Information regarding the population status, trends and distribution of these two species was therefore not available. Harvest of wild-sourced Tridacnidae species for commercial trade was banned until 2021, but trade and export of captive-produced specimens was allowed. Local sale of wild-harvested clams remains a prohibited activity, but subsistence harvest is permitted. A new Fisheries Management Plan was implemented in February 2021 with the purpose of enabling “a limited export trade of clam shells under a licensing system”. Three licences for the export of clams may be in operation at any one time; such licences may have harvesting conditions associated with them (e.g., size limits or maximum quotas). While the draft NDF provided by the Solomon Islands concluded that controlled trading of dead clam products (empty shells) would not be detrimental to the survival of wild clam populations, the scientific basis for this conclusion remains unclear. Questions remain regarding whether export of all *Tridacna* species from all sources and all areas	**Suspension may still be appropriate for all species**

Species (Common name) Appendix/Annex IUCN Red List	Range State	IUCN	Summary assessment	Recommendation
Tridacna crocea, T. derasa, T. gigas, T. maxima T. squamosa, T. noae, T. ningaloo (cont.)	Solomon Islands (cont.)		would be permitted under the NDF, what indicators would be used to establish quotas and size limits that are appropriate and non-detrimental, and whether any conditions regarding the issuance of licences would be in place (for example, whether licences would only be issued for export of dead clam shells produced as by-products of subsistence harvest, and, if so, what relevant controls will be in place to ensure that only products from this origin are exported). Given that *Tridacna* spp. populations are reported to remain below healthy population thresholds in the Solomon Islands, that the average size of individuals is in decline, and the lack of clarity on the management aspects outlined above, the draft NDF is not sufficiently robust to demonstrate that export of shells would be non-detrimental to the survival of the species in compliance with Article IV. **The suspension may therefore still be appropriate.** Although not requested, the Solomon Islands may need technical support with identification of clam species (with reference to the newly accepted CITES species) and guidance on clam surveys or monitoring of harvest impacts. Capacity building may also be required to address issues identified in the Solomon Islands' CITES annual reports. Other range States are managing/exporting clam populations in the region, and in line with paragraph 3c) of Res. Conf. 12.8 (Rev. CoP18), it is recommended that, through regional cooperation and/or mentoring, other Parties (such as Australia as a clam range State, or New Zealand, who has provided mentoring support within the region) provide additional support to the Solomon Islands in the formulation of a robust non-detriment finding.	

1. Introduction

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) aims to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species. It principally does so via the inclusion of species in three Appendices, each of which affords different levels or types of protection from over-exploitation, and the requirement for non-detriment findings for trade in specimens of species included in Appendix I and II. The Review of Significant Trade (hereafter abbreviated to RST) was established to ensure that the provisions of the Convention (specifically Article IV, paragraphs 2 (a), 3 and 6 (a), relating to non-detriment findings) are properly applied for Appendix II species[2], in order to ensure that international trade in these species is maintained within biologically sustainable limits.

The procedure for the RST is set out in Resolution Conf. 12.8 (Rev. CoP18). The resolution "*Directs the Animals and Plants Committees, in cooperation with the Secretariat and experts, and in consultation with range States, to review the biological, trade and other relevant information on Appendix-II species subject to significant levels of trade, to identify problems and solutions concerning the implementation of Article IV, paragraphs 2 (a), 3 and 6 (a).*" This process involves multiple stages, including the formulation of recommendations directed to range States of species under consideration where action is determined to be necessary. In cases where recommendations are not deemed to have been met, and no new information is provided, paragraph 1 k) ii) of Res. Conf. 12.8 (Rev. CoP18) states that "*the Secretariat shall, in consultation with the members of the Animals or Plants Committee through the Chairs, recommend to the Standing Committee appropriate action, which may include, as a last resort, a suspension of trade in the affected species with that State*".

In accordance with Res. Conf. 12.8 (Rev. CoP18), a recommendation to suspend trade in the affected species should be withdrawn only when the State concerned demonstrates to the satisfaction of the Standing Committee, in consultation with the Secretariat and the members of the Animals or Plants Committee, through the relevant Chair, compliance with Article IV, paragraph 2 (a), 3 or 6 (a). A mechanism for reviewing trade suspensions exists under paragraph 1 p) of the Resolution, which states that, in consultation with the Secretariat and the Chair of the Animals or Plants committee, the Standing Committee *"shall review recommendations to suspend trade that have been in place for longer than two years, evaluate the reasons why this is the case in consultation with the range State, and, if appropriate, take measures to address the situation"*. To assist the Secretariat, Standing Committee and AC Chairs with this requirement, UNEP-WCMC was asked to consult with eight selected Parties that are currently subject to trade suspensions established through the RST that have been in place for more than two years. This report provides an overview of the responses received from these eight Parties, as well as detailed accounts of the conservation and trade status of 12 such species/country combinations.

2. Methods

The CITES Management and Scientific Authorities for each Party were contacted by UNEP-WCMC by email in March 2021. Authorities were requested to provide any updates to the conservation and protection status of the relevant species within their country, and to clarify whether there was an interest in resuming trade in the relevant species in the future. If so, Parties were asked to confirm whether they considered that non-detriment findings could now be made. Alternatively, if there was no interest in future trade, Parties were asked to confirm that exports are no longer anticipated. Finally, Parties were asked to outline their management actions, their progress on implementing AC

[2] Plus Appendix I species subject to reservation

recommendations, and any challenges faced in implementing them, along with the underlying reasons for these challenges, and what type of support (if any) would be needed in order to fully address the recommendations.

On the basis of the responses received, in consultation with the CITES Secretariat, UNEP-WCMC made a decision on which cases to prioritise for in-depth review; these did not include range States that did not respond to the consultation (Table 2.2). In-depth reviews were completed for ten species (or 12 species/country combinations) from Benin, Ghana and the Solomon Islands; these build on the detailed species assessments that were previously considered at AC26 and AC27[3], considering updates on the conservation and protection status of the relevant species, trade information, management actions and progress on implementing the AC recommendations. Updates were identified through literature searches, consultation with experts, and consultation with the relevant range States. Aside from the original consultations in March 2021, follow-up consultations including a number of requests for further information or clarification were sent to these Parties in November 2021. At the time of writing, a response to this follow-up consultation had only been received from Benin.

Each taxon/country review provides the following information: history of the CITES RST process for the taxon/country combinations; species biology; current distribution; population status and trends; threats; recent trade; and management of the taxon in each range State, including any relevant legislation. Where several species of the same genus are reviewed for a single range State, or there are multiple range States reviewed for a single taxon, an overview of distribution, conservation status, threats, trade and management is also provided.

The recent trade section in each taxon/country review provides an analysis of CITES trade data for the period 2010-2021. Data were downloaded from the CITES Trade Database (trade.cites.org) in September 2021. Unless otherwise specified, trade tables include all direct trade (i.e. excluding re-export data) in the taxa under review, and include all sources, terms and units reported in trade. Trade volumes are provided as reported by both exporters and importers. Re-export data are noted separately. A list of CITES annual reports received from each range State, along with the date each became a Party to CITES, is provided in Table 2.1.

Table 2.1: Overview of CITES Annual Report submissions at the time of data downloads (September 2021).

Country	Entry into force of CITES	CITES annual reports received									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Benin	28 May 1984	✓	✓	✓	✓	✓	✓	✓		✓	✓
Ghana	12 February 1976	✓	✓	✓	✓	✓	✓		✓	✓	✓
Solomon Islands	24 June 2007	✓			✓	✓	✓	✓			✓

[3] https://cites.org/sites/default/files/eng/com/ac/26/E26-12-02-A.pdf; https://cites.org/sites/default/files/eng/com/ac/27/E-AC27-12-04.pdf

Table 2.2: Parties subject to long-standing SC recommendations to suspend trade (since 15 March 2016) consulted by UNEP-WCMC, summary of the response received, and determination of whether to conduct an in-depth review, in consultation with the CITES Secretariat.

Party	Taxa	Response to the consultation on RST long-standing suspensions (LSS)	Decision to review in-depth
Benin	*Chamaeleo gracilis, Chamaeleo senegalensis, Kinixys homeana*	Benin provided an extensive response to the consultation relating to the RST LSS for all three species.	✓
Cameroon	*Trioceros quadricornis*	A reply to the consultation relating to the RST LSS was received from Cameroon on 15 April 2021. Cameroon indicated that the species was drastically declining and was fully protected in the country (with capture subject to special authorisation only), and that it was not currently possible to produce an NDF for the species. Cameroon confirmed it did not intend to export the species for the time being, and that exports would only be considered in future following an inventory and the drafting of an NDF. It is therefore recommended that the trade suspension remains in force until Cameroon can provide details of how exports would be non-detrimental to the survival of the species in compliance with Article IV.	✗
Fiji	*Plerogyra simplex, Plerogyra sinosa*	Fiji provided a response to the consultation noting that no export of corals would take place in accordance with the prohibition of live coral exports (Customs Act 1986, revised 31 July 2020), and the export quota would therefore be zero. It was noted that the only quota Fiji published for 2021 was for live coral rock and *Physeter macrocephalus* (Sperm whale). On the basis that the provisions of Article IV are no longer applicable, removal of the trade suspension for *P. simplex* and *P. sinuosa* from Fiji may be warranted, although the SC could consider if Fiji would need to specifically "publish" their zero quota for inclusion on the CITES website.	✗
Ghana	*Chamaeleo gracilis, Chamaeleo senegalensis*	Ghana provided an extensive response to the consultation relating to the RST LSS for both species.	✓
Guinea	*Hippocampus algiricus*	Guinea was consulted 30 March 2021; no response to the consultation was received. Noting that there are a suite of Decisions relating to seahorse trade and management (Decisions 18.228-233), it was decided that in-depth review would not be pursued for *Hippocampus algiricus* given the lack of response from Guinea.	✗
Senegal	*Hippocampus algiricus*	Senegal was consulted on 30 March 2021; no response to the consultation was received. Noting that there are a suite of Decisions relating to seahorse trade and management (Decisions 18.228-	✗

Party	Taxa	Response to the consultation on RST long-standing suspensions (LSS)	Decision to review in-depth
		233), it was decided that in-depth review would not be pursued for *Hippocampus algiricus* given the lack of response from Senegal	
Solomon Islands	*Tridacna crocea, T. derasa, T. gigas, T. maxima T. squamosa, T. noae, T. ningaloo*	Solomon Islands provided an extensive response to the consultation relating to the RST LSS, including a draft NDF for *Tridacna* spp.	✓
Tanzania (United Republic of)	*Kinyongia fischeri, Kinyongia tavetana*	Tanzania was consulted on 31 March 2021, 6 May 2021 and 28 September 2021; no response to the consultation was received.	✗

3. Species reviews

REPTILIA: CHAMAELEONIDAE

3.1 *Chamaeleo gracilis*: Benin, Ghana

A. Summary

Suspension valid from:	Summary	Recommendation
15 March 2016	**Overview:** *C. gracilis* was classified as Least Concern by the IUCN in 2014 on the basis that it has a very large extent of occurrence, is widespread and abundant, and seems to survive well in modified habitats. Its global population trend was considered stable. **Benin**: *C. gracilis* occurs in the southern departments of Zou, Plateau, Mono and Atlantique and in the north of Benin in the Pendiari National Park and in the Beninese part of the W Transfrontier Biosphere Reserve. No published information on the population status of *C. gracilis* in Benin was found, although anecdotal information based on surveys with local communities and expert opinion suggests that chameleon populations in general may be declining. A zero export quota for wild, ranched, and captive-bred *C. gracilis* from Benin was published 2018-2021, replacing an annual export quota of 200 wild specimens and 2500 ranched specimens published 2010-2017. CITES annual reports have been submitted by Benin for 2010-2019, with the exception of 2017. Direct exports of *C. gracilis* from Benin 2010-2016 consisted of 8910 live ranched individuals for commercial purposes as reported by Benin; importers reported 547 wild-sourced, 8487 ranched, 373 captive-bred, and 183 source I individuals over the same period. Trade in live, wild-sourced *C. gracilis* as reported by importers appeared to exceed the export quota in 2010, and the 2012 quota for ranched *C. gracilis* was exceeded according to both importing countries and Benin. In the three years following the introduction of the trade suspension (2017-	**Suspension may still be appropriate**

2019), no trade was reported except for 340 live seized/confiscated chameleons imported by the United States in 2017.

Benin responded to the consultation relating to the RST long-standing suspensions. *C. gracilis* was previously categorised as a 'fully protected' species, however a new law passed in July 2021 categorised *C. gracilis* as a 'Category II' species (this is thought to make it a 'partially protected' species - the hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected). It is unclear whether this means that *C. gracilis* has been transferred to a category affording less strict protection.

Benin considered that it would be possible to establish a non-detriment finding for *C. gracilis*, but noted that, until precise information on wild populations could be ascertained by the new Scientific Authority, only exports of captive-bred specimens would be considered. However, no *C. gracilis* were recorded in a census of 21 captive-breeding and ranching facilities in the country carried out in August 2021.

Given the species is assessed globally as Least Concern and is widespread at least in the south of Benin, some level of harvest and export is likely to be sustainable. However, key actions directed to Benin to determine sustainable export levels (such as a national status assessment) are yet to be completed. Noting that previous trade reported by Benin was predominantly in ranched specimens (which has a lower impact on wild populations), and only collection of eggs (not juveniles) is legally permitted, the SC could consider whether lifting the trade suspension would be appropriate provided that Benin: 1) publishes a zero export quota for wild sourced specimens, and 2) provides a scientific justification for a conservative quota for ranched specimens for consideration by the Secretariat and AC Chair. This quota should be based on surveys by the new Scientific Authority and take into account recommendation f) issued at AC27 to impose a size restriction of a maximum snout to vent length of 8 cm. In the absence of a justification for a conservative quota for ranched specimens, however, **the suspension may still be appropriate.**

Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) was a specific capacity building need. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if sufficient resources could be secured.

Ghana: *C. gracilis* occurs throughout Ghana and has been recorded in a range of forest types as well as degraded forests and managed lands. The CITES MA of Ghana estimated the population to be 3 390 960 individuals, based on extrapolation of an average density of 34.7 individuals/km^2 recorded during a rapid (one

Suspension may still be appropriate

week) population survey conducted in 2021. No quantitative information on population trend was available; while the MA of Ghana suggested there was a population recovery following the trade suspension, expert opinion considered that the population was likely to have decreased.

Ghana published annual export quotas for 1500 wild-sourced *C. gracilis* every year 2010-2015 with the exception of 2013; no quotas have been published since 2015. CITES annual reports have been submitted by Ghana for all years 2010-2019, with the exception of 2016. Direct exports of *C. gracilis* from Ghana 2010-2016 consisted of 4253 live wild-sourced chameleons and 50 ranched chameleons exported for commercial purposes as reported by Ghana; importers reported 2743 wild-sourced and 45 ranched chameleons over the same period. Trade remained within quota in every year according to both importers and exporters. Exports of 100 and 130 wild-sourced chameleons were reported by Ghana in 2018 and 2019, respectively, in apparent contravention of the trade suspension. Aside from international trade, use of chameleons for medicinal purposes was reported to be widespread in Ghana; the MA, however, considered this threat to be restricted to remote locations.

The species is not listed under the Schedules of protected animals under Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971), but cannot be hunted within areas designated as reserves. Ghana responded to the consultation relating to the RST long-standing suspensions, and provided a draft NDF report that includes the results of a rapid population survey conducted in 2021 and details of a proposed quota and adaptive management plan. The draft NDF considered that a quota of up to 10% of the population (339 096 individuals based on the above estimate) could be sustainable; however, a more conservative quota of 1500 individuals was proposed identical to the quotas published during 2010-2015. The adaptive management plan outlined includes monitoring of the population at harvested and unharvested sites as well as monitoring of catch per unit effort (CPUE), but details were not provided regarding the scale or frequency of the planned surveys or the methodology proposed to monitor CPUE.

Given the species is assessed globally as Least Concern and occurs throughout much of Ghana, including within modified habitats, some level of harvest and export is likely to be sustainable. Ghana appears to have completed or partially completed all of the recommendations issued at AC27. However, some uncertainties remain regarding the data that underpin the draft NDF; particularly the methodology used for the rapid national status assessment (six regions of the country in seven days, recording 182 specimens), including the calculation of suitable habitat available for the species and the methodology used to extrapolate encounter rates to form an estimated overall population size of >3 million.

Acknowledging the progress made by Ghana, further details of the proposed management plan/NDF could be requested prior to lifting the trade suspension to ensure that the export quota is based on robust scientific data. These elements could include, (1) further details regarding the basis of the species range estimate used to calculate the national population; (2) how density estimates were calculated from encounter rates recorded in the national rapid survey, (3) details of the proposed system for monitoring populations (scale, frequency, locations) and (4) details of how CPUE rates are proposed to be monitored. In the meantime, the **trade suspension may still be appropriate.**

The CITES MA of Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. The MA noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, but this was considered inadequate to manage the country's wildlife resources. In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations.

RST Background

Chamaeleo gracilis from all range States was included in the Review of Significant Trade as a priority species for review at AC25 (AC25 Summary Record). The inclusion was based on the analysis provided in AC25 Doc. 9.6 and its Annexes, which noted that *C. gracilis* met a high-volume trade threshold in 2008 and 2009. No response was received from Benin or Ghana at AC26 (AC26 Doc. 12.3); these species/country combinations were therefore retained in the review (AC26 Summary Record). A detailed review of the *C. gracilis* from Benin and Ghana (AC27 Doc 12.4) was considered at AC27. For Benin, it was noted that the population status of the species, as well as the basis of quota setting, was unclear; additional questions were also noted to remain that were not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) (AC27 Doc 12.4). For Ghana, while the species was noted to appear widespread, its population status and the basis for a non-detriment finding were noted to be unclear (AC27 Doc 12.4). Both species/country combinations were classified as of possible concern, and a number of recommendations were directed to Benin and Ghana (AC27 Summary Record). These recommendations are outlined in Section C, Table 3.1.7 and 3.1.12.

No reply from Benin or Ghana outlining progress on the AC recommendations had been received by SC66 (SC66 Doc 31.1). On the basis that the recommendations had not been complied with, it was recommended that all Parties suspend trade in *C. gracilis* from Benin and Ghana until compliance with Article IV, paragraphs 2 (a) and 3 could be demonstrated for this species. A recommendation to suspend trade has been in place since 15 March 2016.

B. Species characteristics

Taxonomic note: The CITES Standard Reference (Glaw, 2015) recognises two distinct subspecies of *Chamaeleo gracilis*: *C. g. gracilis* and *C. g. etiennei*. Some authors have elevated *C. g. etiennei* to species level (Razzetti and Msuya, 2002; Uetz *et al.*, 2021). *C. gracilis* was noted to be difficult to distinguish from other East African savannah chameleons (*C. anchietae, C. dilepis*, and *C. laevigatus*), but Spawls *et al.* (2018) considered identification possible using features such as locality, ear flap details and tail length. According to the herpetologist C. Tilbury (*in litt*. to UNEP-WCMC, 2021), a phylogenetic study that is currently underway indicates that *C. gracilis* may in fact represent a species complex.

Biology: *Chamaeleo gracilis* is a large, arboreal chameleon (Spawls *et al.*, 2018). It mainly inhabits savannah environments (Malonza *et al.*, 2006; Tilbury, 2010; Spawls *et al.*, 2018; Ernst *et al.*, 2020) but is also found in forests (Akani *et al.*, 2001; Razzetti and Msuya, 2002; Böhme *et al.*, 2011), bushy farmland (Akani *et al.*, 2001), and human settlements (Wagner *et al.*, 2008). It has been frequently observed on the ground or on paths in villages, and was noted to be "fond of acacia trees" (Trape *et al.*, 2012).

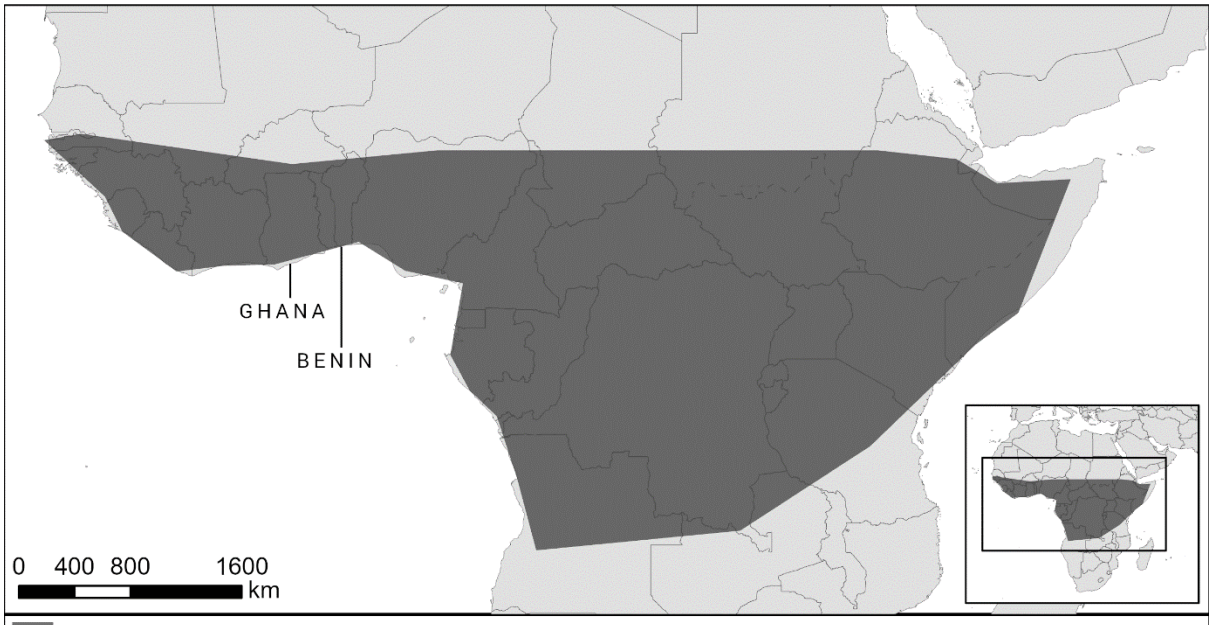
C. gracilis was reported to have a varied diet which includes a variety of insects (Tilbury, 2010). The species reaches sexual maturity at approximately 5-6 months (Bartlett and Bartlett, 2005). In Nigeria, mating was reported to occur in May with a gestation period of 3-4 months, with eggs laid at the end of the rainy reason in September to October (Tilbury, 2010). However, Akani *et al.* (2001) reported at least two distinct egg laying events per year in Nigeria, and noted that it was possible the species reproduced all year round. In captivity, females were reported to produce 1-2 clutches annually (Rearick *et al.*, 2021), while Ghana's CITES MA (*in litt*. to UNEP-WCMC, 2021) reported up to three clutches per year occurring at the end of the wet season, at the onset of the dry season, and at the height of the dry season; it was unclear whether this was for individuals in captivity or in the wild. Whilst clutch sizes of up to 44-45 eggs have been recorded (Engeman *et al.*, 2005; Tilbury, 2010; Spawls *et al.*, 2018), clutches of 10-25 eggs were considered more typical (Spawls *et al.*, 2018). In West

Africa, the incubation period was reported to be up to 7 months (Spawls *et al.*, 2018); this is consistent with observations in captivity (Bartlett and Bartlett, 2005).

The species' lifespan ranges from 2-5 years according to the CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2021), and 3-5 years according to the CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021).

Distribution: C. Tilbury (*in litt*. to UNEP-WCMC, 2021) considered the actual distribution of *C. gracilis* to be uncertain, in light of the results of a phylogenetic study (currently in progress) which indicate that *C. gracilis* is species complex. While the results of the study are pending, it was noted that the distribution of *C. gracilis* sensu stricto may be limited to a small fraction of its historically estimated range, and it was predicted that the number of range States of *C. gracilis* would decrease (C. Tilbury *in litt*. to UNEP-WCMC, 2021).

C. gracilis is currently considered widespread in the sub-Saharan savannah belt, with a range extending across Africa from Senegal in the west to Somalia in the east (Glaw, 2015; Spawls *et al.*, 2018), and Sudan in the north (Townsend and Larson, 2002) (Figure 3.1.1). *C. g. gracilis* was noted to be the more widespread of the two subspecies (Klaver and Böhme, 1997; Tilbury, 2010), with *C. g. etiennei* limited to the west coast of central Africa (Tilbury, 2010). According to the IUCN assessment of *C. gracilis*, the species has an extent of occurrence of 11 520 000 km^2 (Tolley *et al.*, 2014). The assessment noted that estimating the species' area of occupancy was not possible due to a lack of detailed locality records across the species' range (Tolley *et al.*, 2014).



Extant (Resident)

Range Data: IUCN. 2014. *Chamaeleo senegalensis. The IUCN Red List of Threatened Species. Version 2021-2.* http://www.iucnredlist.org. Downloaded on 9 September 2021.
Basemap: United Nations Geospatial, 2020

Disclaimer: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.The final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined ; Final status of the Abyei area is not yet determined.

Figure 3.1.1. Distribution of *Chamaeleo gracilis*.

Population status and trends: *C. gracilis* was categorised as Least Concern in the most recent IUCN assessment for the species in 2014, on the basis that it had very large extent of occurrence, was widespread and abundant, and was present in modified habitats (Tolley *et al.*, 2014). The population

trend was considered stable, with the species noted to be "abundant in suitable habitat" (Tolley *et al.*, 2014). More recent information on the global population status and trend of *C. gracilis* could not be located.

Threats: Hunting for export was identified as the main threat to *C. gracilis* in the 2014 IUCN assessment for the species; however, it was considered unclear whether the global level of trade at the time of the assessment (on average, nearly 5,000 wild individuals were being exported annually) was detrimental (Tolley *et al.*, 2014). According to the CITES Trade Database, direct global trade in *C. gracilis* for commercial purposes between 2010 and 2019 consisted of approximately 37 100 live individuals[4], of which 71% were ranched, 29% wild-sourced, and <1% captive-bred.

The **IUCN SSC Chameleon Specialist Group Chair** C. Anderson (*in litt*. to UNEP-WCMC, 2021) considered that, prior to the suspension of trade from Benin and Ghana, export quantities of *C. gracilis* were "excessive" on the basis that the level of supply exceeded demand, resulting in low retail prices and profit margins which resulted in poor welfare conditions and high mortality rates in captivity. A hobbyist website (Bartlett and Bartlett, 2001; Rearick *et al.*, 2021) noted that *C. gracilis* was sensitive to temperature and humidity, with specimens in the pet trade commonly arriving stressed, dehydrated and with a high parasite load. Altherr and Freyer, (2001, in AC27 Doc. 12.4 (Rev.1)) also considered *C. gracilis* to be unsuitable for private husbandry, noting that the species required conditions that are difficult to simulate, and that it was "difficult to keep", "difficult to breed", and had a "high mortality in captivity".

Harwood (2003) noted the use of *C. gracilis* for traditional medicine in some areas (e.g. Togo), but reported that the species was not targeted for consumption. A few (n = 29) *C. gracilis* specimens were present in a 2012 survey of reptiles traded in West Africa's largest fetish market in Lomé, Togo, and it was noted that some international trade occurred for this purpose between Togo and Ghana (Segniagbeto *et al.*, 2013).

C. Tilbury (*in litt*. to UNEP-WCMC, 2021) noted that chameleons in savannah habitats were threatened by the annual setting of fires in the dry season to stimulate regrowth for livestock grazing. While no studies on the effects of fire setting on chameleon populations have been conducted, it was considered likely that these fires kill the majority of chameleons exposed at the surface and that this threat would increase in the future with the expansion of agricultural lands and an increasing human population (C. Tilbury *in litt*. to UNEP-WCMC, 2021). The recurring nature of these fires was thought to prevent the recovery of a population of reproducing adults that would normally survive and reproduce for several years (C. Tilbury *in litt*. to UNEP-WCMC, 2021). It was further noted that climate change predictions have estimated increasing aridification of savannahs, which may result in changes to *C. gracilis* distribution and population size (C. Tilbury *in litt*. to UNEP-WCMC, 2021). With the threats facing savannah populations, C. Tilbury (*in litt*. to UNEP-WCMC, 2021) reported that "the areas that do support healthy populations of these species are likely to come under high collection pressure with the prospect of incurring localised population declines or extinctions".

Overview of trade and management: *C. gracilis* was listed in CITES Appendix II on 4 February 1977. C. Tilbury (*in litt*. to UNEP-WCMC, 2021) highlighted some concerns relating to the export of *C. gracilis* for commercial purposes, which included a lack of genus- and species-level identification capacity at the borders of importing countries and the potential misuse of CITES permits to export misidentified species with higher values for collectors.

[4] Exporter-reported data

C. Country reviews

Benin

Distribution: The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021) confirmed that the species occurs in the departments of Zou (south-central Benin), Plateau (southeastern Benin), Mono (southwestern Benin) and Atlantique (southern Benin). Occurrence records of the species in these areas within the scientific literature were located for Abomey-Didja (Zou Department) (Ullenbruch *et al.*, 2010) and the Drabo forest (Atlantique Department) (Neuenschwander *et al.*, 2015). There are also records of the species in Pendiari National Park in northern Benin (Ullenbruch *et al.*, 2010) and in the Beninese part of the W Transfrontier Biosphere Reserve (Chirio, 2009).

Population status and trends: The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021) confirmed that no scientific literature on the population status of *C. gracilis* in Benin was available, and noted that an assessment of the overall status of the species was not possible as the only data currently available were scattered observation records. However, it was noted that the University of Abomey-Calavi alongside the Institut national de la recherche agronomique (INRA) would conduct a field study sufficient resources could be secured (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021).

In a series of interviews conducted across 22 communes distributed throughout Benin, Sinsin *et al.* (2008) found that 70% of 121 respondents considered that "the number of chameleons had declined"; while no species-specific details were provided, *C. gracilis* was reported to be a species found in the local environment by 72% of interviewees.

Threats: *C. gracilis* was reported to be collected for local markets and sold for traditional medicinal purposes (CITES MA of Benin (*in litt.* to UNEP-WCMC, 2013 in AC27 Doc. 12.4 (Rev.1)). A recent report by Benin's Ministry of the Environment and Sustainable Development noted that chameleons continue to be openly sold in markets despite this trade being illegal (Ministry of Environment and Sustainable Development, 2020), although no data were available on the specific species being sold. Although the MA (*in litt.* to UNEP-WCMC, 2021) confirmed that illegal trade data at the national level were not available, the report by Benin's Ministry of the Environment and Sustainable Development reported seizures of 95 chameleons (species not specified) in 2015 in the cities of Djougou (95), Porto-Novo (50), and Pobé (15) (Ministry of Environment and Sustainable Development, 2020). The CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) noted that the impact that trade for local markets was having on the population of *C. gracilis* was unclear.

Sinsin *et al.* (2008) considered all chameleons occurring in Benin to be "under heightened threat", and cautioned that "export market demand, should it persist at current levels, will result in the extinction of these species, given that they enjoy little or no effective protection".

Trade: Benin has submitted CITES annual reports for all years 2010-2019, with the exception of 2017. Benin published annual export quotas for wild and ranched specimens of *C. gracilis* for all years 2010-2017 (the 2017 quota was published in the year following the trade suspension), and zero export quotas for wild and ranched specimens 2018-2021 (Table 3.1.2-3.1.3). Zero export quotas for captive-bred specimens were also published in 2018, 2019 and 2021 (Table 3.1.4). Trade in live wild-sourced *C. gracilis* reported by importers appears to have exceeded the export quota in 2010; Benin did not report any wild-sourced trade in that year (Table 3.1.2). Trade in live, ranched *C. gracilis* appears to have exceeded the 2012 quota according to both importers and Benin (Table 3.1.3).

Table 3.1.2: CITES export quotas published for wild-sourced *C. gracilis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import, 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where exporter CITES annual reports have not been received.

Wild-sourced specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	200	200	200	200	200	200	200	200	0	0	0	0
Reported by exporter								-			-	-
Reported by importer	400		147									

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Table 3.1.3: CITES export quotas published for ranched *C. gracilis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import, 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where exporter CITES annual reports have not been received.

Ranched specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	2500	2500	2500	2500	2500	2500	2500	2500	0	0	0	0
Reported by exporter	300	2470	2865	415	150	1210	500	-			-	-
Reported by importer	1210	1532	3133	812	580	585	635					

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Table 3.1.4: CITES export quotas published for captive-bred *C. gracilis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import, 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published or exporter CITES annual reports have not been received.

Captive-bred specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	-	-	-	-	-	-	-	-	0	0	-	0
Reported by exporter								-			-	-
Reported by importer	200	173										

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

The European Union suspended trade in ranched and wild-sourced *C. gracilis* from Benin in 2005. Both suspensions remain in place under Commission Regulation (EC) No. 2019/1587 of 17 October 2019.

According to the CITES Trade Database, direct trade in *C. gracilis* from Benin 2010-2019 comprised 8910 live ranched individuals as reported by Benin, all of which was reported 2010-2016 (i.e. up until the year in which the trade suspension was put in place) (Table 3.1.5); Benin did not report any wild-sourced trade over this period. Importing countries reported imports of 547 live, wild-sourced individuals and 8487 ranched individuals, with lower levels of trade in captive-bred specimens. The United States was the main destination for exports of ranched *C. gracilis* from Benin, with exports peaking in 2012. The United States reported imports of 340 live seized specimens from Benin in 2017 (i.e. the year following the introduction of the trade suspension).

Table 3.1.5: Direct exports of *C. gracilis* from Benin, 2010-2019. Hyphens indicate that Benin's CITES annual report for 2017 has not yet been received.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	-	T	C	Exporter								-			
				Importer	200	173									373
			I	Exporter								-			
				Importer				183				340			523
			R	Exporter	1300	2470	2865	415	150	1210	500	-			8910
				Importer	1210	1532	3133	812	580	585	635				8487
			W	Exporter								-			
				Importer	400		147								547

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Indirect trade in *C. gracilis* originating from Benin 2010-2019 consisted of 786 wild chameleons and 1173 ranched chameleons as reported by re-exporters, with lower levels of exports of captive-bred chameleons (300) (Table 3.1.6). Importing countries reported imports of 132 live, wild-sourced chameleons, 973 ranched chameleons, and 212 captive-bred chameleons over the same period. Ghana was the main re-exporter of *C. gracilis* originating from Benin, accounting for 91% of re-exports according to Ghana and 76% according to importing countries.

Table 3.1.6: Indirect exports of *Chamaeleo gracilis* originating in Benin, 2010-2019.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	-	T	C	Exporter				200	100						300
				Importer			12	200							212
			R	Exporter	205	210	746	12							1173
				Importer	93	150	474	12	244						973
			W	Exporter		350	436								786
				Importer		120	12								132

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Management:

Legislation: Law No. 2002-16 of 18 October 2004 sets out the protection scheme for Benin's fauna, and includes a classification scheme for Benin's species consisting of three categories: fully protected species (Category A), partially protected species (Category B), and other species. The list of species belonging to each category is set by decree. Up until July 2021, *C. gracilis* (as the subspecies *C. gracilis gracilis*) was classified as a fully protected species (Decree No. 394-2011 (2011); the hunting, capture, or collection of the species (including its eggs) was prohibited, with exceptions for licensed hunters, scientific research, and authorised captive breeding operations (Law 2002-16). From July 2021, however, all species in Appendix II of CITES are included as "Category II" species under Law No. 2021-04 on the protection and rules relating to international trade in endangered species of wild fauna and flora, which is assumed to correspond to Category B as described in Law 2002-16. It is unclear whether this translates to a change in protection status for *C. gracilis* from a fully protected species to a partially protected species. According to Law No. 2002-16, the hunting and capture of partially protected species, including the collection of their eggs, is allowed on a limited basis, but females and young are fully protected. Law No. 2002-16 additionally states that, for Category B species, the President of the Republic may, by decree, temporarily place them under the regime of full protection if they are considered under serious threat from extinction; it also prohibits the hunting and capture of wild animals in protected areas.

As well as setting out new protection categories for CITES listed species, Law No. 2021-04 (2021) sets out regulations for captive breeding. The Law states that authorisation from the CITES MA is needed for the captive breeding of Category I-III animals for commercial purposes. It also requires parental populations to be established in a way that does not affect the survival of the species in the wild, and managed to ensure the parental population's long-term maintenance (Law No. 2021-04, 2021). Furthermore, any facility engaged in captive breeding or trade of Category I-III species must keep records of all specimens and make these figures available to the relevant authorities (Law No. 2021-04, 2021). The CITES MA of Benin (*in litt*. to UNEP-WCMC (2021) reported that implementing decrees to specify the conditions for breeding and keeping of Category I-III species were in draft.

The CITES national legislation project currently classifies Benin as a Category 2 Party (Parties that have legislation that is believed generally not to meet all of the requirements for the implementation of CITES).

Monitoring of offtake: The CITES MA of Benin noted that current harvest monitoring is decentralised and done by the means of harvest permits, which are granted on a case-by-case basis and are required for both domestic and international trade (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Harvesting standards, including the age, sex, and condition of females, were also reported to be in place, however no further details were provided by the MA except to note that, as an example, the harvest of gravid females is prohibited under Law No. 2002-16 (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021).

Despite this, the CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) noted that a sustainable harvest limit for wild populations of *C. senegalensis* had not yet been determined, and current domestic harvest levels appear to be unknown. It was noted that demographic studies of wild populations of *C. gracilis* were not possible due to the financial resources required, and that as a result most national monitoring actions were restricted to the annual monitoring of ranching operations rather than monitoring of wild populations (CITES MA of Benin, *in litt*. to UNEP-WCMC, 2021).

The CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) considered that it would be possible to establish a non-detriment finding for *C. gracilis* but explained that, until precise information on the abundance of the species and its population dynamics in the wild could be ascertained by the new Scientific Authority to be established by Law 2021-04, Benin would consider export quotas for captive-bred specimens only (it was unclear whether Benin also considered ranched specimens to be included in this term).

Ranching and captive breeding: A census carried out by the CITES MA of Benin in August 2021 identified 21 ranching and captive breeding facilities that held CITES listed species in the country; no *C. gracilis* were reported to be present at any of these facilities (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). It was reported that the standards of a CITES captive-breeding facility were not met at most locations, and that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Work to establish a database for monitoring captive breeding was reported to be in progress (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Although concerns have been raised in the past that source codes for *C. gracilis* were being used erroneously (Ineich, 2006), the CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) reported that it had attended training organised by IUCN in April 2021 on the application of source codes and the monitoring of breeding centres.

While the MA of Benin (*in litt.* to UNEP-WCMC, 2021) did not propose quantitative quotas for captive bred or ranched specimens of *C. gracilis*, it was noted that the establishment of quotas for ranched or captive-bred specimens would be done on the basis of predicted production levels from monitoring of facilities; further details of this quota setting system were not provided. The breeding capacity of facilities has been used as the basis of quota setting for captive-bred and ranched reptiles in the past

(see Harwood, 2003); however, the system in place was not believed to be robust as it did not take into account the structure of populations or variation in reproductive output (Harwood, 2003).

Three control mechanisms were outlined to differentiate between ranched and wild-caught specimens: 1) Only breeders confirmed to have ranched specimens in their facilities will be authorised to trade; 2) harvesting forms will be countersigned by the competent forestry agent, with an account of the available stock; 3) breeders will have to provide a monthly update on the status of their stock, under the supervision of a competent forestry agent (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021).

Progress on recommendations: Table 3.1.7 shows a summary of progress towards the recommendations issued to Benin at AC27, based on information submitted by the MA of Benin *in litt.* to UNEP-WCMC, 2021.

Table 3.1.7: Recommendations by the Animals Committee (AC27 WG1 Doc. 1; AC27 Summary Record) and a summary of progress against them.

Recommendation	Progress (based on information submitted by MA of Benin, *in litt.* to UNEP-WCMC, 2021).
Within 90 days the Management Authority should provide the following information to the Secretariat for transmission to the Animals Committee to review at its 28th meeting:	
a) Provide the Secretariat with available information on the status, distribution (including extent of distribution in protected areas) and abundance of *Chamaeleo gracilis* in Benin;	The MA of Benin provided information on distribution, but noted that the population status and abundance of the species in Benin were unknown (see *Benin: Population status and trends* section).
b) Inform the Secretariat that Benin will maintain an annual export quota at a level not higher than the current published export quota.	The MA of Benin stated it would consider future export quotas of captive-bred specimens only, until information on status and trends of wild populations could be provided by the new Scientific Authority.
c) Provide information on management of ranched animals in trade (e.g., ranching facilities including stock number, sources, production levels, survival rate of female specimens used in the ranching operation) and the details of impacts on wild populations;	Law No. 2021-04 (2021) establishes a new legislative framework for ranching and breeding CITES listed species (see *Benin: Management* section). No *C. gracilis* were reported to be present at 21 captive breeding and ranching facilities that were visited across Benin during inspections carried out in August 2021to establish a baseline of available stock, but concerns were generally raised regarding the standards of a captive-breeding facilities visited, and it was noted that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques.
d) Provide a justification and the scientific basis by which the current export quotas were established and considered not to be detrimental to the survival of the species in the	No scientific justification for the export of wild or ranched *C. gracilis* has been provided; however, Benin noted that they have been establishing a new Scientific Authority.

wild and in compliance with Article IV, paragraphs 2 (a) and 3;	
e) Provide the CITES Secretariat with detailed information on the control measures used to differentiate between ranched and wild-caught specimens to ensure that the authorized exports of ranched specimens are not augmented by mis-declared wild specimens;	The MA of Benin did not clearly outline measures to differentiate between specimens of differing origin (R, C, W).
f) As a precautionary measure impose a size restriction of a maximum snout to vent length of 8 cm for live specimens of source code R to be exported and which should be published with the annual export quota.	No information relating to this recommendation was provided.
Within 2 years the Management Authority should:	
g) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Benin);	A national status assessment has not yet been conducted; the MA of Benin noted that precise population estimates for *C. gracilis* in the country were unavailable due to the scarcity of observations in Benin. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if resources could be secured. The *Benin: Management* section outlines current management measures in place.
h) Establish revised annual export quotas (if appropriate) for wild taken or ranched specimens based on the results of the assessment;	A national status assessment has not yet been conducted; although the MA of Benin stated it would consider future export quotas of captive-bred specimens only until information on status and trends of wild populations could be provided by the Scientific Authority, no quantitative quotas for captive-bred specimens of *C. gracilis* were proposed.
i) Provide a justification for, and explanation of, the scientific basis by which it is determined that these revised quotas would not be detrimental to the survival of the species in the wild and are established in compliance with Article IV, paragraphs 2 (a) and 3.	While the MA of Benin considered that a non-detriment finding for *C. gracilis* would be possible. it noted that only future export quotas of captive-bred specimens would be considered until information on the status and trends of wild populations could be provided by the Scientific Authority. No quantitative quotas for captive-bred specimens of *C. gracilis* were proposed.

Challenges faced and identification of needs: The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021) identified specific national research and management needs. These included the need for further research on the ecology and population status of *C. gracilis* and funding to carry this out, research regarding the traceability of specimens in trade, and research regarding levels of legal and illegal trade (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). The following capacity building needs were also identified: training of customs officials on border control measures; training on the identification of endangered species; and training on the implementation of CITES (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). It was also noted that captive breeding and ranching facilities with CITES-listed species were mostly located in the south of the country, which was considered a monitoring challenge due to the distance from the capital (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021); additional needs regarding training sessions for breeders on species biology, husbandry requirements, stock management, and marking techniques were also highlighted.

Ghana

Distribution: The range map of Tilbury (2010) indicates that *C. gracilis* occurs throughout the country. The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) reported that *C. gracilis* was present in a range of habitats in Ghana, including savannah, dry and humid mature forest, degraded forest, and bushy farmland and plantations. The potential suitable range for the species in Ghana was estimated "conservatively" at 97 714 km^2, based on estimates of the percentage of suitable habitat in the main habitat types across the country: 40% of agricultural lands (16 361 km^2), 70% of savannah (77 000 km^2), 5% of forests (4104 km^2), 20% of rural settlements (234.54 km^2), and 10% (14.72 km^2) of urban settlements (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021). The basis of these habitat suitability estimates was not specified.

Population status and trends: Between 2 April 2021 and 9 April 2021, the MA of Ghana conducted a rapid population survey of *C. gracilis* across six regions in the country, covering Ghana's major vegetation zones (forest, savannah, and forest-savannah transition belt) (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021; Figure 3.1.2). CITES MA staff and local hunters walked 40 m fixed width transects of varying length at 27 sites and recorded a total of 182 *C. gracilis* during the sampling period. The overall average population density for the species was reported to be 34.7 individuals/km^2, with the range of average densities spanning from 2.7 individuals/km^2 in Upper West and Northern Region sites to 126 individuals/km^2 in Greater Accra (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021) (Table 3.1.8). *C. gracilis* was found to be present at higher densities in the forests of southern Ghana (e.g. Accra and Eastern regions) compared to the savannah habitats of the north (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

The survey results were used to estimate a population size of 3 390 960 individuals (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021), which appears to have been calculated by multiplying the average density of *C. gracilis* across the 27 sites surveyed by the species' estimated range. The IUCN SSC Chameleon Specialist Group (*in litt*. to UNEP-WCMC, 2021) expressed concerns over the methodology used to produce this estimate, noting in particular an apparent non-linear relationship between encounter rates and corresponding density estimates for *C. gracilis.* On the basis of these concerns the IUCN Specialist Group (*in litt*. to UNEP-WCMC, 2021) considered that this population estimate may not be reliable, and noted further information was needed to validate the methodology used to produce both the population estimate and the estimate of the species' range[5].

[5] The CITES MA of Ghana was contacted by UNEP-WCMC in November 2021 to request clarification on this matter, however no response had been received at the time of writing (December 2021)).

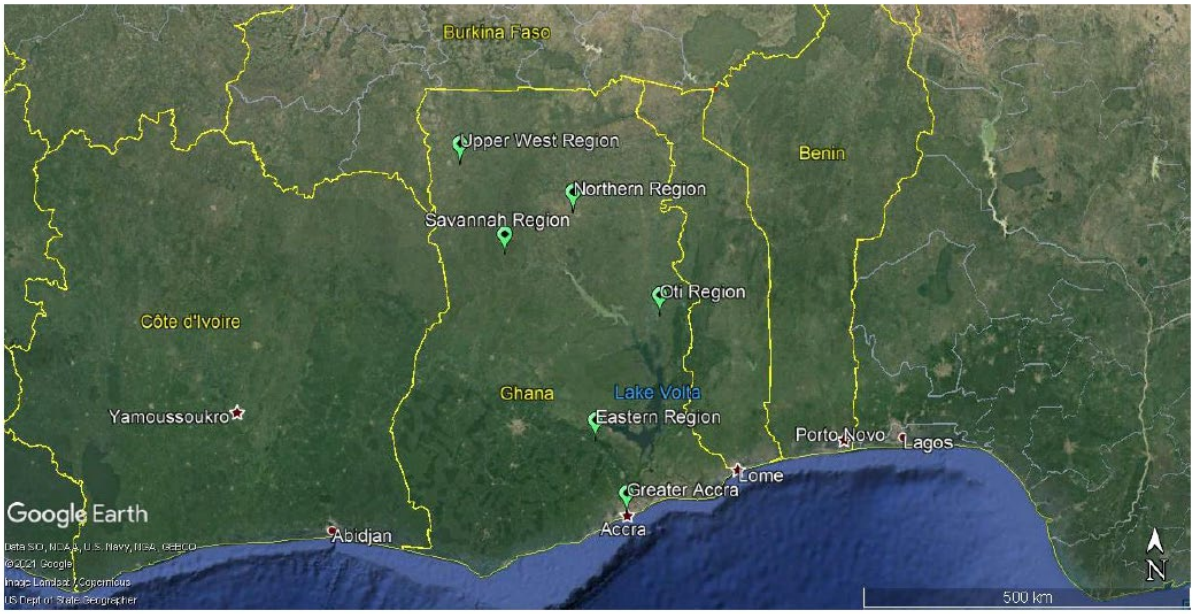


Figure 3.1.2. Sampling locations for the rapid population assessment of *C. gracilis* carried out by the CITES MA of Ghana in April 2021. Source: CITES MA of Ghana *in litt.* to UNEP-WCMC, 2021.

Table 3.1.8: Encounter rates and density estimates* of *C. gracilis* recorded in a rapid population assessment undertaken by the CITES MA of Ghana in April 2021. Source: CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021.

Region	No. of sampling locations	Average encounter rate (per km)	Average density (per km^2)
Oti	6	0.8	13
Savannah	4	1.2	18
Eastern	4	2.7	33
Greater Accra	5	2.2	126
Upper West	5	0.2	2.7
Northern	3	0.27	2.9

*The CITES MA of Ghana provided encounter rate and density estimates per sampling location (n=27); to provide a summary, encounter rates and densities have been averaged across the six regions surveyed.

While it was considered that the suspension of trade since 2016 would contribute to the recovery of *C. gracilis* populations in affected areas (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021), no information on the population trend of *C. gracilis* following suspension of trade was located. IUCN Chameleon Specialist Group member C. Tilbury (*in litt.* to UNEP-WCMC, 2021) considered that, despite the trade ban, the populations of *C. gracilis* and *C. senegalensis* were likely to have "spiralled downward" rather than increased in the country.

Threats: *C. gracilis* was reportedly used for medicinal and ceremonial purposes in south-western Ghana (Ernst *et al.*, 2005), with C. Tilbury (*in litt.* to UNEP-WCMC, 2021) noting that the use of chameleons for medicinal purposes in Ghana was ongoing and widespread. The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021), however, considered use for these purposes to be limited to a small number of remote locations. Illegal trade issues involving reptiles from Ghana have been reported in the past (Ineich 2006), and TRAFFIC International's Wildlife Trade Portal, an open-access repository of wildlife seizure and incident data, recorded one incident of the seizure of 95 live *C. gracilis* specimens originating from Ghana at an airport in the United Kingdom in 2011; Japan was noted as the intended country of destination (TRAFFIC International 2021 Wildlife Trade Portal). No illegal trade in *C. gracilis* was reported by the CITES MA of Ghana, but it was noted that a new Wildlife Resource

Management Bill would implement stricter penalties for non-compliance with wildlife laws (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

Habitat loss from expansion of human settlements and agricultural activities was noted to continue to pose a major threat to the species (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

Trade: CITES annual reports have been received from Ghana for all years 2010-2019, with the exception of 2016. Ghana published annual export quotas for 1500 wild-sourced *C. gracilis* every year 2010-2015 with the exception of 2013; no quotas have been published since 2015. Trade remained within quota in every year where a quota was published, according to both exporter- and importer-reported data (Table 3.1.9).

Table 3.1.9: CITES export quotas for wild-sourced *C. gracilis* from Ghana, 2010-2021, and global direct exports as reported by Ghana and countries of import, 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years for which quotas were not published or CITES annual reports have not been received.

Wild-sourced specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	1500	1500	1500	-	1500	1500	-	-	-	-	-	-
Reported by Ghana	1320	1160	673	320	370	410	-		100	130	-	-
Reported by importer	779	754	504	73	300	233	100					

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

The European Union suspended trade in wild-sourced *C. gracilis* from Ghana in 2012. The suspension remains in place under Commission Regulation (EC) No. 2019/1587 of 17 October 2019. A negative opinion on ranched *C. gracilis* from Ghana was formed on 7 November 2016.

According to the CITES Trade Database, direct exports of *C. gracilis* from Ghana 2010-2019 comprised 4483 live, wild-sourced chameleons and 50 ranched chameleons as reported by Ghana, and 2773 wild-sourced and 45 ranched chameleons as reported by importers. All trade was for commercial purposes (Table 3.1.10). The United States was the main destination, importing 65% of specimens according to Ghana and 77% according to the United States. The majority of trade occurred in the years up until the trade suspension was put in place (2010-2016), however exports of 100 (to Japan) and 130 wild-sourced chameleons (to Canada, Indonesia, and the United States) were also reported by Ghana in 2018 and 2019 respectively, in apparent contravention of the trade suspension. Of these importers only Indonesia reported the associated trade.

Table 3.1.10: Direct exports of *C. gracilis* from Ghana, 2010-2019. All trade was reported by number. Hyphens indicate that Ghana's CITES annual report for 2016 has not been received.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	-	T	R	Exporter						50	-				50
				Importer	45										45
			W	Exporter	1320	1160	673	320	370	410	-		100	130	4483
				Importer	779	754	504	73	300	233	100			30	2773

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Indirect trade in *C. gracilis* originating from Ghana 2010-2019 consisted of 178 live, wild-sourced individuals as reported by exporters and 157 wild-sourced individuals as reported by importers; most re-exports of wild-sourced individuals were for commercial purposes (Table 3.1.11). The majority of trade was re-exported via the United States (87% according to importers, 72% according to exporters).

Table 3.1.11: Indirect exports of *C. gracilis* originating in Ghana, 2010-2019.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	-	T	R	Exporter											
				Importer				30							30
			W	Exporter	52	76						50			178
				Importer	47	95									142
		-	W	Exporter											
				Importer	15										15

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Management:

Legislation: Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971) includes 'Schedules', lists of species which are afforded more specific stricter protections. *C. gracilis* is not listed under any Schedules under this legislation. The MA of Ghana (*in litt* to UNEP-WCMC, 2021) noted that the 1971 Regulations prohibit the hunting or capture of wild animals without a licence or permit, and require a permit for the import or export of wild animals or wildlife products; however, the Regulations appear to specify that a permit is only required to export species included in the Regulation's three Schedules. An amendment to the Wildlife Conservation Regulations in 1989 prohibited the capture of any wild animal by group hunters[6], required the issuance of a license for trade in bushmeat, and banned the keeping of wild animals as pets without a licence (L.I. 1452, 1989).

The CITES national legislation project currently classifies Ghana as a Category 3 Party (Parties that have legislation that is believed generally not to meet the requirements for the implementation of CITES). The most recent legislative status table (updated August 2021) noted that a bill had been through a second reading in Parliament; next steps included enactment and submission to the Secretariat for analysis and an agreement on the revised legislation.

Monitoring of offtake and quota system: The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) reported that an individual species management plan would be developed for *C. gracilis*, but it is unclear when this management plan is expected to be in place[7]. Sustainable harvest levels for *C. gracilis* are proposed to be set using a 5-step decision-making process: (1) estimation of species population size; (2) establishment of a precautionary harvest quota of up to 10% of the population, based on field monitoring results in areas in which harvesting occurs; (3) continuous assessment of

[6] Group hunting was defined as "a group of two or more individuals hunting together and whose activities complement one another's for the purpose of hunting" (L.I. 1452, 1989).
[7,5] The CITES MA of Ghana was contacted in November 2021 for clarification on this matter, however, no response had been received at the time of writing (December 2021).

population status at harvested and unharvested sites; (4) continuous monitoring of trade dynamics to ensure there are no major changes in catch per unit effort (CPUE); and (5) review of results from monitoring and subsequent adaptation of harvest regulations (permit numbers, harvesting areas, and quotas).

A harvest rate of 10% of the population per year based on the population estimate contained in the draft NDF provided by Ghana (3 390 960 individuals) would equate to approximately 340 000 individuals of *C. gracilis* (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). The justification for the sustainability of this rate provided by the MA of Ghana referred to the species' life-history traits, which were stated to include rapid maturation and age of reproduction, a relatively short lifespan, and a large number of offspring produced at a time, as well as the species having few reproductive events, a high mortality rate, a low offspring survival rate, and relatively minimal parental care/investment. The draft NDF states that a 10% harvest rate is widespread and accepted for other wildlife that is harvested for commercial purposes; while Sinclair *et al.* (2006) was cited to support this statement, this reference indicates that harvest rates are context- and species-specific, and no information was found to support a widely accepted 10% harvest rate for reptile species harvested for commercial purposes. However; although a harvest rate of 10% was considered to be sustainable by the CITES MA of Ghana, the MA proposed to maintain a more conservative export quota of 1500 *C. gracilis* individuals per year, which was in place prior to the trade suspension (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021). The MA noted that catch rates of *C. gracilis* and *C. senegalensis* appeared "stable" at the peak of trading (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021); although it is unclear which timespan this refers to, according to the CITES Trade Database, trade in live, wild sourced *C. gracilis* over the last 10 years peaked in 2010 with 1320 individuals exported according to Ghana.

The harvest monitoring system outlined by the MA of Ghana (*in litt*. to UNEP-WCMC, 2021) is proposed to consist of a set of permanent transects and quadrats laid across three density zones (high, medium and low density) that have been established on the basis of the April 2021 rapid assessment survey results (see *Ghana: Population status and trends* section). A capture/recapture technique is planned to be used to assess the species' distribution, population structure, density and dynamics, with data collected on the sex, size and age class of individuals. The number of proposed transects and quadrats and their distribution across harvest and non-harvest sites was not specified, nor was the proposed timing for the monitoring system[8]. Similarly, no further detail was provided on how CPUE data are proposed to be collected or monitored. C. Tilbury (*in litt.* to UNEP-WCMC, 2021) noted that the ongoing and widespread use of chameleons for medicinal purposes in Ghana may be one readily available source of monitoring information.

Prior to the trade suspension in 2016, permits for collection of *C. gracilis* were reported to be issued across specific geographical areas to prevent over-collection from a single population (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). The MA of Ghana did not state whether a similar system would be envisioned if trade in *C. gracilis* were to resume[9].

Ranching and captive breeding: The CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2021) noted that chameleon traders were encouraged to establish ranching and breeding operations to replace wild-caught trade, and to return parental stocks to the wild. However, it was reported that ranching and captive breeding programs established by some traders had collapsed following the trade suspension in 2016 (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021). The MA did not specify whether trade in captive-bred and ranched specimens would be intended if the trade suspension were to be lifted[10].

[9, 7] The CITES MA of Ghana was contacted in November 2021 for clarification on this matter, however, no response had been received at the time of writing (December 2021).

Protected areas: Several of Ghana's protected areas were reported to host significant populations of *C. gracilis*, with the range of *C. senegalensis* and *C. gracilis* combined covering approximately 12 000 km^2 of protected areas (national parks) and over 80 000 km^2 of forest reserves (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021). Occurrence records of the species in the literature were located for the Keta Ramsar site (Attuquayefio *et al.*, 2005), and the Draw River, Boi-Tano and Krokosua Hills forest reserves (Ernst *et al.*, 2005), all in southwestern Ghana.

Progress on recommendations: Table 3.1.12 shows a summary of progress towards the recommendations issued to Ghana at AC27, based on information submitted by the MA of Ghana *in litt.* to UNEP-WCMC, 2021.

Table 3.1.12: Recommendations by the Animals Committee (AC27 WG1 Doc. 1; AC27 Summary Record) and a summary of progress against them.

Recommendation	Progress (based on information submitted by MA of Ghana, *in litt.* to UNEP-WCMC, 2021).
Within 90 days the Management Authority should provide the following information to the Secretariat for transmission to the Animals Committee to review at its 28th meeting:	
a) Provide the Secretariat with available information on the status, distribution (including extent of distribution in protected areas) and abundance of *Chamaeleo gracilis* in Ghana;	The MA of Ghana provided information on these aspects, including an estimate of population size and regional estimates of population densities based on a rapid population survey. However, further information regarding the methodology used to produce these estimates may be needed to assess whether they are robust (see *Ghana: Population status and trends* section).
b) Inform the Secretariat that Ghana will maintain an annual export quota at a level not higher than the current published export quota; and	Ghana has not published export quotas for *C. gracilis* since 2015; the MA of Ghana proposed re-instating an annual quota of 1500 specimens.
c) Provide justification for, and details of, the scientific basis by which it has been established that the quantities of *Chamaeleo gracilis* exported are not detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3;	See response for recommendation f).
Within 2 years the Management Authority should:	
d) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Ghana);	The MA of Ghana conducted a rapid population survey in April 2021 across six regions, including all of the country's major vegetation zones (see *Ghana: Population status and trends* section). In an evaluation of threats, the MA of Ghana noted that the effect of harvesting on wild populations was unknown, and that

	habitat loss presents a major threat to the species. The draft NDF provided by Ghana outlines an adaptive management plan that includes proposals to carry out monitoring of the population at harvested and unharvested sites, as well as monitoring of CPUE; however details were not provided regarding the scale or frequency of planned surveys as well as the methodology proposed to monitor CPUE. It is also unclear how the proposed quota (1500 individuals) would be distributed among harvesting sites.
e) Establish revised annual export quotas (if appropriate) for wild-taken and ranched specimens based on the results of the assessment; and	Based on the results of a rapid population survey, Ghana considered that re-instating an annual export quota of 1500 specimens would be sustainable.
f) Provide a justification for, and explanation of, the scientific basis by which it is determined that these quota(s) would not be detrimental to the survival of the species in the wild and are established in compliance with Article IV, paragraphs 2 (a) and 3.	A justification for resumed trade in *C. gracilis* was provided on the basis of the results of rapid population surveys and the proposal that a 10% harvest rate would be sustainable. In addition, harvested populations were planned to be monitored through CPUE surveys. A number of concerns were raised by the IUCN SSC Chameleon Specialist Group regarding the methodology used to produce both the population estimate for the species and the estimate of the species' range. In addition, no information was found to support a widely accepted 10% harvest rate for reptile species harvested for commercial purposes.

Challenges faced and identification of needs: The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) stated that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. It was noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, which was considered inadequate to manage the country's wildlife resources (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Ghana reported exports of 100 and 130 wild-sourced chameleons in 2018 and 2019, respectively, in apparent contravention of the trade suspension (see *Trade* section). These were reported by Ghana

as exported to Japan, Canada, Indonesia, and the United States; of these importers, only Indonesia reported this trade.

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REPTILIA: CHAMAELEONIDAE

3.2 *Chamaeleo senegalensis*: Benin, Ghana

A. Summary

Suspension valid from:	Summary	Recommendation
15 March 2016	*C. senegalensis* was classified as Least Concern by the IUCN in 2012 in view of its wide distribution and abundance. The species' global population trend is unknown.	
	Benin: *C. senegalensis* was reported to be widespread in Benin, with suitable habitat primarily found in the south of the country. The CITES MA of Benin estimated the population to be "over 10 000" based on unpublished survey data from hunters and local communities, however the species' population trend is unknown. Anecdotal information based on surveys with local communities and expert opinion suggested that chameleon populations in general may be declining.	**Suspension may still be appropriate**
	A zero export quota for wild, ranched, and captive-bred *C. senegalensis* has been in place since 2019, replacing annual export quotas of 4000 ranched specimens and 1000 wild-sourced live specimens 2010-2017. CITES annual reports have been submitted by Benin for 2010-2019, with the exception of 2017. Direct exports of *C. senegalensis* from Benin 2010-2016 consisted of 400 live wild-sourced individuals and 12 740 ranched individuals, exported for commercial purposes according to exporters. Trade in live ranched *C. senegalensis* appears to have exceeded the specified quota in 2012 according to countries of import. The United States reported importing 198 live confiscated *C. senegalensis* in 2017 (the year after trade in the species was suspended).	
	Benin responded to the consultation relating to the RST long-standing suspensions. As of July 2021 *C. senegalensis* is categorised as a 'Category II' species, which is thought to make it partially protected; the hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected.	

	Benin considered that it would be possible to establish a non-detriment finding for *C. senegalensis*, but noted that, until precise information on wild populations could be ascertained by the new Scientific Authority, only quotas for captive-bred specimens would be considered. However, no *C. senegalensis* were recorded in a census of 21 captive-breeding and ranching facilities in the country carried out in August 2021. Given the species is assessed globally as Least Concern and is widespread in Benin, some level of harvest and export is likely to be sustainable. However, key actions directed to Benin to determine sustainable export levels (such as a national status assessment) are yet to be completed. Noting that previous trade reported by Benin was predominantly in ranched specimens (which has a lower impact on wild populations) and only collection of eggs (not juveniles) is legally permitted, the SC could consider whether lifting the trade suspension would be appropriate provided that Benin: 1) publishes a zero export quota for wild sourced specimens, and 2) provides a scientific justification for a conservative quota for ranched specimens for consideration by the Secretariat and AC Chair. This quota should be based on surveys by the new Scientific Authority and take into account recommendation f) issued at AC27 to impose a size restriction of a maximum snout to vent length of 6 cm. In the absence of a justification for a conservative quota for ranched specimens, however, **the suspension may still be appropriate.** Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) was a specific capacity building need. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if sufficient resources could be secured.	
	Ghana: *C. senegalensis* was noted to occur in all regions of Ghana according to the CITES MA of Ghana, although the IUCN range map suggests it does not occur in the southwest. The CITES MA estimated the population to be 4 168 252 individuals, based on extrapolation of an average density of 42.7 individuals/ km^2 calculated using the results of a rapid (one week) population survey conducted in 2021. It was noted that densities were higher in the north of the country. No quantitative information on population trend was available; while the MA of Ghana suggested there was a population recovery following the trade suspension, expert opinion considered that the population was likely to have decreased. Ghana published annual export quotas for 1500 wild-sourced *C. senegalensis* every year 2010-2015, apart from 2013, when no quotas were published. No quotas have been published since 2015. CITES annual reports have been submitted by Ghana for all years 2010-2019, with the exception of 2016. Direct exports of *C. senegalensis* from Ghana 2010-2016 predominantly consisted of 6221 live wild-sourced individuals as reported by Ghana,	**Suspension may still be appropriate**

and 5067 wild-sourced individuals as reported by importers. Trade reported by Ghana appears to have exceeded the published quota in 2011. Trade was additionally reported in all years 2017-2019 by both Ghana (totalling 585 live wild-sourced and 400 live ranched) and by importers (83 live wild-sourced and 100 live captive-bred) in apparent contravention of the trade suspension. Aside from international trade, use of chameleons for medicinal purposes was also reported to be widespread in Ghana; the MA, however, considered this threat to be restricted to remote locations.

The species is not listed under the Schedules of protected animals under Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971), but cannot be hunted within areas designated as reserves. Ghana responded to the consultation relating to the RST long-standing suspensions, and provided a draft NDF report for the species. This included the results of a rapid population survey conducted in 2021 and details of a proposed quota and adaptive management plan. The draft NDF considered that a quota of up to 10% of the population (416 825 individuals based on the above population estimate) could be sustainable; however, a more conservative quota of 1500 individuals was proposed that is identical to quotas published 2010-2015. The adaptive management plan outlined includes monitoring of the population at harvested and unharvested sites as well as monitoring of catch per unit effort (CPUE), but details were not provided regarding the scale or frequency of the planned surveys or the methodology proposed to monitor CPUE.

Given the species is assessed globally as Least Concern and is relatively widespread, at least in the north of the country, some level of harvest and export is likely to be sustainable. Ghana appears to have completed or partially completed all of the recommendations issued at AC27. However, some uncertainties remain regarding the data that underpin the draft NDF; particularly the methodology used for the rapid national status assessment (six regions of the country in seven days, recording 259 specimens), including the calculation of suitable habitat available for the species and the methodology used to extrapolate encounter rates to form an estimated overall population size > 4 million.

Acknowledging the progress made by Ghana, further details of the proposed management plan/ NDF could be requested prior to lifting the trade suspension to ensure that the export quota is based on robust scientific data. These elements could include (1) further details regarding the basis of the species range estimate used to calculate the national population; (2) how density estimates were calculated from encounter rates recorded in the national rapid survey; (3) details of the proposed system for monitoring populations (scale, frequency, locations); and (4) details of how CPUE rates are proposed to be monitored. In the meantime, **the trade suspension may still be appropriate**.

The CITES MA of Ghana noted that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. The MA noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, but this was considered inadequate to manage the country's wildlife resources. In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations.

RST Background

Chamaeleo senegalensis from all range States was initially included in the Review of Significant Trade as a priority species for review at AC25 (AC25 Summary Record). The inclusion was based on the analysis provided in AC25 Doc. 9.6 and its Annexes, which noted that *C. senegalensis* met a high-volume trade threshold in 2008 and 2009. No response was received from Benin or Ghana at AC26 (AC26 Doc. 12.3); these species/country combinations were therefore retained in the review (AC26 Summary Record). A detailed review of the *C. senegalensis* from Benin and Ghana (AC27 Doc 12.4) was considered at AC27. For Benin, while the species was noted to be locally common, the basis for quota setting was considered unclear; additional questions were also noted to remain that were not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) (AC27 Doc 12.4). For Ghana, the population status of the species and the basis for a non-detriment finding were noted to be unclear, and four instances of possible quota excesses in wild sourced specimens were reported in 2002, 2008, 2009 and 2011 (AC27 Doc 12.4). Both species/country combinations were classified as of possible concern, and a number of recommendations were directed to Benin and Ghana (AC27 Summary Record). These recommendations are outlined in Section C, Table 3.2.7 and 3.2.12.

No reply from Benin or Ghana outlining progress on the AC recommendations had been received by SC66 (SC66 Doc 31.1). On the basis that the recommendations had not been complied with, it was recommended that all Parties suspend trade in *C. senegalensis* from Benin and Ghana until compliance with Article IV, paragraphs 2 (a) and 3 could be demonstrated for this species. A recommendation to suspend trade has been in place since 15 March 2016.

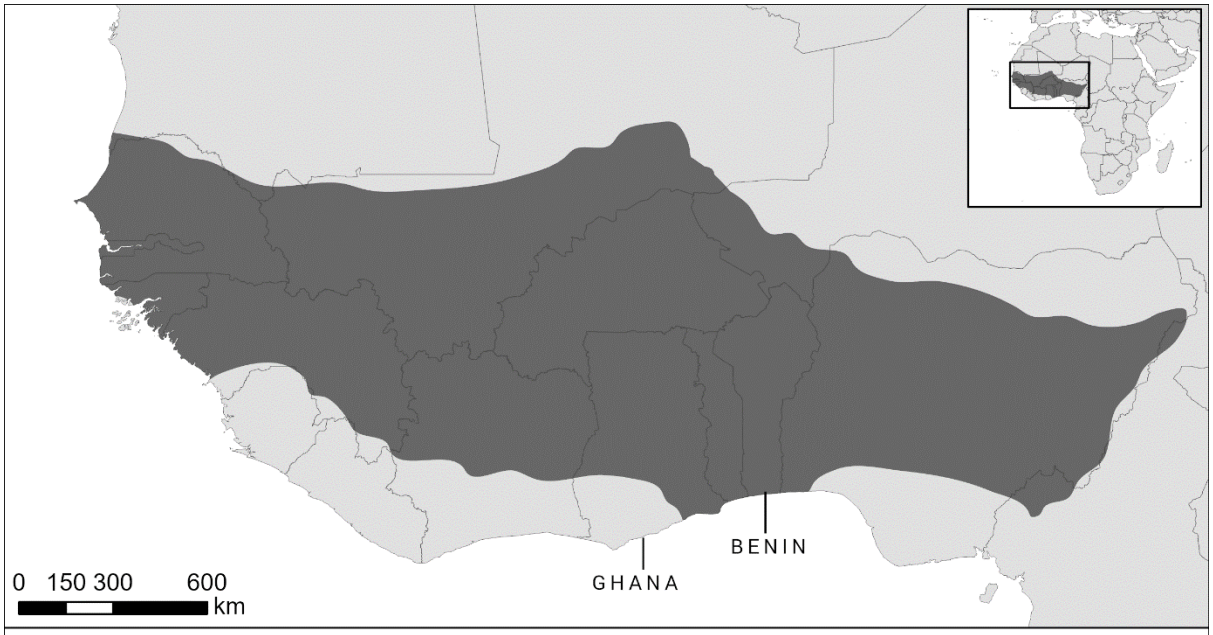
B. Species characteristics

Taxonomic note: Glaw (2015), the CITES Standard Reference for chameleons, noted there was "potential confusion" between *C. senegalensis* and *C. laevigatus*; Tilbury (2010) also reported that the two species were difficult to distinguish in the field. It was noted that some authors consider *C. laevigatus* a subspecies of *C. senegalensis* (Tilbury, 2010), however, recent literature recognises it to be a full species (Tilbury, 2010; Tolley and Trape, 2014; Spawls *et al.*, 2018). Bartlett and Bartlett (2001) reported close resemblance with *C. gracilis* and *C. dilepis*.

Biology: *C. senegalensis* is a widespread West African chameleon (Wilms *et al.*, 2013) that occurs in dry and moist savannah as well as forest habitats (Leaché *et al.*, 2006; Wilms *et al.*, 2013). The species was reported to be common in the southern Guinean savannah and wet woodlands, but rarer in the dry sandy north (Tilbury, 2010). The species was also reported to be abundant in towns and villages, where it favours planted neem (*Azadirachta indica*) trees (Trape *et al.*, 2012).

C. senegalensis feeds on a variety of insects including crickets, locusts and cockroaches (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Gravid females have been observed from May to July in Nigeria (Tilbury, 2010); Meiri *et al.* (2020) estimated a mean clutch size of 52 eggs for the species based on data from scientific literature and personal observations. Eggs incubated in captivity were reported to hatch after 7 months (Tilbury, 2010). The species' lifespan ranges from 2-5 years according to the CITES Management Authority (MA) of Ghana (*in litt.* to UNEP-WCMC, 2021).

Distribution: *C. senegalensis* is widespread across sub-Saharan Africa, with a range reaching from Senegal and Gambia in the west to Cameroon in the east (Klaver and Böhme, 1997; Leaché *et al.*, 2006; Wilms *et al.*, 2013). Tilbury (2010) included the Central African Republic as the easternmost range State.



Range Data: IUCN & Conservation International. 2012. *Chamaeleo senegalensis. The IUCN Red List of Threatened Species. Version 2021-2*. http://www.iucnredlist.org. Downloaded on 9 September 2021.
Basemap: United Nations Geospatial, 2020

Disclaimer: The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Figure 3.2.1. Distribution of *Chamaeleo senegalensis.*

Population status and trends: There are no global population estimates for *C. senegalensis*, but the species was categorised as Least Concern in the IUCN Red List in a 2012 assessment based on its wide distribution and abundance; the assessment noted that "while its population may be deleteriously impacted by exploitation, there is currently no indication that population declines are severe enough to qualify for listing in a threatened category" (Wilms *et al.*, 2013). However, the population trend for the species was reported to be unknown, and it was noted that monitoring and research were needed to ensure the prevention of significant population declines (Wilms *et al.*, 2013).

Tilbury (2010) described the species as "widespread and common" and "in no danger of extinction". However, the same author (*in litt*. to UNEP-WCMC, 2013 in AC27 Doc. 12.4 (Rev.1)) noted that the species "could become locally scarce if harvested intensively".

Threats: Tilbury (2010) reported "intensive" harvesting of the species for the pet trade, but noted that *C. senegalensis* was protected in many national parks and reserves in West Africa. The species' value to the pet industry is also noted in its IUCN assessment, however this is caveated by noting that the impact of harvesting on natural populations is considered unknown (Wilms *et al.*, 2013). Carpenter *et al.* (2004) considered that the high annual volumes of *C. senegalensis* traded should be of concern to conservationists "as there is a lack of information concerning the biology of the species and harvesting impacts".

The IUCN SSC Chameleon Specialist Group Chair C. Anderson (*in litt*. to UNEP-WCMC, 2021) considered that, prior to the suspension of trade from Benin and Ghana, export quantities of *C. senegalensis* were "excessive" on the basis that the level of supply exceeded demand, resulting in low retail prices and profit margins which resulted in poor welfare conditions and high mortality rates in captivity. In an assessment of morbidity and mortality in captivity by Altherr and Freyer (2001 in:

AC27 Doc. 12.4 (Rev.1)), the species was considered unsuitable for private husbandry, because it was "difficult to keep", required conditions that are difficult to simulate, was "difficult to breed", and had a high mortality in captivity. A hobbyist website (Briggs *et al.*, 2021) described *C. senegalensis* as a "delicate" species prone to stress-related health problems, and only recommended for owners with advanced reptile experience.

C. senegalensis was also considered "possibly" threatened by local collection for medicinal purposes (Leaché *et al.*, 2006). In a quantitative survey in December 2012 of reptiles traded in West Africa's largest fetish market in Lomé, Togo, *C. senegalensis* was the most common reptile species (n = 963) and accounted for 55% of all reptiles present at the market (Segniagbeto *et al.*, 2013). Trape *et al.* (2012) noted that chameleons are feared in parts of West Africa, and therefore considered that *C. senegalensis* may face some level of persecution.

Herpetologist C. Tilbury (*in litt*. to UNEP-WCMC, 2021) noted that chameleons in savannah habitats were threatened by the annual setting of fires in the dry season to stimulate regrowth for livestock grazing. While no studies on the effects of fire setting on chameleon populations have been conducted, it was considered likely that these fires kill the majority of chameleons exposed at the surface and that this threat would increase in the future with the expansion of agricultural lands and an increasing human population (C. Tilbury *in litt*. to UNEP-WCMC, 2021). The recurring nature of these fires was thought to prevent the recovery of a population of reproducing adults that would normally survive and reproduce for several years (C. Tilbury *in litt*. to UNEP-WCMC, 2021). It was further noted that climate change predictions have estimated increasing aridification of savannahs, which may result in changes to *C. senegalensis* distribution and population size (C. Tilbury *in litt*. to UNEP-WCMC, 2021). With the threats facing savannah populations, C. Tilbury (*in litt*. to UNEP-WCMC, 2021) reported that "the areas that do support healthy populations of these species are likely to come under high collection pressure with the prospect of incurring localised population declines or extinctions".

Overview of trade and management: *C. senegalensis* was listed in CITES Appendix II on 4 February 1977. As previously noted, the species has been in high demand in the pet trade: according to the CITES Trade Database, between 2010-2019 *C. senegalensis* accounted for 9% of all global direct exports of live chameleons for commercial purposes (with 22% reported to be wild-sourced), and was the third-most exported chameleon species after *Chamaeleo calyptratus* (30% of live direct exports) and *Furcifer pardalis* (10%). C. Tilbury (*in litt*. to UNEP-WCMC, 2021) highlighted some concerns relating to the export of *C. senegalesis* for commercial purposes, which included a lack of genus- and species-level identification capacity at the borders of importing countries and the potential misuse of CITES permits to export misidentified species with higher values for collectors.

C. Country reviews

Benin

Distribution: The CITES Management Authority of Benin considered *C. senegalensis* to be widespread in the country, with suitable habitat primarily found in southern Benin (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). The species has been recorded in the departments of Atlantique and Ouémé (southern Benin), Mono (southwestern Benin), Collines (south-central Benin) (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021), and Zou (south-central Benin) (Ullenbruch *et al.*, 2010)). The species was also recorded in the Beninese part of the W Transfrontier Biosphere Reserve of northern Benin (covering the region bordering Benin, Niger and Burkina Faso) in surveys conducted between May 2006 and November 2007 (Chirio, 2009).

Population status and trends: The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021) confirmed that it had not been possible to assess the population size of *C. senegalensis* in the country, as the

only data currently available were scattered observations; however, the MA estimated that the population in Benin was "over 10 000" based on unpublished survey data from hunters and local communities. The species had previously been described by the MA (*in litt*. to UNEP-WCMC, 2013 in AC27 Doc. 12.4 (Rev.1)) as common, but declining. It was noted that the University of Abomey-Calavi alongside the Institut national de la recherche agronomique (INRA) would conduct a field study if there were sufficient resources in future (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021).

In a series of interviews conducted across 22 communes distributed throughout Benin, Sinsin *et al.* (2008) found that 70% of 121 respondents considered that "the number of chameleons had declined"; while no species-specific details were provided, *C. senegalensis* was reported to be a species found in the local environment by 6% of interviewees.

Threats: *C. senegalensis* was historically the most important chameleon species exported from Benin (Carpenter *et al*., 2004). Sinsin *et al.* (2008) previously considered all chameleons occurring in Benin to be "under heightened threat" and cautioned that "export market demand, should it persist at current levels, will result in the extinction of these species, given that they enjoy little or no effective protection".

Although there are no current exports, Ullenbruch *et al.* (2010) reported that *C. senegalensis* was for sale "in all markets in southern Benin". However, no data were located regarding estimated domestic volumes of trade in this species, or whether trade for local markets was impacting *C. senegalensis* populations. Benin's Ministry of the Environment and Sustainable Development noted that chameleons continue to be openly sold in markets despite this trade being illegal (Ministry of Environment and Sustainable Development, 2020), although no data were available on the specific species being sold. It was noted that seizures of 95 chameleons (species not specified) had been reported in 2015 in the cities of Djougou (95), Porto-Novo (50), and Pobé (15) (Ministry of the Environment and Development, 2020).

TRAFFIC International's Wildlife Trade Portal, an open-access repository of wildlife seizure and incident data, holds a record of the seizure of 28 live *C. senegalensis* specimens originating from Benin in January 2012. The chameleons were transported via Ghana and seized at an airport in the United Kingdom; Canada was reported as the intended country of destination (TRAFFIC International 2021 Wildlife Trade Portal). The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2013 in AC27 Doc. 12.4 (Rev.1)) also reported that the species had been traded illegally to Cameroon for medicinal purposes.

Trade: Benin has submitted CITES annual reports for all years 2010-2019, with the exception of 2017. Benin published annual export quotas for wild and ranched specimens of *C. senegalensis* for all years 2010-2017 (the 2017 quota was published in the year following the trade suspension), and zero export quotas for wild and ranched specimens 2019-2021 (no export quotas were published by Benin in 2018; Tables 3.2.2-3.2.3). Zero quotas for captive-bred specimens were also published in 2019 and 2021 (Table 3.2.4). Direct exports of ranched *C. senegalensis* appear to have exceeded the specified quota in 2012 according to trade data reported by importers. Permit analysis of importer CITES annual reports suggests that some of the trade reported in 2012 was associated with Benin's 2011 trade (based on the export permit number format). However, if these permits are considered with the importer-reported data for 2011, it appears that the quota for 2011 may have also been exceeded.

The European Union suspended trade in wild-sourced and ranched *C. senegalensis* from Benin in 2012, with the suspension for ranched specimens applying only to specimens with a snout-vent length greater than 6 cm. Both suspensions remain in place under Commission Regulation (EC) No. 2019/1587 of 17 October 2019. In 2014, a positive opinion on specimens with a snout-vent length equal to or less than 6 cm was established; this was replaced by a negative opinion on 7 November 2016.

Table 3.2.2: CITES export quotas published for wild-sourced *C. senegalensis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published or exporter CITES annual reports have not been received.

Wild-sourced specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	1000	1000	1000	1000	1000	1000	1000	1000	-	0	0	0
Reported by exporter				400							-	-
Reported by importer	500		135									

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Table 3.2.3: CITES export quotas published for ranched *C. senegalensis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published or exporter CITES annual reports have not been received.

Ranched specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	4000	4000	4000	4000	4000	4000	4000	4000	-	0	0	0
Reported by exporter	2550	2770	3610	1535	500	1155	620	-			-	-
Reported by importer	3605	3985	5641	1639	1120	1350	835					

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Table 3.2.4: CITES export quotas published for captive-bred *C. senegalensis* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published or exporter CITES annual reports have not been received.

Captive-bred specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	-	-	-	-	-	-	-	-	-	0	-	0
Reported by exporter											-	-
Reported by importer		200										

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

According to the CITES Trade Database, direct trade in *C. senegalensis* from Benin 2010-2019 comprised 400 live, wild-sourced chameleons and 12 740 ranched chameleons as reported by Benin, all of which was reported 2010-2016 (Table 3.2.5). Importing countries reported imports of 635 live, wild-sourced chameleons and 18 175 ranched chameleons, all of which was reported 2010-2017, with lower levels of imports of captive-bred specimens and live chameleons reported as seized. Direct exports of ranched chameleons peaked in 2012 according to both Benin and importers, and decreased by ~84% between 2012 and 2016. The United States was the main importer of live *C. senegalensis* 2010-2019, accounting for 69% of all imports as reported by Benin and 74% according to the United States. The United States reported imports of 198 live *C. senegalensis* as seized specimens in 2017, the year after the trade suspension was put in place.

Table 3.2.5: Direct exports of *C. senegalensis* from Benin 2010-2019. All trade was reported by number. Hyphens indicate that Benin's CITES annual report for 2017 has not yet been received. All trade was reported by number.

Term	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	T	C	Exporter								-			
			Importer		200									200
		I	Exporter								-			
			Importer			900	300				198			1398
		R	Exporter	2550	2770	3610	1535	500	1155	620	-			12740
			Importer	3605	3985	5641	1639	1120	1350	835				18175
		W	Exporter				400				-			400
			Importer	500		135								635

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/09/2021

Indirect trade in *C. senegalensis* originating from Benin 2010-2019 comprised 970 live, wild-sourced chameleons and 3282 ranched chameleons according to exporters; importing countries reported 781 wild-sourced chameleons, 2242 ranched chameleons and 12 captive-bred specimens (Table 3.2.6). All indirect trade was reported between 2010-2014. Ghana was the main re-exporter of *C. senegalensis* originating from Benin, accounting for 91% of re-exports as reported by exporters.

Table 3.2.6: Indirect exports of *C. senegalensis* originating in Benin 2010-2019. All trade was reported by number.

Term	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	T	C	Exporter											
			Importer				12							12
		R	Exporter	405	1512	973	42	350						3282
			Importer	175	905	692		470						2242
		W	Exporter	270	500			200						970
			Importer	106	533	142								781

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/09/2021

Management:

Legislation: Law No. 2002-16 of 18 October 2004 sets out the protection scheme for Benin's fauna, and includes a classification scheme for Benin's species consisting of three categories: totally protected species (Category A), partially protected species (Category B), and other species. The list of species belonging to each category is set by decree. Up until July 2021, *C. senegalensis* was not specifically listed as either a fully or partially protected species, but all lizards (except for those specifically mentioned in other categories) were classified as "non-game" species under Annex IV of the implementing decree (Decree No. 394-2011 (2011)). From July 2021, however, all species in Appendix II of CITES are included as "Category II" species under Law No. 2021-04 on the protection and rules relating to international trade in endangered species of wild fauna and flora. Assuming that this equates to *C. senegalensis* becoming a partially protected (Category B) species as described in Law 2002-16, the hunting and capture of individuals, including the collection of their eggs, is allowed on a limited basis, but females and young are fully protected. Law No. 2002-16 additionally states that, for Category B species, the President of the Republic may, by decree, temporarily place them under the regime of full protection if they are considered under serious threat from extinction; it also prohibits the hunting and capture of wild animals in protected areas.

As well as setting out new protection categories for CITES listed species, Law No. 2021-04 (2021) sets out regulations for captive breeding. The Law states that authorisation from the CITES MA is needed for the captive breeding of Category I-III animals for commercial purposes. It also requires parental populations to be established in a way that does not affect the survival of the species in the wild, and

managed to ensure the parental population's long-term maintenance (Law No. 2021-04, 2021). Furthermore, any facility engaged in captive breeding or trade of Category I-III species must keep records of all specimens and make these figures available to the relevant authorities (Law No. 2021-04, 2021). The CITES MA of Benin (*in litt*. to UNEP-WCMC (2021) reported that implementing decrees to specify the conditions for breeding and keeping of Category I-III species were in draft.

The CITES national legislation project currently classifies Benin as a Category 2 Party (Parties that have legislation that is believed generally not to meet all of the requirements for the implementation of CITES).

Monitoring of offtake: The CITES MA of Benin noted that current harvest monitoring is decentralised and done by the means of harvest permits, which are granted on a case-by-case basis and are required for both domestic and international trade (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Harvesting standards, including the age, sex, and condition of females, were also reported to be in place, however no further details were provided by the MA except to note that, as an example, the harvest of gravid females is prohibited under Law No. 2002-16 (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021).

Despite this, the CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) noted that a sustainable harvest limit for wild populations of *C. senegalensis* had not yet been determined, and current domestic harvest levels appear to be unknown. It was noted that demographic studies of wild populations of *C. senegalensis* were not possible due to the financial resources required, and that as a result most national monitoring actions were restricted to the annual monitoring of ranching operations rather than the monitoring of wild populations (CITES MA of Benin, *in litt*. to UNEP-WCMC, 2021).

The CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) considered that it would be possible to establish a non-detriment finding for *C. senegalensis* but explained that, until precise information on the abundance of the species and its population dynamics in the wild could be ascertained by the new Scientific Authority to be established by Law 2021-04, Benin would consider export quotas for captive-bred specimens only.

Ranching and captive breeding: A census carried out by the CITES MA of Benin in August 2021 identified 21 ranching and captive breeding facilities that held CITES listed species in the country; no *C. senegalensis* were reported to be present at any of these facilities (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). It was reported that the standards of a CITES captive-breeding facility were not met at most locations, and that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Work to establish a database for monitoring captive breeding was reported to be in progress (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Although concerns have been raised in the past that source codes for *C. senegalensis* were being used erroneously (Ineich, 2006), the CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) reported that it had attended training organised by IUCN in April 2021, in consultation with the CITES Secretariat, on the application of source codes and the monitoring of breeding centres.

While the MA of Benin (*in litt.* to UNEP-WCMC, 2021) did not propose quantitative quotas for captive bred or ranched specimens of *C. senegalensis*, it was noted that the establishment of such quotas would be done on the basis of predicted production levels from monitoring of facilities; further details of this quota setting system were not provided. The breeding capacity of facilities has been used as the basis of quota setting for captive-bred and ranched reptiles in the past (see Harwood, 2003); however, the system in place was not believed to be robust as it did not take into account the structure of populations or variation in reproductive output (Harwood, 2003).

Three control mechanisms were outlined to differentiate between ranched and wild-caught specimens: 1) Only breeders confirmed to have ranched specimens in their facilities will be authorised

to trade; 2) harvesting forms will be countersigned by the competent forestry agent, with an account of the available stock; 3) breeders will have to provide a monthly update on the status of their stock, under the supervision of a competent forestry agent (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021).

Progress on recommendations: Table 3.2.7 shows a summary of progress towards the recommendations issued to Benin at AC27, based on information submitted by the MA of Benin *in litt.* to UNEP-WCMC, 2021.

Table 3.2.7: Recommendations by the Animals Committee (AC27 WG1 Doc. 1; AC27 Summary Record) and a summary of progress against them.

Recommendation	Progress (based on information submitted by MA of Benin, *in litt.* to UNEP-WCMC, 2021).
Within 90 days the Management Authority should provide the following information to the Secretariat for transmission to the Animals Committee to review at its 28th meeting:	
a) Provide the Secretariat with available information on the status, distribution and abundance of *Chamaeleo senegalensis* in Benin;	The MA of Benin provided information on distribution, but noted that the population status and abundance of the species in Benin were unknown (see *Benin: Population status and trends* section).
b) Inform the Secretariat that Benin will maintain an annual export quotas at a level not higher than the current published export quota.	The MA of Benin stated it would consider future export quotas of captive-bred specimens only, until information on status and trends of wild populations could be provided by the new Scientific Authority.
c) Provide information on management of ranched animals in trade (e.g., ranching facilities including stock number, sources, production levels, survival rate of female specimens used in the ranching operation) and the details of impacts on wild populations;	Law No. 2021-04 (2021) establishes a new legislative framework for ranching and breeding CITES listed species (see *Benin: Management* section). No *C. senegalensis* were reported to be present at 21 captive breeding and ranching facilities that were visited across Benin during inspections carried out in August 2021to establish a baseline of available stock, but concerns were generally raised regarding the standards of a captive-breeding facilities visited, and it was noted that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques.
d) Provide a justification and the scientific basis by which the current export quotas for wild and ranched live specimens were established, and considered not to be detrimental to the survival of the species in the wild and in compliance with Article IV, paragraphs 2 (a) and 3;	No scientific justification for the export of wild or ranched *C. senegalensis* has been provided; however, Benin noted that they have been establishing a new Scientific Authority.

e) Provide the CITES Secretariat with detailed information on measures to differentiate between ranched and wild-caught specimens to ensure that the authorized exports of ranched specimens are not augmented by miss-declared wild specimens; and	The MA of Benin did not clearly outline measures to differentiate between specimens of differing origin (R, C, W).
f) As a precautionary measure impose a size restriction of a maximum snout to vent length of 6 cm for live specimens of source code R to be exported and which should be published with the annual export quota.	No information relating to this recommendation was provided.
Within 2 years the Management Authority should:	
g) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Benin);	A national status assessment has not been conducted; the MA of Benin noted that precise population estimates for *C. senegalensis* in the country were unavailable due to the scarcity of observations in the country. It was noted that the University of Abomey-Calavi, with the Institut national de la recherche agronomique (INRA) could conduct a field study if resources could be secured. The *Benin: Management* section outlines current management measures in place.
h) Establish revised annual export quotas (if appropriate) for wild taken and ranched specimens based on the results of the assessment; and	A national status assessment has not yet been conducted; although the MA of Benin stated it would consider future export quotas of captive-bred specimens only until information on status and trends of wild populations could be provided by the new Scientific Authority, no quantitative quotas for captive-bred specimens of *C. senegalensis* were proposed.
i) Provide a justification for, and explanation of, the scientific basis by which it is determined that these revised quotas would not be detrimental to the survival of the species in the wild and are established in compliance with Article IV, paragraphs 2 (a) and 3.	While the MA of Benin considered that a non-detriment finding for *C. senegalensis* would be possible. it noted that future export quotas of captive-bred specimens only would be considered until information on status and trends of wild populations could be provided by the new Scientific Authority. No quantitative quotas for captive-bred specimens of *C. senegalensis* were proposed.

Challenges faced and identification of needs: The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021) identified specific national research and management needs. These included the need for further research on the ecology and population status of *C. senegalensis* and funding to carry this out, research regarding the traceability of specimens in trade, and research regarding levels of legal and illegal trade (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). The following capacity building needs were also identified: training of customs officials on border control measures; training on the

identification of endangered species; and training on the implementation of CITES (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). It was also noted that captive breeding and ranching facilities with CITES-listed species were mostly located in the south of the country, which was considered a monitoring challenge due to the distance from the capital (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021); additional needs regarding training sessions for breeders on species biology, husbandry requirements, stock management, and marking techniques were also highlighted.

Ghana

Distribution: The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) reported that *C. senegalensis* has been widely collected in all regions of Ghana, including the Sudanese, Guinean, and coastal savannah, and forest-savanna transition zones; however, the range map of Tilbury (2010) only indicates occurrence of the species in the west of the country. In response to the consultation relating to the RST long-standing suspensions, Ghana provided a draft NDF report for *C. senegalensis*. This draft NDF states that the potential suitable range for the species in Ghana was estimated "conservatively" at 97 714 km^2, based on estimates of the percentage of suitable habitat in the main habitat types across the country: 40% of agricultural lands (16 361 km^2), 70% of savannah (77 000 km^2), 5% of forests (4104 km^2), 20% of rural settlements (234.54 km^2), and 10% (14.72 km^2) of urban settlements (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021). However, 97 714 km^2 is the same range estimate that was provided in the NDF for *C. gracilis*, and the IUCN SSC Chameleon Specialist Group (*in litt*. to UNEP-WCMC, 2021) noted that, as *C. senegalensis* does not occur in southwest Ghana, the range for *C. senegalensis* would be expected to be smaller than that of *C. gracilis*. Further information regarding the methodology used to calculate the potential suitable range of *C. senegalensis* in the draft NDF may therefore be needed.

Population status and trends: Between 2 April 2021 and 9 April 2021, Ghana's CITES Management Authority conducted a rapid population survey of *C. senegalensis* across six regions in Ghana, covering the country's major vegetation zones (forest, savannah, and forest-savannah transition belt) (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021; Figure 3.2.2). CITES MA staff and local hunters walked 40 m fixed width transects of varying length at 27 sites, recording a total of 259 *C. senegalensis* during the sampling period. The overall average population density for the species was reported to be 42.7 individuals/km^2, with the range of average densities spanning from 14/km^2 in Greater Accra to 62/km^2 in the Northern Region site (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021) (Table 3.2.8). *C. senegalensis* was found to be present at higher densities in the savannahs of northern Ghana compared to the south (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

A population estimate of 4 168 252 individuals was provided in the draft NDF (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021), which appears to have been calculated by multiplying the average density of *C. senegalensis* across the 27 sites surveyed by the species' estimated range. The IUCN SSC Chameleon Specialist Group (*in litt*. to UNEP-WCMC, 2021) expressed concerns over the methodology used to produce this estimate; in particular, it was considered unclear how the density estimates used were calculated from initial encounter rates[11].

[11] The CITES MA of Ghana was contacted by UNEP-WCMC in November 2021 to request clarification on this matter, however no response had been received at the time of writing (December 2021)).

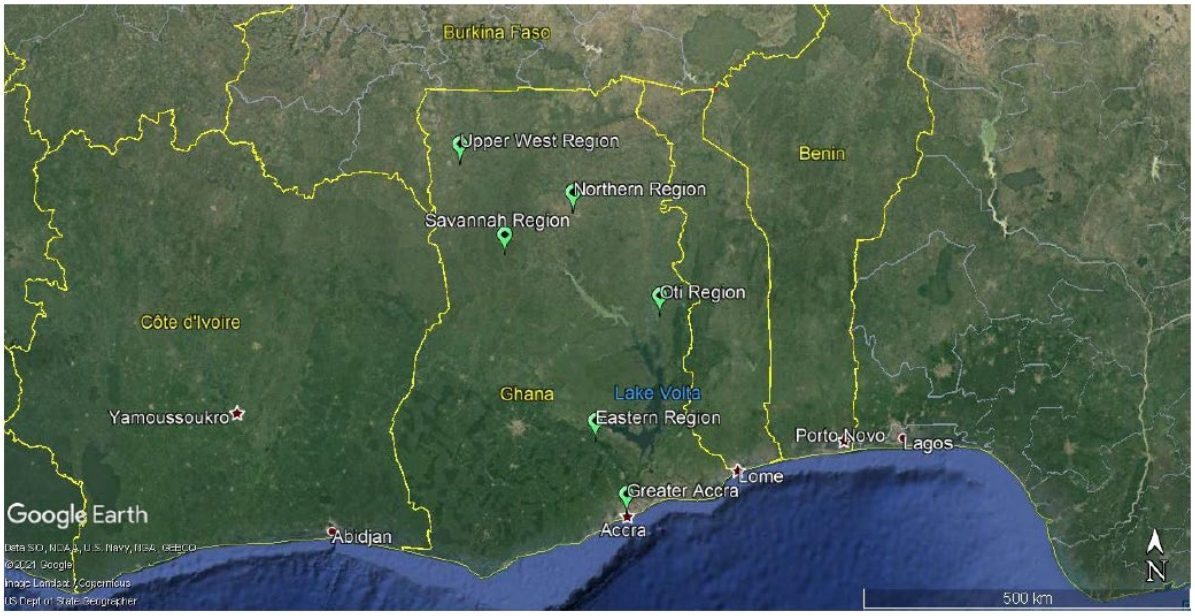


Figure 3.2.2. Sampling locations for the rapid population assessment of *C. senegalensis* carried out by the CITES MA of Ghana in April 2021. Source: CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021.

Table 3.2.8: Encounter rates and density estimates* of *C. senegalensis* recorded in a rapid population assessment undertaken by the CITES MA of Ghana in April 2021. Source: CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021.

Region	No. of sampling locations	Average encounter rate (per km)	Average density (per km^2)
Oti	6	1.7	43
Savannah	4	1.6	40
Eastern	4	2.1	51
Greater Accra	5	0.6	14
Upper West	5	2.2	55
Northern	3	2.5	62

*The CITES MA of Ghana provided encounter rate and density estimates per sampling location (n=27); to provide a summary, encounter rates and densities have been averaged across the six regions surveyed.

While it was considered that the suspension of trade since 2016 would contribute to the recovery of *C. senegalensis* populations in affected areas (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021), no information on the population trend of *C. senegalensis* following suspension of trade was located. C. Tilbury (*in litt.* to UNEP-WCMC, 2021) considered that, despite the trade ban, populations of *C. gracilis* and *C. senegalensis* were likely to have "spiralled downward" rather than increased.

Threats: Leaché *et al.* (2006) considered *C. senegalensis* in Ghana to be "possibly threatened by bush fires and collecting for local medicinal use", with C. Tilbury (*in litt.* to UNEP-WCMC, 2021) noting that the use of chameleons for medicinal purposes in Ghana was ongoing and widespread. The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021), however, considered use for these purposes to be limited to a small number of remote locations. No illegal trade in *C. senegalensis* was reported by the CITES MA of Ghana, but it was noted that a new Wildlife Resource Management Bill would implement stricter penalties for non-compliance with wildlife laws (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

Habitat loss from expansion of human settlements and agricultural activities was noted to continue to pose a major threat to the species (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

Trade: CITES annual reports have been received from Ghana for all years 2010-2019, with the exception of 2016. Ghana has published annual export quotas for 1500 wild-sourced *C. senegalensis* every year from 1997 until 2015, apart from 2013 and 2005-2007, when no quotas were published. From 1999 onwards, the quota applied to live specimens only, though no term was specified in the 2014 or 2015 quotas. No quotas have been published since 2015. Trade reported by Ghana appeared to exceed the published quota in 2011 (Table 3.2.9).

Table 3.2.9: CITES export quotas for wild-sourced *C. senegalensis* from Ghana, 2010-2021, and global direct exports as reported by Ghana and countries of import, 2010-2021; trade data for 2020 and 2021 are incomplete. Quotas for the years 2010-2013 specified live specimens. Hyphens indicate years for which quotas were not published or CITES annual reports have not been received.

Term	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	1500	1500	1500	-	1500[+]	1500[+]	-	-	-	-	-	-
Reported by Ghana	1397	1639	865	745	610	965	-	175	310	100		
Reported by importer	1177	980	1044	384	635	795	52	40	43			

[+]Resulting from a recommendation from the Animals Committee or Standing Committee
Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

The European Union suspended trade in wild-sourced *C. senegalensis* from Ghana in 2012. The suspension remains in place under Commission Regulation (EC) No. 2019/1587 of 17 October 2019. A negative opinion on ranched *C. senegalensis* from Ghana was formed on 7 November 2016.

According to the CITES Trade Database, direct exports of *C. senegalensis* from Ghana 2010-2019 predominantly consisted of 6806 live wild-sourced chameleons and 600 ranched chameleons as reported by Ghana. Of these, 585 wild-sourced chameleons and 400 ranched chameleons were reported after the suspension in trade (i.e. between 2017-2019); these were predominantly exported to the United States (Table 3.2.10). Importing countries reported imports of 5150 live wild-sourced and 146 live ranched chameleons over the 10-year period, as well as 100 captive-bred and 95 seized live chameleons. Eighty-three of the wild-sourced chameleons and all of the captive-bred individuals reported by importers were reported in trade by the United States and Japan after the year in which the trade suspension was put in place (i.e. between 2017-2019). Additional exports over the ten-year period included low levels of trade for scientific purposes: six bodies (reported as wild-sourced by Ghana and as seized according to importers) and seven seized specimens reported by importers only. According to Ghana, trade in live wild-sourced chameleons over the 10-year period peaked in 2011 with 1639 individuals, and generally decreased over time to a low of 100 individuals exported in 2019.

Table 3.2.10: Direct exports of *C. senegalensis* from Ghana, 2010-2019. Hyphens indicate years for which exporter CITES annual reports have not been received.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
bodies	-	S	I	Exporter							-				
				Importer		6									6
			W	Exporter		6					-				6
				Importer											
live	-	T	C	Exporter							-				
				Importer									100		100
			I	Exporter							-				
				Importer		95									95
			R	Exporter			100			100	-		100	200	500
				Importer	146										146
			W	Exporter	1397	1639	865	745	610	965	-	175	310	100	6806
				Importer	1177	980	1044	384	635	795	52	40	43		5150
		-	R	Exporter							-		100		100
				Importer											
specimens	-	S	I	Exporter							-				
				Importer		7									7

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/09/2021

Indirect trade in *C. senegalensis* originating from Ghana consisted of 289 live wild-sourced chameleons and 29 live captive-bred chameleons for commercial purposes, as reported by exporters (Table 3.2.11). Importing countries reported imports of 281 live wild-sourced chameleons (93% for commercial purposes, with the remainder unspecified) with lower levels of ranched, captive-bred and pre-Convention specimens traded for commercial purposes. The United States was the main re-exporter of live *C. senegalensis*, accounting for 66% of all re-exports as reported by the United States and 86% according to importing countries.

Table 3.2.11: Indirect exports of *C. senegalensis* originating in Ghana, 2010-2019.

Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	-	T	C	Exporter					75						75
				Importer											
			O	Exporter											
				Importer		32									32
			R	Exporter											
				Importer			15	30							45
			W	Exporter	59	160	20					50			289
				Importer	76	170	15								261
		-	W	Exporter											
				Importer	20										20

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 27/09/2021

Management:

Legislation: Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971) includes 'Schedules', lists of species which are afforded more specific stricter protections. *C. senegalensis* is not listed under any Schedules under this legislation. The MA of Ghana (*in litt* to UNEP-WCMC, 2021) noted that the 1971 Regulations prohibit the hunting or capture of wild animals without a licence or permit, and require a permit for the import or export of wild animals or wildlife products; however, the Regulations appear to specify that a permit is only required to export species included in the Regulation's three Schedules. An amendment to the Wildlife Conservation Regulations in 1989 prohibited the capture of

any wild animal by group hunters[12], required the issuance of a license for trade in bushmeat, and banned the keeping of wild animals as pets without a licence (L.I. 1452, 1989).

The CITES national legislation project currently classifies Ghana as a Category 3 Party (Parties that have legislation that is believed generally not to meet the requirements for the implementation of CITES). The most recent legislative status table (updated August 2021) noted that a bill had been through a second reading in Parliament; next steps included enactment and submission to the Secretariat for analysis and an agreement on the revised legislation.

Monitoring of offtake and quota system: The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) reported that an individual species management plan would be developed for *C. senegalensis*, but it is unclear when the management plan is expected to be in place[13]. Sustainable harvest levels for *C. senegalensis* are proposed to be set using a 5-step decision-making process: (1) estimation of the species population size; (2) establishment of a precautionary harvest quota of up to 10% of the population, based on field monitoring results; (3) continuous assessment of the species' population status at harvested and unharvested sites; (4) continuous monitoring of trade dynamics to ensure there are no major changes in catch per unit effort (CPUE); and (5) review of results from monitoring and subsequent adaptation of harvest regulations (permit numbers, harvesting areas, and quotas).

A harvest rate of 10% of the population per year based on the population estimate contained in the draft NDF provided by Ghana (4 168 252 individuals) would equate to approximately 416 000 individuals of *C. senegalensis* (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). The justification for the sustainability of this rate provided by the MA of Ghana referred to species' life-history traits, which were stated to include rapid maturation and age of reproduction, a relatively short lifespan, and a large number of offspring produced at a time, as well as the species having few reproductive events, a high mortality rate, a low offspring survival rate, and relatively minimal parental care/investment. The draft NDF states that a 10% harvest rate is widespread and accepted for other wildlife that is harvested for commercial purposes; while Sinclair *et al.* (2006) was cited to support this statement, this reference indicates that harvest rates are context- and species-specific, and no information was found to support a widely accepted 10% harvest rate for reptile species harvested for commercial purposes. However; although a harvest rate of 10% was considered by the MA of Ghana to be sustainable, the MA proposed to maintain a more conservative export quota of 1500 *C. senegalensis* individuals per year which was in place prior to the trade suspension (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). The MA noted that catch and effort rates of *C. gracilis* and *C. senegalensis* had appeared "stable" at the previous peak of trading (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021); although it is unclear which timespan this referred to, according to the CITES Trade Database trade in live, wild sourced *C. senegalensis* over the last 10 years peaked in 2011, with 1639 individuals exported according to Ghana.

The harvest monitoring system outlined by the MA of Ghana (*in litt*. to UNEP-WCMC, 2021) is proposed to consist of a set of permanent transects and quadrats laid across three density zones (high, medium and low density), that have been established on the basis of the April 2021 rapid assessment survey results (see *Ghana: Population status and trends* section). A capture/recapture technique is planned to be used to assess the species' distribution, population structure, density and dynamics, with data collected on the sex, size and age class of individuals. The number of proposed transects and quadrats and their distribution across harvest and non-harvest sites was not specified, nor was the proposed timing for the monitoring system[14]. Similarly, no further detail was provided on how CPUE data are proposed to be collected or monitored. C. Tilbury (*in litt.* to UNEP-WCMC, 2021) noted that

[12] Group hunting was defined as "a group of two or more individuals hunting together and whose activities complement one another's for the purpose of hunting" (L.I. 1452, 1989).
[13,4] The CITES MA of Ghana was contacted by UNEP-WCMC in November 2021 to request clarification on this matter, however, no response had been received at the time of writing (December 2021).

the ongoing and widespread use of chameleons for medicinal purposes in Ghana may be a readily available source of monitoring information.

Prior to the trade suspension in 2016, permits for collection of *C. senegalensis* were reported to be issued across specific geographical areas to prevent over-collection from a single population (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). The MA of Ghana did not state whether a similar system would be envisioned if trade in *C. senegalensis* were to resume[15].

Ranching and captive breeding: The CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2021) noted that chameleon traders were encouraged to establish ranching and breeding operations to replace wild-caught trade, and to return parental stocks to the wild. However, it was reported that ranching and captive breeding programs established by some traders had collapsed following the trade suspension in 2016 (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021)[16]. The MA did not specify whether trade in captive-bred and ranched specimens would be intended if the trade suspension were to be lifted[17].

Protected areas: Several of Ghana's protected areas were reported to host significant populations of *C. senegalensis*, with the range of *C. senegalensis* and *C. gracilis* combined covering approximately 12 000 km^2 of protected areas (national parks) and over 80 000 km^2 of forest reserves (CITES MA of Ghana *in litt*. to UNEP-WCMC, 2021).

Progress on recommendations: Table 3.1.12 shows a summary of progress towards the recommendations issued to Ghana at AC27, based on information submitted by the MA of Ghana *in litt.* to UNEP-WCMC, 2021.

Table 3.2.12. Recommendations addressed to Ghana by the Animals Committee (AC27 WG1 Doc. 1; AC27 Summary Record) and a summary of progress against them.

Recommendation	Progress (based on information submitted by MA of Ghana, *in litt.* to UNEP-WCMC, 2021).
Within 90 days the Management Authority should provide the following information to the Secretariat for transmission to the Animals Committee to review at its 28th meeting:	
a) Provide the Secretariat with available information on the status, distribution and abundance of *Chamaeleo senegalensis* in Ghana;	The MA of Ghana provided information on these aspects, including an estimate of population size and regional estimates of population densities based on a rapid population survey. However, further information regarding the methodology used to produce these estimates may be needed to assess whether they are robust (see *Ghana: Population status and trends* section).
b) Inform the Secretariat that Ghana will maintain an annual export quota at a level not higher than the current published export quota;	Ghana has not published export quotas for *C. senegalensis* since 2015; the MA of Ghana proposed re-instating an annual quota of 1500 specimens.
c) Provide information on management of ranched animals in trade (e.g., ranching facilities including stock number, sources, production levels, survival rate of female	The MA of Ghana stated that while traders had been encouraged to set up ranching and breeding operations, programs that had been set up by traders had collapsed following the

[15, 6, 7] The CITES MA of Ghana was contacted by UNEP-WCMC in November 2021 to request clarification on this matter, however, no response had been received at the time of writing (December 2021).

specimens used in the ranching operation) and the details of impacts on wild populations;	trade suspension in 2016. No further information on planned ranching facilities in Ghana was provided.
d) Provide justification for, and details of, the scientific basis by which it has been established that the quantities of *Chamaeleo senegalensis* exported are not detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3; and	See response for recommendation f).
e) Establish, in consultation with the Secretariat, an export quota for wild and ranched specimens of this species as an interim measure, based on estimates of sustainable off-take and available scientific information; and account for quota excesses in recent years.	The MA of Ghana proposed an export quota of 1500 individuals per year.
Within 2 years the Management Authority should:	
f) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Ghana);	The MA of Ghana conducted a rapid population survey in April 2021 across six regions in Ghana, including all of the country's major vegetation zones (see *Ghana: Population status and trends* section). In an evaluation of threats, the MA of Ghana noted that the effect of harvesting on wild populations was unknown, and that habitat loss presents a major threat to the species. The draft NDF provided by Ghana outlines an adaptive management plan that includes proposals to carry out monitoring of the population at harvested and unharvested sites, as well as monitoring of CPUE, but details were not provided regarding the scale or frequency of planned surveys as well as the methodology proposed to monitor CPUE. It is also unclear how the proposed quota (1500 individuals) would be distributed among harvesting sites.
g) Establish revised annual export quotas (if appropriate) for wild taken and ranched specimens based on the results of the assessment; and	Based on the results of a rapid population survey, Ghana considered that re-instating an annual export quota of 1500 individuals would be sustainable.

h) Provide a justification for, and explanation of, the scientific basis by which it is determined that these revised quotas would not be detrimental to the survival of the species in the wild and are established in compliance with Article IV, paragraphs 2 (a) and 3.	A justification for resumed trade in *C. senegalensis* was provided on the basis of the results of rapid population surveys and the proposal that a 10% harvest rate would be sustainable. In addition, harvested populations were planned to be monitored through CPUE surveys. A number of concerns were raised by the IUCN SSC Chameleon Specialist Group regarding the methodology used to produce both the population estimate for the species and the estimate of the species' range. In addition, no information was found to support a widely accepted 10% harvest rate for reptile species harvested for commercial purposes.

Challenges faced and identification of needs: The CITES MA of Ghana (*in litt*. to UNEP-WCMC, 2021) stated that a dedicated source of funding was required for the sustainable management of species and the implementation of CITES. It was noted that Ghana's Wildlife Division currently receives quarterly funding from the government and levies from harvests and exports, which was considered inadequate to manage to the country's wildlife resources (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021). In addition, it was noted that further research was needed on species population dynamics and the impact of trade on wild populations (CITES MA of Ghana, *in litt*. to UNEP-WCMC, 2021).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Ghana reported exports of 585 wild-sourced chameleons and 400 ranched chameleons in all three years 2017-2019, in apparent contravention of the trade suspension, to the United States (72% of these exports), Japan (10%), Canada (5%), Panama (5%), Togo (5%), and Benin (3%). Imports were reported from Ghana by the United States in 2018 (43 wild-sourced and 100 captive-bred individuals) and Japan in 2017 (40 wild-sourced individuals), in apparent contravention of the trade suspension.

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REPTILIA: TESTUDINIDAE

3.3 *Kinixys homeana:* Benin

A. Summary

Suspension valid from:	Summary	Recommendation
15 March 2016	The species' IUCN Red List status was revised from Vulnerable to Critically Endangered in 2019, based on an estimated 90% decline in suitable habitat over the past three generations, and past and projected population reductions of c. 30% per generation. Occurrence of *K. homeana* in Benin is limited to a relatively small area in the south east of the country; although no numerical estimates of in-country declines are available, interviews and surveys conducted in 2018 considered the species to be "almost extinct". Benin previously issued quotas for 50 wild taken, 800 ranched, and 30 captive-bred specimens in 2016 and 2017; zero export quotas for wild, ranched, and captive-bred specimens were issued in 2019, 2020 and 2021 (no quotas were issued in 2018). Benin has submitted CITES annual reports for all years 2010-2019 with the exception of 2017. Direct exports 2010-2016 consisted of 100 live wild-sourced, 2440 live ranched, 50 live captive-bred, and 110 live individuals without a source specified, as reported by Benin. Importers reported 125 wild-sourced specimens in 2017, with permit analysis suggesting that the export permit associated with this trade was issued by Benin in 2016. Export permits are valid for six months from the date on which they were granted (Resolution Conf. 12.3 (Rev. CoP18) paragraph 5g); therefore this trade appears to have occurred after the trade suspension was put in place in March 2016. No trade in the species from Benin has since been recorded. Illegal trade in the species has been reported to occur, with specimens originating from Nigeria being imported across the border to Benin without CITES permits. Benin responded to the consultation relating to the RST long-standing suspensions. While until recently *K. homeana* was categorised as an Annex III species (small game species that are not protected) as of July 2021 *K. homeana* is now a 'Category II' species. This is thought to make *K. homeana* a partially protected species; the	**Suspension may still be appropriate**

hunting and capture of individuals, including the collection of their eggs, is allowed only on a limited basis, but females and young are fully protected.

Benin considered it possible to establish a non-detriment finding for *K. homeana* but explained that until precise information on wild abundance and population dynamics could be ascertained by the new Scientific Authority, only exports of captive-bred specimens would be considered. Noting that the species is Critically Endangered and declining with a presumed small population in Benin, **the suspension may still be appropriate** until such a time that a scientifically based NDF has been produced to demonstrate that the export of wild or ranched specimens would not be detrimental to the survival of the species in compliance with Article IV.

While the species has been recorded to be present in two captive breeding facilities in the country which both currently maintain a very limited number of specimens; given the worsening conservation status of the species, it is unlikely that a robust non-detriment finding could be made for the acquisition of any additional parental stock from the wild for breeding operations. Whilst no trade is currently occurring in captive-bred specimens, should trade from this production system resume and concerns remain, the AC could consider the inclusion of the species/country combination in Resolution Conf. 17.7 (Rev. CoP18).

Benin highlighted that a lack of financial resources to conduct population assessments remained a challenge, and that training of management/enforcement officials (e.g. border agents) in Benin and across the sub-region was a specific capacity building need. Addressing these capacity building needs would further assist Benin in fulfilling the AC recommendations directed to it.

RST Background

Kinixys homeana from all range States was included in the RST as a priority species for review at AC25 (AC25 Summary Record). The inclusion was based on the analysis provided in AC25 Doc. 9.6 and its Annexes, which noted that *K. homeana* met a high-volume trade threshold for a globally threatened species in 2008 and 2009. No response was received from Benin at AC26 (AC26 Doc. 12.3); the species/country combination was therefore retained in the review (AC26 Summary Record). A detailed review of the species/country combination contained in AC27 Doc 12.4 was considered at AC27, where concerns were raised regarding the limited range and ongoing population decline of the species, as well as the management of ranching. The AC agreed to classify *K. homeana* from Benin as of possible concern, and to issue a number recommendations for the species/country combination (AC27 Summary Record). These recommendations are outlined in Section C, Table 3.3.6.

No reply from Benin had been received by SC66 (SC66 Doc 31.1); on the basis that the recommendations of the AC had not been complied with, it was recommended that all Parties suspend trade in *K. homeana* from Benin until the country can demonstrate compliance with Article IV, paragraphs 2 (a) and 3, for this species, and provide full information to the Secretariat regarding compliance with the recommendations of the Animals Committee (SC66 Doc 31.1). A recommendation to suspend trade has subsequently been in place since 15 March 2016.

B. Species characteristics

Biology: *Kinixys homeana* is a small to medium-sized tortoise, with a carapace length of up to 22 cm, that inhabits lowland evergreen forests in West Africa (Luiselli and Diagne, 2013). The species prefers moist forests that provide closed canopy and shady microhabitats which help it avoid overheating (Luiselli, 2005; Mifsud and Stapleton, 2014), but it is also associated with streams and swampy habitats (Branch, 2008). Luiselli (2003a) reported that the species can be found in patches of dense vegetation in areas where it is hunted, but that it occupies more varied habitats in areas where it is protected from hunting. Patches of forest that are interconnected by floods during the wet season have been identified as particularly important habitat for the species, as *K. homeana* uses these flooded areas to navigate from site to site (Luiselli *et al.*, 2016). In regions where primary forests have been cleared, the species has been shown to inhabit mature secondary forests/swamp forests (Luiselli *et al.*, 2000).

The ecology and life history of *K. homeana* is poorly known, partially due to the species being relatively inactive and difficult to observe (Harwood, 2003). In the forests of the Niger River Delta, southern Nigeria, *K. homeana* exhibits an omnivorous, generalist diet that includes plant material, fungi, oligochaeta, gastropods and various arthropods (Luiselli, 2006). It can also feed on frogs and carrion (Branch, 2008). The age at maturity for this species is unknown, but has been estimated at 10 years based on experience in captivity and data available for other forest tortoises (Luiselli *et al.*, 2021); generation time in the wild has been assessed at 15 to 20 years, based on the estimate of the age of maturity above and an estimated longevity (in captivity) of 60 years (Luiselli *et al.*, 2021). *K. homeana* produces clutches of two to four eggs up to two times per year, generally during the dry season in December and January (Blackwell, 1968 *in* Luiselli *et al.*, 2021).

C. Country reviews

Benin

Distribution: The global distribution of *K. homeana* extends across the coastal regions of the Gulf of Guinea and the continuous Guinea-Congo West Africa rainforest region, spanning from Liberia in the west to Cameroon in the east (Figure 3.3.1). The most recent calculations by Luiselli *et al.* (2021)

estimated a global extent of occurrence for *K. homeana* of 867 000 km^2, but an estimated area of occupancy of only 43 500 km^2. Luiselli *et al.* (2001) noted that many subpopulations of the species are isolated, and that the range for the species in general is severely fragmented.

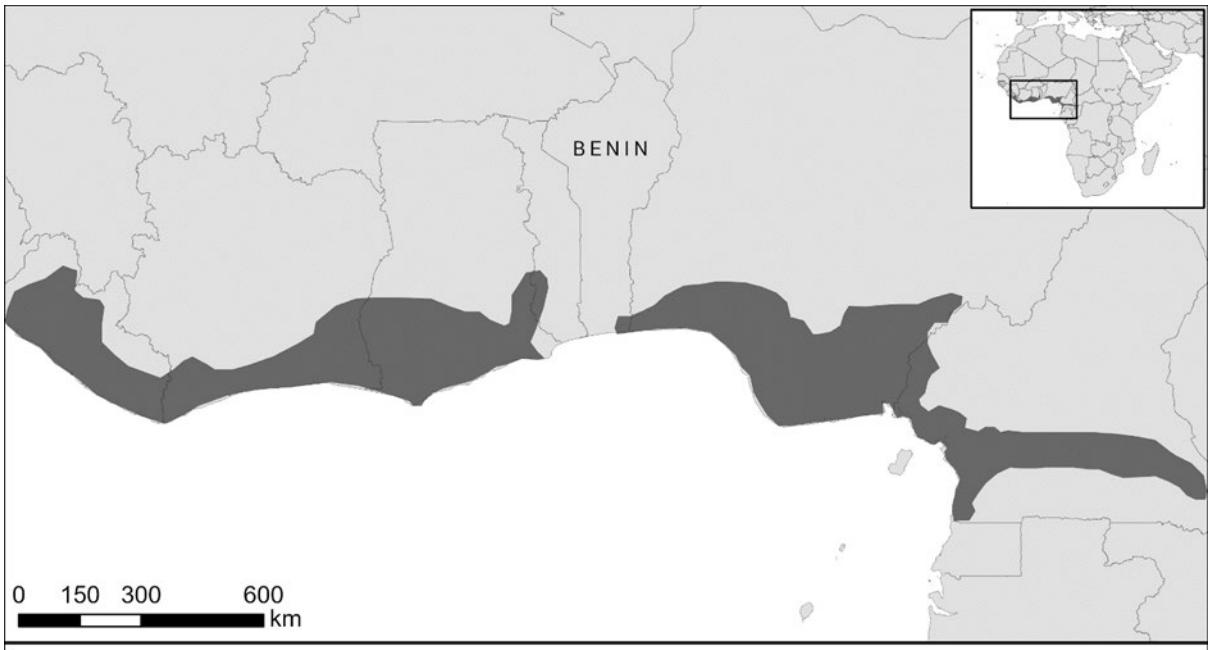

Figure 3.3.1: Distribution of *Kinixys homeana* in West Africa.

In Benin, *K. homeana* is restricted to the country's south-eastern coastal border with Nigeria (Figure 3.3.1), based on observations from the Ouémé Department and the Zou department (Luiselli *et al.*, 2008; Maran, 2009; Diagne, 2010) and confirmation from the CITES Management Authority of Benin (*in litt*. to UNEP-WCMC, 2013 in AC27 Doc 12.4 (Rev 1)) that the species is present in the Plateau department. Herpetologist T. Diagne (*in litt.* to UNEP-WCMC, 2021) reported that the "last few individuals" of the species could be found in the Ouémé Department near the border with Nigeria. Mifsud and Stapleton (2014) noted that the species may have occurred over a wider area of Benin prior to habitat conversion and collection pressures, but estimates of the potential scale of range reduction were not located. The most recent estimate of the extent of occurrence for the species in Benin was published by Luiselli *et al.*, (2006), who used maps published in 1992 and data published in other sources before this time to estimate a potential extent of occurrence in the country of 2600 km^2. However, the authors noted that the area of occupancy for the species was likely to be much smaller than this (Luiselli *et al.*, 2006).

Population status and trends: After previously being assessed as Vulnerable by the IUCN in 2006, *K. homeana* was categorised as Critically Endangered in 2019 (Luiselli *et al.*, 2021). This was based on an estimated 90% decline in suitable habitat over the past three *K. homeana* generations[18], and past and projected population reductions of c. 30% per generation (estimated at 15 years)[19].

[18] CR A2bcd
[19] CR 4bcd

Several studies have shown that *K. homeana* is found at low densities, even in highly suitable environments; this is thought to be a result of highly territorial males driving out other males from their home ranges, which may exceed 50 ha (Luiselli *et al.*, 2021). In surveys conducted in southeastern Nigeria in 2001, densities of 0.15 to 0.9 tortoises/ha were reported in areas where the species was harvested, and densities of 1.65-2.85 tortoises/ha were reported at sites with no hunting pressure (Luiseli 2003a). In Benin, a study involving six independent line-transect surveys along the swamps and coastal wet forests of Porto Novo and Cotonou conducted during different seasons in 2003-2005 found the species to occur at a density of 0.914 individuals/ha (i.e. just above the maximum density recorded by Luiselli *et al.* (2003a) in hunted areas in southern Nigeria) (Luiselli *et al.*, 2008).

Luiselli *et al.* (2006) estimated the global population of *K. homeana* to be "at best" 4 205 000 individuals; this was calculated assuming a density of 0.53 individuals/ha (representing the average density for *K. homeana* in hunted areas in Nigeria, see Luiselli 2003a) across the entire species range. However, there is widespread evidence that the current population figure is far lower, due to a combination of habitat loss and hunting (Branch, 2008; Luiselli *et al.*, 2006; Luiselli and Diagne, 2013). Field surveys of bushmeat markets across the Niger Delta conducted in 1996-2002 and 2011-2012 revealed a collapse of trade in *K. homeana* with 95% fewer specimens recorded during the later surveys (Luiselli *et al.*, 2013), while interviews with rural people in Côte d'Ivoire, Togo and Nigeria have also indicated that these tortoises are heavily declining (Luiselli *et al.*, 2018).

The CITES Management Authority of Benin (*in litt.* to UNEP-WCMC, 2021) noted that precise population estimates for *K. homeana* in the country were unavailable due to the scarcity of observations and an absence of ecological studies on the population dynamics of the species (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). According to interviews conducted throughout Benin by Sinsin *et al.* (2008, in CITES MA of Benin *in litt.* to UNEP-WCMC, 2021), however, 76% of local people considered that populations of *K. homeana* were declining. Auliya *et al.* (2016) also reported that reptile traders operating in Benin had noted that the abundance of *K. homeana* had been in decline. Maran (2009) indicated that the species was the most endangered Chelonian in Benin and could disappear from the country if protection measures were not rapidly enacted. Recent interviews and unpublished field data collected during 2018 surveys in the Ouémé Department found that *K. homeana* was believed to be "almost extinct" in the country (Diagne *unpublished data* in Luiselli *et al.,* 2021).

Threats: Multiple threats were reported to be driving declines in *K. homeana* populations, including habitat loss (suitable habitat for *K. homeana* was thought to have declined by at least 90% in the last 45 years), local consumption as bushmeat, and exploitation for the international pet trade (Luiselli *et al.* 2021). Luiselli *et al.* (2021) estimated that the percentage involvement of these three threats in driving the species towards extinction was 50%, 40%, and 10% respectively. The species is also potentially vulnerable to the impacts of climate change and forest fires (Mifsud and Stapleton, 2014), but little research has examined these threats in detail.

K. homeana was reported to be commonly hunted in Benin for local consumption and for use in traditional medicine (Luiselli *et al.*, 2006; Sinsin *et al.*, 2008 in CITES MA of Benin *in litt.* to UNEP-WCMC, 2021; Maran, 2009), with the species reported to be available in local markets (CITES MA of Benin, *in litt.* to UNEP-WCMC, 2013 in AC27 Doc. 12.4 (Rev.1); Maran, 2009; T. Diagne *in litt.* to UNEP-WCMC, 2021). In 2003, Luiselli recorded 97 individuals for sale during three visits to main markets around Cotonou, and 109 individuals for sale during three visits to main markets around Porto Novo. However, more recent information regarding the prevalence of domestic use in this species and its occurrence in local markets could not be located.

Illegal trade in the species has been reported by Auliya *et al.* (2016), who stated that some *K. homeana* specimens exported from Benin were in fact captured in Nigeria (Cross-River State). T. Diagne (*in litt.* to UNEP-WCMC, 2021) noted that, according to surveys conducted in 2010, an estimated 90% of *K homeana* specimens present in bushmeat and traditional medicine markets in Benin, or held by animal exporters in the country, originated from Nigeria. However, according to the CITES Trade Database, no direct exports of *K. homeana* from Nigeria to Benin have been recorded 2004-2019. Luiselli *et al.* (2016b) claimed that, according to traders, forest tortoises (inc. *K. homeana*) had been previously dispatched illegally to Benin and then exported "legally" with CITES certificates. The CITES Management Authority of Benin (*in litt.* to UNEP-WCMC, 2021) noted that data on illegal trade in *K. homeana* at the national level do not currently exist in the country, but that better monitoring of re-exports within the sub-region by CITES authorities was necessary.

K. homeana is considered difficult to keep in captivity; high mortality of the species in captivity has been observed and linked to parasitic infections or inadequate environmental conditions (Farkas and Sátorhelyi, 2006).

Trade: *K. homeana* was listed in CITES Appendix II on 1 July 1975. Benin has submitted CITES annual reports for all years 2010-2019 with the exception of 2017, and has published CITES export quotas for *K. homeana* for the years 2010-2021 (Tables 3.3.1 – 3.3.3). Between 2010-2017, quotas were published for 50 wild-taken individuals per year, 800 ranched individuals, and 30 captive-bred individuals; the quotas for 2017 were published after the trade suspension was put in place in March 2016. No quotas were published in 2018, and zero quotas have been published for all sources since 2019. According to importer-reported data, the quota for wild-sourced individuals appears to have been exceeded in 2010 and 2017 (Table 3.3.1), and for captive-bred individuals in 2010 and 2011(Table 3.3.3).

Table 3.3.1: CITES export quotas published for wild-sourced *K. homeana* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published, or exporter CITES annual reports have not been received.

Wild-sourced specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	50	50	50	50	50	50	50	50	-	0	0	0
Reported by exporter					50		50	-			-	-
Reported by importer	1000		32					125				

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/21

Table 3.3.2: CITES export quotas published for ranched *K. homeana* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published, or exporter CITES annual reports have not been received.

Ranched specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	800	800	800	800	800	800	800	800	-	0	0	0
Reported by exporter	270	730	580		240	520	100	-			-	-
Reported by importer	114	520	415		228	412	83					

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/21

Table 3.3.3: CITES export quotas published for captive-bred *K. homeana* from Benin, 2010-2021, and global direct exports as reported by Benin and countries of import 2010-2021; trade data for 2020 and 2021 are incomplete. Hyphens indicate years where quotas were not published, or exporter CITES annual reports have not been received.

Captive-bred specimens	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Quota	30	30	30	30	30	30	30	30	-	0	0	0
Reported by exporter		30	20					-			-	-
Reported by importer	200	100	20									

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/21

The European Union suspended trade from Benin in wild *K. homeana* specimens in 2006, and in ranched specimens in 2008; these suspensions, in accordance with Commission Regulation (EC) No. 2019/1587, remain in force.

According to the CITES Trade Database, direct exports of *K. homeana* from Benin 2010-2019 consisted of 100 wild-sourced, 2440 ranched, and 50 captive-bred live individuals as reported by Benin, and 1157 wild-sourced, 1772 ranched, and 320 captive-bred live individuals according to importers (Table 3.3.4). An additional 110 live individuals were reported by Benin without a specified source. All trade reported by Benin was for commercial purposes with the exception of 100 live individuals reported without a purpose specified. The majority of trade was imported by Ghana and the United States according to exporter-reported data, and by Ghana according to importers. All trade was reported 2010-2016, with the exception of 125 live individuals reported by the United States in 2017; permit analysis suggests that the export permit associated with this trade was issued by Benin in 2016. Export permits are valid for six months from the date on which they were granted (Resolution Conf. 12.3 (Rev. CoP18) paragraph 5g); therefore this trade appears to have occurred after the trade suspension was put in place in March 2016.

Table 3.3.4: Direct exports of *K. homeana* from Benin, 2010-2019; hyphens indicate that Benin's CITES annual report for 2017 has not yet been received. All trade was reported by number.

Term	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	T	C	Exporter		30	20					-			50
			Importer	200	100	20								320
		R	Exporter	270	730	580		240	520	100	-			2440
			Importer	114	520	415		228	412	83				1772
		W	Exporter					50		50	-			100
			Importer	1000		32					125			1157
		-	Exporter							10	-			10
			Importer											
	-	-	Exporter							100	-			100
			Importer											

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/21

Indirect trade in *K. homeana* originating from Benin 2010-2019 comprised 2646 live tortoises traded for commercial purposes from ranched (1212), wild-taken (1079), and captive-bred (355) sources, according to exporters (Table 3.3.5). Nearly all indirect trade was re-exported by Ghana (98%) and the United States was the main importer (63%), according to exporter-reported data.

Table 3.3.5: Indirect exports of *K. homeana* originating from Benin, 2010-2019. All trade was reported by number.

Term	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
live	T	C	Exporter	5	180	10	160							355
			Importer			10	160							170
		I	Exporter											
			Importer							36				36
		R	Exporter	161	326	435	50	90	100		50			1212
			Importer	123	320	238		120						801
		W	Exporter	414	415	80	20	100	50					1079
			Importer	149	267	150		125	22			6		719

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/21

Management:

Legislation: Law No. 2002-16 of 18 October 2004 sets out the protection scheme for Benin's fauna, and includes a classification scheme for Benin's species consisting of three categories: totally protected species (Category A), partially protected species (Category B), and other species. The list of species belonging to each category is set by decree. Up until July 2021, *K. homeana* was not specifically listed as either a fully or partially protected species, but all turtles and tortoises (except "marine turtles and large land turtles") were included in Annex III of the implementing decree as small game species that are not protected (Decree No. 394-2011 (2011)). From July 2021, however, all species in Appendix II of CITES are included as "Category II" species under Law No. 2021-04 on the protection and rules relating to international trade in endangered species of wild fauna and flora. Assuming that this equates to *K. homeana* becoming a partially protected (Category B) species as described in Law 2002-16, the hunting and capture of individuals, including the collection of their eggs, will be allowed on a limited basis but females and young are fully protected. It is assumed therefore that collection of eggs may be permitted for the purposes of ranching. Law No. 2002-16 additionally states that, for Category B species, the President of the Republic may, by decree, temporarily place them under the regime of full protection if they are considered under serious threat from extinction; it also prohibits the hunting and capture of wild animals in protected areas.

As well as setting out new protection categories for CITES listed species, Law No. 2021-04 (2021) sets out regulations for captive breeding. The Law states that authorisation from the CITES MA is needed for the captive breeding of Category I-III animals for commercial purposes. It also requires parental populations to be established in a way that does not affect the survival of the species in the wild, and managed to ensure the parental population's long-term maintenance (Law No. 2021-04, 2021). Furthermore, any facility engaged in captive breeding or trade of Category I-III species must keep records of all specimens and make these figures available to the relevant authorities (Law No. 2021-04, 2021). The CITES MA of Benin (*in litt*. to UNEP-WCMC (2021) reported that implementing decrees to specify the conditions for breeding and keeping of Category I-III species were in draft.

The CITES national legislation project currently classifies Benin as a Category 2 Party (Parties that have legislation that is believed generally not to meet all of the requirements for the implementation of CITES).

Monitoring of offtake: The CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) noted that sustainable levels of offtake for *K. homeana* had not yet been determined, and that no quotas [presumed to refer to export quotas] were in place as a result of the trade suspension. Current domestic harvest levels appear to be unknown.

Harvest monitoring was reported to be decentralised and done by the means of harvest permits, which are granted on a case-by-case basis and are required for both domestic and international trade (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Harvesting standards, including the age, sex, and condition of females, were also reported to be in place, however no further details were provided except to note that, as an example, the harvest of gravid females is prohibited under Law No. 2002-16 (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021).

The CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) considered that it would be possible to establish a non-detriment finding for *K. homeana* but explained that, until precise information on the abundance of the species and its population dynamics in the wild could be ascertained by the new Scientific Authority to be established by Law 2021-04, Benin would consider export quotas for captive-bred specimens only.

Ranching and captive breeding: A census carried out by the CITES MA of Benin in August 2021 identified 21 ranching and captive breeding facilities that held CITES listed species in the country (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). Two of these, both located in the south of Benin, were reported to hold *K. homeana* for commercial purposes. One facility held two individuals (a male and a female) and the other held 14 individuals (females and males) (CITES MA of Benin *in litt.* to UNEP-WCMC, 2021). On this basis, there remain doubts as to whether the production of second-generation offspring is feasible in the country without such facilities further augmenting their breeding stock. It was reported that the standards of a CITES captive-breeding facility were not met at most locations, and that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Work to establish a database for monitoring captive breeding was reported to be in progress (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021). Although concerns have been raised in the past that source codes for *K. homeana* were being used erroneously (Ineich, 2006), the CITES MA of Benin (*in litt.* to UNEP-WCMC, 2021) reported that it had attended training organised by IUCN in April 2021, in consultation with the CITES Secretariat, on the application of source codes and the monitoring of breeding centres.

While the MA of Benin (*in litt.* to UNEP-WCMC, 2021) did not propose quantitative quotas for captive bred or ranched specimens, it was noted that the establishment of quotas for these sources would be done on the basis of predicted production levels from monitoring of facilities; further details of this quota setting system were not provided. The breeding capacity of facilities has been used as the basis of quota setting for captive-bred and ranched reptiles in the past (see Harwood, 2003); however, the system in place was not believed to be robust as it did not take into account the structure of populations or variation in reproductive output (Harwood, 2003).

Under the context of the *Review of trade in animal specimens reported as produced in captivity* (Resolution Conf. 17.7 (Rev. CoP18)), the Secretariat, in AC29 Doc 14.1, drew attention to cases that had been identified under the RST (or by other means) where concerns about captive production had been highlighted. *K. homeana* from Benin (as well as Togo) was highlighted, based on concerns that the acquisition of specimens as founder stock or to augment captive populations may have negative impacts on wild populations; however, the species has not been taken forward under this process.

Progress on recommendations: Table 3.3.6 shows a summary of progress towards the recommendations issued to Benin at AC27, based on information submitted by the MA of Benin (*in litt.* to UNEP-WCMC, 2021).

Table 3.3.6: Recommendations addressed to Benin by the Animals Committee (AC27 WG1 Doc. 1; AC27 Summary Record) and a summary of progress against them.

Recommendation	Progress (based on information submitted by MA of Benin, *in litt.* to UNEP-WCMC, 2021).
Within 90 days the Management Authority should provide the following information to the Secretariat for transmission to the Animals Committee to review at its 28th meeting:	
a) available information on the status, distribution (including extent of distribution in protected areas) and abundance of *Kinixys homeana* in Benin;	Information on these aspects was provided by the MA of Benin, however many key data (such as the status and distribution of the species in Benin) are based on sources that are now quite old (see *Population status and trends* section).
b) confirmation that Benin will maintain an annual export quota at a level not higher than the current published export quota;	The MA of Benin stated it would consider future export quotas of captive-bred specimens only, until information on status and trends of wild populations could be provided by the new Scientific Authority.
c) a justification for, and details of, the scientific basis by which it has been established that the quantities of *Kinixys homeana* exported as wild and ranched specimens are not detrimental to the survival of the species and are in compliance with Article IV, paragraphs 2 (a) and 3;	No scientific justification for the export of wild or ranched *K. homeana* has been provided; however, Benin noted that they have been establishing a new Scientific Authority.
d) details of the extent of breeding in captivity of *Kinixys homeana* in Benin, and of measures taken to ensure that there is no detrimental impact on wild populations including, but not limited to, the origin of founder stock, details of the breeding stock, whether the breeding stock is augmented by wild-taken specimens and their origin, annual production for last 5 years, whether the species is bred to second generation or beyond, and a detailed description of the breeding facilities;	A census carried out by the CITES MA of Benin in August 2021 identified two captive breeding and/or ranching facilities that held *K. homeana*, both for commercial purposes; one facility held two individuals (a male and a female) and the other held 14 individuals (females and males). The MA of Benin reported that the standards of a CITES captive-breeding facility were not met at most locations, and that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques. Law No. 2021-04 (2021) establishes a new legislative framework for ranching and breeding CITES listed species (see *Management* section). The MA of Benin noted that the establishment of quotas for ranched or captive-bred specimens would be done on the basis of predicted production levels from monitoring of facilities; however, further details of this quota setting system were not provided. Information was not provided regarding whether the

	species can be bred to second generation or beyond. It is therefore unclear if the facilities are able to maintain a closed breeding group that is capable of achieving second generation captive-bred individuals without any detriment to wild populations.
e) the management of ranched animals in trade (e.g. ranching facilities, stock numbers, sources, production levels, survival rate of female specimens used in the ranching operation) and impacts on wild populations;	*Ibid.*
f) the control measures to differentiate between ranched, captive produced, and wild-caught specimens to ensure that the authorized exports of ranched and captive produced specimens are not augmented by mis-declared wild specimens;	The MA of Benin did not clearly outline measures to differentiate between specimens of differing origin (R, C, W). Benin stated that there were three control mechanisms in place: 1) Only breeders confirmed to have specimens in their facilities will be authorised to trade; 2) harvesting forms will be countersigned by the competent forestry agent, with an account of the available stock; and 3) breeders have to provide a monthly update on the status of their stock under the supervision of a competent forestry agent.
Within 2 years the Management Authority should:	
g) Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Benin);	No national status assessment has been conducted; the MA of Benin noted that precise population estimates for *K. homeana* in the country were unavailable due to the scarcity of observations. The *Management* section outlines current measures in place.
h) establish revised annual export quotas (if appropriate) for wild taken and ranched specimens based on the results of the assessment;	No quotas for wild or ranched specimens are anticipated as a national status assessment has not yet been conducted, and the MA of Benin stated that it would consider future export quotas of captive-bred specimens only until information on status and trends of wild populations could be provided by the Scientific Authority (no quota for captive-bred specimens of *K. homeana* was proposed).

i) provide a justification for, and explanation of, the scientific by which it is determined that these quotas would not be detrimental to the survival of the species in the wild and are established in compliance with Article IV, paragraphs 2 (a) and 3.	Not addressed (see above).

Challenges faced and identification of needs: The Management Authority of Benin (*in litt.* to UNEP-WCMC, 2021) highlighted the following as additional research and capacity building needed to improve the application of CITES for this species:

- Knowledge gaps: The ecology of the species, including its reproductive biology; the status of wild populations.
- Implementation challenges: Species identification; border control measures and systems; traceability of traded specimens; application of anti-poaching measures. Additional needs were also highlighted regarding training sessions for breeders on species biology, husbandry requirements, stock management, and marking techniques.

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Imports of 125 wild-sourced live *K. homeana* were reported by the United States in 2017 in apparent contravention of the trade suspension. As noted in the *Threats* section, according to surveys conducted in 2010, an estimated 90% of *K. homeana* specimens present in bushmeat and traditional medicine markets in Benin, or from animal exporters, originated from Nigeria (T. Diagne *in litt*. to UNEP-WCMC, 2021); however, according to the CITES Trade Database no direct exports of *K. homeana* from Nigeria to Benin have been recorded 2004-2019. This implies that cross border trade in this species has occurred that is not in compliance with the Convention.

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BIVALVIA: TRIDACNIDAE

3.4 *Tridacna* spp.: Solomon Islands

Tridacna crocea, T. derasa, T. gigas, T. maxima, T. ningaloo, T. noae and *T. squamosa*

A. Summary

Suspension valid from:	Summary	Recommendation
15 March 2016	*Tridacna* spp. are large, slow growing, long-lived clams that have low natural recruitment rates and are globally declining due to harvest for export/subsistence. Five species have been assessed by the IUCN Red List: three are categorised as Lower risk/Least concern (*T. crocea, T. maxima* and *T. squamosa*) and two are Vulnerable (*T. derasa* and *T. gigas*). All assessments are from 1996 and need to be updated. Following inclusion in the RST, a genus-level zero quota for wild-taken *Tridacna* spp. specimens from the Solomon Islands was published in 2013, 2014 and 2015. The 2015 quota did not reflect a recommendation by AC27 (2014) to extend the zero export quota to include *Tridacna* spp. from all sources. No quotas have since been issued. CITES annual reports have been submitted by the Solomon Islands for some years, but not yet for 2011, 2012, 2017 or 2018. Direct trade in wild-sourced *Tridacna* species from the Solomon Islands 2010-2019 predominantly comprised 590 live clams, 639 bodies, and 3025 shells; importers reported corresponding imports of 638 live clams and 2276 shells. The quota for wild-sourced individuals appears to have been exceeded in 2014 and 2015 according to exporter-reported data only. Whilst the majority of the trade occurred prior to the trade suspension, 58 wild-sourced shells were reported to have been exported by Solomon Islands in 2019, in apparent contravention of the trade suspension. The Solomon Islands responded to the consultation relating to RST long standing suspensions, providing a draft NDF for trade in dead clam shells. *Tridacna* spp. were reported to remain widespread in the country and all species have generally persisted in historical locations. However, densities recorded in 2019 for all species were found to be below regional healthy population density reference points (where these are available); only *T. squamosa* was	**Suspension may still be appropriate for all species**

found above the healthy density reference point in some locations. The average size of individuals of *T. crocea*, *T. maxima* and *T. squamosa* was also found to have decreased since 2006, indicating that harvest pressure is affecting population structure. The response provided by the Solomon Islands did not contain any information relating to the two new species that occur in the country that were recognised at CoP17 (*T. noae* and *T. ningaloo*); it is assumed that these species are still considered as *T. maxima*. Information regarding the population status, trends and distribution of these two species was therefore not available.

Harvest of wild-sourced Tridacnidae species for commercial trade was banned until 2021, but trade and export of captive-produced specimens was allowed. Local sale of wild-harvested clams remains a prohibited activity, but subsistence harvest is permitted. A new Fisheries Management Plan was implemented in February 2021 with the purpose of enabling "a limited export trade of clam shells under a licensing system". Three licences for the export of clams may be in operation at any one time; such licences may have harvesting conditions associated with them (e.g., size limits or maximum quotas).

While the draft NDF provided by the Solomon Islands concluded that controlled trading of dead clam products (empty shells) would not be detrimental to the survival of wild clam populations, the scientific basis for this conclusion remains unclear. Questions remain regarding whether export of all *Tridacna* species from all sources and all areas would be permitted under the NDF, what indicators would be used to establish quotas and size limits that are appropriate and non-detrimental, and whether any conditions regarding the issuance of licences would be in place (for example, whether licences would only be issued for export of dead clam shells produced as by-products of subsistence harvest, and, if so, what relevant controls will be in place to ensure that only products from this origin are exported). Given that *Tridacna* spp. populations are reported to remain below healthy population thresholds in the Solomon Islands, that the average size of individuals is in decline, and the lack of clarity on the management aspects outlined above, the draft NDF is not sufficiently robust to demonstrate that export of shells would be non-detrimental to the survival of the species in compliance with Article IV. **The suspension may therefore still be appropriate.**

Although not requested, the Solomon Islands may need technical support with identification of clam species (with reference to the newly accepted CITES species) and guidance on clam surveys or monitoring of harvest impacts. Capacity building may also be required to address issues identified in the Solomon Islands' CITES annual reports. Other range States are managing/exporting clam populations in the region, and in line with paragraph 3c) of Res. Conf. 12.8 (Rev. CoP18), it is recommended that, through regional cooperation and/or mentoring, other Parties

(such as Australia as a clam range State, or New Zealand, who has provided mentoring support within the region) provide additional support to the Solomon Islands in the formulation of a robust non-detriment finding.

RST Background

Tridacna spp. from the Solomon Islands was included in the RST as an urgent case at AC24 in 2009 (AC24 Summary Record). The Secretariat was instructed to write to the Solomon Islands, requesting a) an explanation of information provided in 2004 which differed from published trade data, b) updated information on the status of captive-production facilities, and c) information on any recent quantitative surveys conducted on giant clam abundances in the Solomon Islands for "all six species" (assumed to be *Tridacna crocea, T. derasa, T. gigas, T. maxima* and *T. squamosa,* as well as *Hippopus hippopus*) (AC24 Summary Record). No response from the Solomon Islands was received by March 2011; the taxon/country combination was therefore retained in the RST process at AC25 (AC25 Summary Record). A detailed review of the taxon/country combination was considered at AC26 in March 2012 (AC26 Doc. 12.2); the AC agreed to categorise *T. crocea, T. gigas, T. maxima* and *T. squamosa* as of possible concern, and *T. derasa* as of urgent concern. The categorisation for *T. derasa* was made on the basis that the impact of high levels of international trade was not known, with no information available on the implementation of Article IV. A series of recommendations (a-j) were issued to the Solomon Islands at this meeting, which are detailed in Table 3.4.11.

A response from the Management Authority (MA) of the Solomon Islands addressing the short-term recommendations issued for *Tridacna* spp. (a-f) was received by the Secretariat in February 2013 (see Table 3.4.11); however, because this was received after the deadline for submission of documents to SC63, it was agreed that the case would be addressed via postal procedure. The results of the procedure are detailed in Notif. No 2013/049; in summary, the SC took note of the progress that the Solomon Islands were making in implementing the AC recommendations concerning *Tridacna* spp., and it was agreed that the Secretariat should:

> (1) request the Solomon Islands to provide full information in response to recommendations d) and g) for *T. derasa*, and recommendations c) to i) for *T. crocea, T. gigas, T. maxima* and *T. squamosa* (see Table 3.4.11), by 1 February 2014, in time for consideration at AC27 and SC65; and;
>
> (2) in support of Solomon Islands' current trade measures, publish a zero export quota for *Tridacna* spp. of wild origin from Solomon Islands on the CITES website. This quota could be reviewed in the light of Solomon Islands' further implementation of the recommendations of the Animals Committee.

The Secretariat informed the country about the SC decisions in November 2013 and requested this additional information; it also published a zero export quota for *Tridacna* spp. of wild origin on its website for 2013 (as of 19 November 2013) and 2014; this was acknowledged by the Solomon Islands in January 2014. In March 2014, the Solomon Islands submitted a response regarding recommendations d) and g) for *Tridacna derasa* and recommendations c) and i) for *T. crocea, T. gigas, T. maxima* and *T. squamosa* (which relate to captive production in the country). A working group was established at AC27 to consider the response. Noting the apparent intention of the Solomon Islands to export "dead clam shells" of *Tridacna* spp. of wild and, possibly, captive bred sources, the AC issued a further series of recommendations for the Solomon Islands to be considered by the Standing Committee; these are detailed in SC65 Doc. 26.1 and included in Table 3.4.11.

The AC recommendations were endorsed by the SC at SC65 in July 2014, with the addition of a paragraph stating: "The Secretariat should issue a Notification to the Parties to state that no ranching or captive breeding of *Tridacna* species currently takes place in Solomon Islands and that, until further notice from the Secretariat, Parties should not authorize the importation of specimens from these sources from Solomon Islands". It is unclear if this notification was issued.

No further response to the recommendations outlined in SC65 Doc. 26.1 had been received from the Solomon Islands by SC66; as a result, on 15 March 2016, the Standing Committee recommended that that all Parties suspend trade covered by Article IV of the Convention in specimens of *Tridacna derasa, T. crocea*, *T. gigas*, *T. maxima,* and *T. squamosa* from the Solomon Islands until the country can demonstrate compliance with Article IV, paragraphs 2 (a) and 3, for these species, and provide full information to the Secretariat regarding compliance with the AC recommendations (Notif. No. 2016/018).

B. Species characteristics

Taxonomic note: A CITES standard reference has not yet been adopted for the family Tridacnidae. When *Tridacna* spp. from the Solomon Islands was included in the RST in 2009, the Solomon Islands were considered to be a range State for five species: *T. crocea*, *T. derasa*, *T. gigas*, *T. maxima*, and *T. squamosa* (see AC26 Doc. 12.2). At CoP17 in 2016, however, two new species were recognised that occur in the Solomon Islands: *T. noae* and *T. ningaloo.* Each species was assigned respective CITES Standard Reference: Su *et al. (*2014) and Penny and Willan (2014), respectively.

T. noae (Röding, 1798) was resurrected from *T. maxima* by Su *et al.* (2014) on the basis of genetic analyses and physical characteristics; this taxonomic split was further supported by Borsa *et al.* (2015). *T. ningaloo* is a new species first described from Ningaloo Reef, Australia in 2014 (Penny and Willan, 2014). Penny and Willan (2014) reported that it was a cryptic species that cannot be morphologically differentiated from *T. maxima* in the field, but that is genetically closest to *T. squamosa* and *T. crocea*. However, *T. ningaloo* was not found to be genetically or morphologically different from *T. noae* by Borsa *et al.* (2015), and Johnson *et al.* (2016) supported this conclusion in reporting that all genetically known *Tridacna* species at Ningaloo Reef were *T. noae*. These authors, alongside Neo *et al.* (2017), consider *T. ningaloo* to be a synonym of *T. noae*.

Biology: The family Tridacnidae (giant clams) comprises the genera *Tridacna* and *Hippopus*, and includes the largest marine bivalves in the world (Kinch and Teitelbaum, 2010). Of the seven species of *Tridacna* that occur in the Solomon Islands, the largest is *T. gigas* (80-137 cm (Kinch, 2002; Kinch and Teitelbaum, 2010), and the smallest are *T. crocea* (maximum length of 15 cm (Kinch and Teitelbaum, 2010)) and *T. noae* (6-20 cm; (Su *et al.*, 2014)) (see Annex 1). *Tridacna* spp. are typically found in clear, warm and shallow (above 20 m depth) waters with high salinity (Apte *et al.*, 2004). The recorded optimal temperatures range between 25 and 30°C, and optimal salinity levels range between 32 and 35 parts per thousand (Ellis, 1998). Typical habitats were considered to include shallow shorelines and coral reefs (Othman *et al.*, 2010). Natural predators of *Tridacna* spp. include fish, molluscs, crustaceans and marine turtles (Raymakers *et al.*, 2003). Although they obtain a part of their nutrition by filter feeding, all *Tridacna* spp. get a significant proportion of nutrients through symbiosis with photosynthetic zooxanthellae algae (Lucas, 1988; Bell and Amos, 1993; Ellis, 1998). The algae live in the mantle tissue of *Tridacna* spp., producing sugars, amino acids and fatty acids used by its host (Ellis, 1998).

All *Tridacna* spp. were reported to mature as males, after which they develop into hermaphrodites (Ellis, 1998). Fecundity has been found to increase with the age and size of individuals (Apte *et al.*, 2004), with Gervis (1993) reporting that the largest individuals of *T. derasa* and *T. gigas* could produce 500 million eggs in a single spawning event. While the fecundity of the genus is high, however, natural recruitment rates for the genus are low due to high rates of early mortality. Spawning was found to be seasonal in some areas, and occurs year-round in other areas (Kinch and Teitelbaum, 2010). Due to their spawning pattern, *Tridacna* reproduction was found to be unsuccessful at low densities of mature individuals (Kinch, 2009). No critical density thresholds below which reproduction is unsuccessful could be located in the literature for any of the species under review; however, a manual for assessing

tropical marine invertebrates for Pacific island resource managers (Pakoa *et al.* 2014) cites the following densities to be healthy reference points (defined as the point below which stocks may be less able to supply juveniles to sustain or increase the population) (Table 3.4.1).

Table 3.4.1: Healthy reference points for *Tridacna* spp., below which stocks may be less able to supply juveniles to sustain or increase the population. RBt = Reef benthos transect. Source: Pakoa *et al.* 2014.

Species	Reference point
T. maxima	Regional reference for RBt surveys is 750 ind. /ha, however site-specific density reference points are recommended
T. crocea	In areas where clams are common, 5000 ind./ha (RBt stations)
T. squamosa	Regional reference at 20–30 ind./ha for RBt and SBt surveys, however site-specific reference points are recommended
T. derasa and *T. gigas*	Insufficient data for regional reference point (site-specific references are recommended)
T. noae and *T. ningaloo*	Not included in the source document

The growth of *Tridacna* spp. is influenced by factors such as water temperature and clarity, wave action and water flow (Hart *et al.*, 1998). Generally, the development from fertilization to a juvenile clam was reported to take around 10-14 days (Ellis, 1998: 199), which was considered to limit the distribution abilities of *Tridacna* spp. (Apte *et al.*, 2004). The age of sexual maturation was estimated to be at an average of 5-7 years (Kinch and Teitelbaum, 2010). Apte *et al.* (2004) indicated that after fast growth in the early years, *Tridacna* spp. are slow-growing. Life spans of over 100 years have been recorded (Apte *et al.*, 2004). Specific data on size, annual growth rates, reproductive parameters and habitat preferences for the species under review can be found in Annex 1.

Distribution: The range of the genus *Tridacna* reaches from East Africa to the eastern Pacific and from Japan to Australia, roughly between 30°E and 120°W and between 36°N and 30°S (Othman *et al.*, 2010). Skewes (1990) reported that the overall range of the genus had decreased due to exploitation, particularly for the larger species, although no numerical estimates of the scale of this decline were provided.

Population status and trends: The population of *Tridacna* spp. was reported to be globally declining (Isamu, 2008; Othman *et al.*, 2010), and Neo *et al.* (2017) considered there to be "global consensus" that *Tridacna* species in many locations are endangered. In an analysis of global records on *Tridacna* spp. population densities from 66 localities, Neo *et al.* (2017) noted these were generally low in areas subject to intense historical and current exploitation, and higher in remote areas and marine reserves. Declines as a result of severe overfishing were reported as early as the 1980s, and to have led to several regional extinctions in the Indo-Pacific region (Lucas, 2003). Particularly dramatic declines have been reported for the larger species of *T. derasa* and *T. gigas* (Wells, 1997; Neo *et al.*, 2017). Species specific accounts of population status and trends are given below:

Tridacna crocea: *T. crocea* was categorised as **Lower Risk/least concern** in an IUCN Red List assessment noted as needing to be updated (Mollusc Specialist Group, 1996). It has been described as "reasonably" (Wells, 1997) and "relatively" (Neo *et al.*, 2017) abundant throughout its range, although many populations in Southeast Asia were considered to be in decline (Wells, 1997).

Tridacna derasa: *T. derasa* was categorised as **Vulnerable** in an IUCN Red List assessment noted as needing to be updated (Wells, 1996a). Globally, population declines have been reported by Wells (1997), IUCN (2006a), Isamu (2008) and Othman *et al.* (2010). Local or national extinctions were reported to have occurred in several countries (IUCN, 2006a). Neo *et al.* (2017) reported that >50% of wild populations of the species were either severely depleted or locally extinct.

Tridacna gigas: The species was categorised as **Vulnerable** in an IUCN Red List assessment noted as needing to be updated (Wells, 1996b). Neo *et al.*, (2017) noted that the species was data deficient, severely depleted, or locally extinct at 26 of the 31 localities for which data *T. gigas* were available, and Othman *et al.* (2010) considered many populations in Southeast Asia to be in sharp decline. Wide-ranging surveys in the Pacific Islands indicated that sometimes only one individual of the species was present within a locality (Neo *et al.*, 2017).

Tridacna maxima: The species was categorised as **Lower Risk/conservation dependent** in an IUCN Red List assessment noted as needing to be updated (Wells, 1996c). *T. maxima* was considered to be "reasonably" (Wells, 1997) and "relatively" (Neo *et al.*, 2017) abundant throughout its range. Van Wynsberge *et al.* (2016) reviewed 59 density estimate studies and reported that *T. maxima* densities typically ranged from 0.0001 to 0.1 ind. m^{-2} (1–1000 ind./ha), with exceptions of up to 2.24 ind. m^{-2} (22,400 ind./ha) in the Central Pacific. However, following the split of the species into *T. maxima* and *T. noae*, it is noted that previous surveys identifying *T. maxima* populations and densities would have conflated the two species, leading to density and population overestimates for *T. maxima* (Neo *et al.*, 2017). For example, in a survey of the Kavieng Lagoon system, Papua New Guinea, Militz *et al.* (2015) determined that almost 42% of specimens previously recorded as *T. maxima* should actually be classified as *T. noae*; a similar study in Ningaloo Reef, Australia, found this figure to be 100% (Johnson *et al.*, 2016).

Tridacna noae/Tridacna ningaloo: Neither species has yet been assessed by the IUCN Red List. Population data for *T. noae* are scarce because the species has been recently split from *T. maxima*, and previous surveys may have incorporated the species within *T. maxima* density and population estimates (Neo *et al.*, 2017). However, density has been estimated at 2.06 individuals/200 m^2 (103 ind./ha) in Papua New Guinea (Militz *et al.*, 2015), and 1.846 individuals per 100 m^2 (92.3 ind./ha) within a 3630 m^2 survey area at Dongsha Atoll, Taiwan, Province of China (Neo *et al.*, 2018). No population density data were available for *T. ningaloo*.

Tridacna squamosa: The species was categorised as **Lower Risk/conservation dependent** in an IUCN Red List assessment noted as needing to be updated (Wells, 1996d). *T. squamosa* was considered to be "reasonably abundant" throughout its range (Wells, 1997). Neo *et al.*, (2017) considered populaitons to have remained relatively stable across the species' global range, but Othman *et al.*, (2010) considered many populations in Southeast Asia to be in decline.

Threats: Harvesting for export and subsistence use is considered to be the major cause of population decline in the genus (Friedman and Teitelbaum, 2008; Neo *et al.*, 2017). *Tridacna* spp. are particularly vulnerable to overharvest as a result of their slow-growth rates and the fact that they are usually found in easily accessible shallow waters (Kinch, 2002; Friedman and Teitelbaum, 2008). *Tridacna* meat is as a high-value, luxury food (Feltham *et al.*, 2021), with demand reported to be particularly high in Asia (Kinch and Teitelbaum, 2010) and to be focused on the two largest species, *T. gigas* and *T. derasa* (Neo *et al.* 2017). China has additionally been reported to be a growing market for carved shells, particularly of *T. gigas* (Larson, 2016); shells were also reported have been becoming an increasingly popular elephant ivory substitute following the country's 2017 ban on domestic elephant ivory trade (Feltham *et al.*, 2021).

Large-scale poaching of Tridacnidae has been reported to be a persistent, major threat, with coastal resource authorities from several countries (Australia, Cambodia, Malaysia and the Philippines) reporting an increase in illegal clam-poaching vessels within the last 10 years (Neo *et al.*, 2017). Large scale seizures in recent years (e.g. Feltham *et al.*, 2021) were considered to suggest the involvement of organised crime (Feltham *et al.*, 2021).

Other threats to *Tridacna* spp. were reported to include habitat degradation, pollution, disease and increased sea temperatures as a result of climate change (Blidberg, 2004; Brahmi *et al.*, 2021; Elfwing *et al.*, 2003; Leggat *et al.*, 2003; Mingoa-Licuanan and Gomez, 2002; Raymakers *et al.*, 2003; Othman *et al.*, 2010).

Overview of trade and management: *Tridacna gigas* and *T. derasa* were first listed in Appendix II of CITES on 29 July 1983; the remaining members of the family Tridacnidae were listed in Appendix II on 1 August 1985.

According to the CITES Trade Database, global direct commercial trade in all *Tridacna* species from 2010 to 2019 was predominantly in live, wild-caught clams (393 948 individuals), as well as live captive-bred and captive-born individuals (188 460 combined), as reported by exporters. According to exporter-reported data, the main exporters of wild-sourced live clams over this ten-year period were France (52%), Cambodia (31%), and Viet Nam (16%), while the main importers were the United States (37%), Viet Nam (31%), and France (10%).

Management of *Tridacna* spp. populations was reported to be most developed in Australia and the Pacific Island nations, where several local communities have implemented measures to alleviate fishing pressures, such as banning commercial fishing (e.g. Fiji, Papua New Guinea), implementing minimum size-limits for subsistence harvesting (e.g. French Polynesia, Niue, Samoa and Tonga), banning certain types of fishing equipment, and imposing catch quotas (New Caledonia, American Samoa and Cook Islands) (Neo *et al.*, 2017). Several countries have national protection acts which include giant clams (Australia, China, India, Japan, Malaysia, the Philippines, Taiwan Province of China, Thailand and the Solomon Islands) (Neo *et al.*, 2017; Fisheries Management Plan (Tridacna and Hippopus Clams) 2020).

Global *Tridacna* mariculture is mostly undertaken by private companies supplying the aquarium trade, with some NGO programmes aiming to re-stock rare species and depleted populations, and some local government programmes undertaking re-stocking and food production (Mies *et al.*, 2017; Neo *et al.*, 2017). Neo *et al.* (2017) reported that, as of 2016, there were at least 34 giant clam hatcheries across 25 countries, and hundreds of ocean nurseries and reserves. However, in many cases, mariculture programmes have ended due to limited production (itself a result of high mortality and the slow growth rates of the species), hatchery expenses and cost inefficiencies (Neo *et al.*, 2017), and current production is reported to still be relatively low (Mies *et al.*, 2017). Neo *et al.* (2017) also noted that restocking initiatives are rarely accompanied by regular monitoring to ascertain their success, and that the survivorship of restocked claims varies widely within and among localities. Ensuring that restoked populations can successfully reproduce and recruit is considered to remain a major challenge to clam mariculture (Neo *et al.*, 2017).

C. Country reviews

Solomon Islands

In response to the consultation relating to RST long standing suspensions, the Solomon Islands provided a draft NDF for trade in dead clam shells, referenced here as Tua and Schwarz (2021). The draft NDF is available in full in SC74 Doc. 30.2 Annex 1.

Distribution: Six *Tridacna* species have been reported to occur in the Solomon Islands: *T. crocea*, *T. derasa*, *T. gigas*, *T. maxima, T. noae,* and *T. squamosa* (Wells, 1997; Green *et al.*, 2006; Pauku and Lapo, 2009; Borsa *et al.*, 2015), with the presence of a seventh species, *T. ningaloo*, inferred due to its possible synonymy with *T. noae* (Borsa *et al.*, 2015). *T. crocea, T. gigas, T. maxima* and *T. squamosa* were all considered to be widespread within the country (Govan, 1988; Richards *et al.*, 1994; Tua and Schwarz, 2021), whereas *T. derasa* was considered to be more localised. No country specific population information was located for the distribution of *T. ningaloo* and *T. noae,* which are not recognised in these data sources as separate species from *T. maxima.*

Table 3.4.2 shows data provided by the CITES MA of the Solomon Islands regarding the occurrence of Tridacnidae in country according to three surveys carried out in 1988, 2006 and 2019 (Tua and Schwarz, 2021). The 2019 survey across 303 sites in 6 provinces found that the five species surveyed were found at low densities, but species diversity had been maintained (Tua and Schwarz, 2021).

Table 3.4.2: Occurrence of Tridacnidae in Solomon Islands provinces. Not all provinces were surveyed in all surveys; the 2006 survey covered three provinces of the initial nine provinces surveyed (Guadalcanal, Western and Central Islands), while the 2019 survey covered six provinces (Guadalcanal, Western, Isabel, Makira Ulawa, Central Islands and Choiseul). Note that *T. noae* and *T. ningaloo* were not considered recognised by the Solomon Islands as separate species from *T. maxima* at the time of the survey. Reproduced from Tua and Schwarz (2021).

	Provinces								
Years	**Guadalcanal**	**Malaita**	**Western**	**Isabel**	**Makira Ulawa**	**Temotu**	**Central Islands**	**Rennel Bellona**	**Choiseul**
1988	*T. gigas*	*T. gigas*	*T. gigas*	*T. squamosa*	*T. squamosa*	*T. gigas*	*T. gigas*	*T. gigas*	*T. gigas*
	T. squamosa	*T. squamosa*	*T. squamosa*	*T. maxima*	*T. maxima*	*T. squamosa*	*T. squamosa*	*T. squamosa*	*T. squamosa*
	T. maxima	*T. maxima*	*T. maxima*	*T. crocea*	*T. crocea*	*T. maxima*	*T. maxima*	*T. maxima*	*T. maxima*
	T. crocea	*T. crocea*	*T. crocea*	*H. hippopus*	*H. hippopus*	*T. crocea*	*T. crocea*	*T. crocea*	*T. crocea*
	T. derasa	*H. hippopus*	*T.derasa*				*H. hippopus*		*H. hippopus*
	H. hippopus		*H. hippopus*						
	6 species	**5 species**	**6 species**	**4 species**	**4 species**	**4 species**	**4 species**	**4 species**	**5 species**
2006	*H. hippopus*		*H. hippopus*				*H. hippopus*		
	T. crocea		*T. crocea*				*T. crocea*		
	T. maxima		*T. maxima*				*T. maxima*		
	T. derasa		*T. derasa*				*T. derasa*		
	T. gigas		*T. squamosa*				*T. squamosa*		
	T. squamosa								
	6 species		**5 species**				**5 species**		
2019	*H. hippopus*		*H. hippopus*	*H. hippopus*	*H. hippopus*		*H. hippopus*		*H. hippopus*
	T. crocea		*T. crocea*	*T. crocea*	*T. crocea*		*T. crocea*		*T. crocea*
	T. derasa		*T. derasa*	*T. derasa*	*T. derasa*		*T. derasa*		*T. derasa*
	T. maxima		*T. maxima*	*T. maxima*	*T. maxima*		*T. maxima*		*T. maxima*
	T. gigas		*T. gigas*	*T. gigas*	*T. gigas*		*T. gigas*		*T. gigas*
	T. squamosa		*T. squamosa*	*T. squamosa*	*T. squamosa*		*T. squamosa*		*T. squamosa*
	6 species		**6 species**	**6 species**	**6 species**		**6 species**		**6 species**

Population status and trends: Neo *et al.* (2017) assessed the Solomon Islands as having relatively good stocks of *T. crocea, T. maxima,* and *T. squamosa*, but noted that recent surveys have found lower densities than previously reported for these species. *T. derasa* and *T. gigas* were considered to have depleted populations (Neo *et al.* 2017). Species specific information is detailed below.

Tridacna crocea: Available density estimates for *T. crocea* in the Solomon Islands are summarised in Table 3.4.3. *T. crocea* has historically been considered to be an abundant species in the Solomon Islands (Govan, 1988; Hviding, 1993); however, densities of the species recorded in 2004 in the Marau Sound, the Sisili and Taburu MPAs, and the Maravaghi community-based MPA in Ngella in Central Province were considered to be low compared to similar studies in other countries (Ramohia, 2004; Ramohia *et al.*, 2005a). Neo *et al.* (2017) still considered the Solomon Islands to have relatively good stocks of *T. crocea* compared to other island states of the Pacific Region; however, it was recognised

that, overall, much lower densities had been reported from more recent surveys (Neo *et al.*, 2017). The results from 2019 surveys presented in the Solomon Island's draft NDF indicated that the species occurred at an overall mean density of 92 ind./ha; this was considered to be far below the healthy density reference point outlined in Pakoa *et al.* (2014) of 5000 ind./ha, and below the overall mean density of 188 ind./ha reported from surveys at three of the same provinces in 2006. The proportion of individuals in a smaller size class was also noted to have increased since these 2006 surveys (Tua and Schwarz, 2021), indicating that offtake pressure may have affected population structure.

Table 3.4.3: Density and percentage occurrence estimates for *T. crocea* in the Solomon Islands.

Year	Location	Percentage occurrence (if available)	Estimate	Source
2004	Marapa and Simeruka MPAs in Marau Sound		5-24 ind./ha	Ramohia (2004)
	Sisili MPA		300 ind./ha	Ramohia (2004)
	Taburu MPA		217 ind./ha	Ramohia (2004)
	Maravaghi MPA		33-67 ind./ha	Ramohia *et al.* (2005a)
	66 sites in main island group		15 ind./ha	Ramohia (2006)
2006	Across Guadalcanal, Western, and Central Islands Provinces		188 ind./ha	Tua and Schwarz (2021)
2004-2012	Solomon Islands		100–10 000 ind./ha* ** Broad category assigned based on the basis of densities recorded in Ramohia (2006) and Reef Check (2005-2012)*	Neo *et al.* (2017)
2019	Across Guadalcanal, Malaita, Western, Isabel, Makira Ulawa, Temotu, Central Islands, Rennel Bellona and Choiseul Provinces	114 out of 303 stations (38%)	92 ind./ha	Tua and Schwarz (2021)

Tridacna derasa: Available density estimates for *T. derasa* in the Solomon Islands are summarised in Table 3.4.4. Historically, Oengpepa (1993) reported that populations of *T. derasa* in many areas within the Solomon Islands were severely depleted, referring to surveys conducted between 1987-1991 by the International Center for Living Aquatic Resources Management (ICLARM). Ramohia (2006) found *T. derasa* to be the rarest of the *Tridacna* species across their 66 sampling sites, occurring at densities that were considered low compared to those recorded in earlier studies (Ramohia 2006). Kinch *et al.* (2006) did not record the species in the Marovo Lagoon despite Foale (2002 in Kinch *et al.* 2006) previously recording the species at low densities; this possible extirpation was postulated to have been a result of overexploitation.

Neo *et al.* (2017) described *T. derasa* as "rare" within the Solomon Islands, noting that the species has a limited distribution and that surveys had shown that the population had become depleted [presumed to be in comparison to the species' historical abundance pre-early 2000s]. The most recent data presented in the Solomon Island's draft NDF (Tua and Schwarz, 2021), from surveys across six provinces completed in 2019 showed that *T. derasa* was present at 45 out of 303 stations (15%), with an overall mean density of 4 ind./ha.

Table 3.4.4: Density and percentage occurrence estimates for *T. derasa* in the Solomon Islands.

Year	Location	Percentage occurrence (if available)	Estimate	Source
2004	66 sites in main island group	11% of studied sites	<4 ind./ha	Ramohia (2006)
	Marapa and Simeruka MPAs in Marau Sound		0–0.8 <1 ind./ha	Ramohia (2004)
	Maravaghi MPA		0-17 ind./ha	Ramohia *et al.* (2005a)
2005	Mbili Passage and Chea		0 ind./ha	Kinch *et al.* (2006)
2004-2012	Solomon Islands		<1 ind./ha* * *Broad category assigned based on the basis of densities recorded in Ramohia (2006) and Reef Check (2005-2012)*	Neo *et al.* (2017)
2019	Across Guadalcanal, Malaita, Western, Isabel, Makira Ulawa, Temotu, Central Islands, Rennel Bellona and Choiseul Provinces	45 out of 303 stations (15%)	4 ind./ha	Tua and Schwarz (2021)

Tridacna gigas: Available density estimates for *T. gigas* in the Solomon Islands are summarised in Table 3.4.5. Historically, Wells (1997) considered the Solomon Islands as the only country besides Australia to have abundant populations of *T. gigas*, even if the species was found in low numbers; however Oengpepa (1993) reported severely depleted populations in many areas, referring to surveys conducted between 1987-1991 by ICLARM staff. The authors noted that the decline was "continuing at an alarming rate", and attributed it to "overharvesting by coastal dwellers" (Oengpepa, 1993).

Ramohia (2006) noted in particular that low densities of *T. gigas* were a cause of concern in the results of their survey of key invertebrate species at 66 sites in the main island group of the Solomon Islands. In related Rapid Ecological Assessment surveys, *T. gigas* was recorded at only 5 out of 113 sites, with each site surveyed covering an area approximately 5000 m^2 (Turak, 2006). The species was additionally not recorded in transect surveys conducted in 2004 in the Maravaghi community-based MPA in Ngella in Central Province (Ramohia *et al.*, 2005a), in the Sisili and Taburu community-based MPAs in Ngella in the Central Province (Ramohia *et al.*, 2005a), or in the Marapa and Simeruka MPAs

in Marau Sound, Central Province (Ramohia, 2004). Similarly, Kinch *et al.* (2006) did not record the species in the Marovo Lagoon in the Western Province.

Neo *et al.* (2017) considered that, while *T. gigas* was formerly widespread and abundant, it was now "rare" across the Solomon Islands. The most recent data presented in the Solomon Island's draft NDF, from surveys across six provinces completed in 2019, showed that *T. gigas* was present at 23 out of 303 stations (8%), with an overall mean density of 2 ind./ha (Tua and Schwarz, 2021).

Table 3.4.5: Density and percentage occurrence estimates for *T. gigas* in the Solomon Islands.

Year	Location	Percentage occurrence (if available)	Estimate	Source
2004	66 sites in the main island group	14% (12 individuals recorded)	4 or fewer ind./ha	Ramohia (2006)
	Maravaghi MPA		0 ind./ha	Ramohia *et al.* (2005a)
	Sisili MPA		0 ind./ha	Ramohia *et al.* (2005b)
	Taburu MPA		0 ind./ha	Ramohia *et al.* (2005b)
	Marapa and Simeruka MPAs in Marau Sound		0 ind./ha	Ramohia (2004)
2005	Mbili Passage and Chea		0 ind./ha	Kinch *et al.* (2006)
2006	Across Guadalcanal, Western, and Central Islands Provinces	0% (not observed)	0 ind./ha	Tua and Schwarz (2021)
2004-2012	Solomon Islands		<1 ind./ha* * *Broad category assigned based on the basis of densities recorded in Ramohia (2006) and Reef Check (2005-2012)*	Neo *et al.* (2017)
2019	Across Guadalcanal, Malaita, Western, Isabel, Makira Ulawa, Temotu, Central Islands, Rennel Bellona and Choiseul Provinces		2 ind./ha	Tua and Schwarz (2021)

Tridacna maxima: Available density estimates for *T. maxima* in the Solomon Islands are summarised in Table 3.4.6. Surveys conducted by Turak (2006), Ramohia (2006) and Tua and Schwarz (2021) found *T. maxima* to be the most abundant Tridacnidae species in the Solomon Islands. However, densities of the species recorded by Ramohia (2004), Ramohia *et al.*, (2005b) and Ramohia (2006) were considered very low compared to densities reported in other studies in the Solomon Islands and in other countries (Green *et al.*, 2006). Smith *et al.* (2000) found that the populations of *T. maxima* within and around the Arnavon Islands MPA in north-western Solomon Islands were increasing;

however, Kinch *et al.* (2006) found the species to occur in low numbers in the Marovo Lagoon in the Western Province.

Neo *et al.* (2017) regarded *T. maxima* as "abundant" across the Solomon Islands, and considered the country to have relatively good stocks of *T. maxima* compared to other island states of the Pacific Region. However, it was noted that, overall, lower densities have been reported from more recent surveys (Neo *et al.*, 2017). The most recent data presented in the Solomon Island's draft NDF, from surveys across six provinces completed in 2019, showed that *T. maxima* was present at 189 out of 303 stations (62%), with an overall mean density of 104 ind./ha. This was noted to be below the healthy density reference point outlined in Pakoa *et al.* (2014) of 750 ind./ha (Tua and Schwarz, 2021). It was also noted that, while the overall mean density for the species had increased compared to surveys at three of the same provinces in 2006, the proportion of individuals in a larger size class had decreased (Tua and Schwarz, 2021), indicating that offtake pressure may have affected population structure.

Table 3.4.6: Density and percentage occurrence estimates for *T. maxima* in the Solomon Islands.

Year	Location	Percentage occurrence (if available)	Estimate	Source
2004	66 sites in the main island group		28 ind./ha	Ramohia (2006)
	Maravaghi MPA		167 ind./ha	Ramohia *et al.* (2005a)
	Marapa and Simeruka MPAs in Marau Sound		2.5–15 ind./ha	Ramohia (2004)
2004-2012	Solomon Islands		100–10 000 ind./ha* * *Broad category assigned based on the basis of densities recorded in Ramohia (2006) and Reef Check (2005-2012)*	Neo *et al.* (2017)
2019	Across Guadalcanal, Malaita, Western, Isabel, Makira Ulawa, Temotu, Central Islands, Rennel Bellona and Choiseul Provinces	189 out of 303 stations (62%)	104 ind./ha	Tua and Schwarz (2021)

Tridacna noae/Tridacna ningaloo: Neo *et al.* (2017) regarded *T. noae* as "frequent" across the Solomon Islands, providing a density estimate of 10^{-3}–10^{-4}/m^2 (10–100 ind./ha) based on densities recorded in Ramohia (2006) and Reef Check (2005-2012).

Tridacna squamosa: Available density estimates for *T. squamosa* in the Solomon Islands are summarised in Table 3.4.7. Govan (1988), Hviding (1993), Wells (1997) and Ramohia (2006)

considered *T. squamosa* to be widespread in the country. In Rapid Ecological Assessment surveys in the Solomon Islands, where approximately one hectare was surveyed in each of 59 locations in the main island group, Turak (2006) found *T. squamosa* to be the most common Tridacnidae species, along with *T. maxima*. However, average recorded densities in Ramohia (2006), as well as in Ramohia (2004), were considered very low compared to other similar studies. In the Marovo Lagoon in Western Province, *T. squamosa* was found to occur in low numbers, but no density estimate was provided (Kinch *et al.*, 2006).

Neo *et al.* (2017) regarded *T. squamosa* as "abundant" across the Solomon Islands, and considered the country to have relatively good stocks of *T. squamosa* compared to other island states of the Pacific Region. However, it was noted that, overall, lower densities have been reported from more recent surveys (Neo *et al.*, 2017). The most recent data presented in the Solomon Island's draft NDF, from surveys across six provinces completed in 2019, showed that *T. squamosa* was present at 62 out of 303 stations (20%), with an overall mean density of 17 ind./ha (Tua and Schwarz, 2021). This was considered to be below the healthy density reference point outlined in Pakoa *et al.* (2014) of 20–30 ind./ha; however, it was noted that there were some stations at which the species was present in healthy densities above the reference point (Tua and Schwarz, 2021). The overall mean density of the species was found to have increased compared to surveys at three of the same provinces in 2006, but the proportion of individuals in a larger size class had decreased (Tua and Schwarz, 2021), indicating that offtake pressure may have affected population structure.

Table 3.4.7: Density estimates for *T. squamosa* in the Solomon Islands.

Year	Location	Percentage occurrence (if available)	Estimate	Source
2004	66 sites in the main island group	67% of shallow sites, and some deep sites.	15 ind./ha	Ramohia (2006)
	Maravaghi MPA		0-33 ind./ha	Ramohia *et al.* (2005a)
	Marapa and Simeruka MPAs in Marau Sound		<2 ind./ha (5 individuals)	Ramohia (2004)
2004-2012	Solomon Islands		100–10 000 ind./ha* ** Broad category assigned based on the basis of densities recorded in Ramohia (2006) and Reef Check (2005-2012)*	Neo *et al.* (2017)
2019	Across Guadalcanal, Malaita, Western, Isabel, Makira Ulawa, Temotu, Central Islands, Rennel Bellona and Choiseul Provinces		17 ind./ha	Tua and Schwarz (2021)

Threats: In the Solomon Islands, *Tridacna* spp. were reported to have an important role in subsistence and small-scale fisheries (Pauku and Lapo, 2009; Tua and Schwarz, 2021), and were reported to be often used as ceremonial food and food for feasts (Hviding, 1993). All species are used for subsistence, with *T. crocea* considered to be the most important species used for this purpose; however, a lack of regulations on subsistence harvesting was considered by Green *et al.*, (2006) to be a particular threat to the larger species, *T. derasa* and *T. gigas*. Ramohia (2006) found evidence of possible Tridacnidae overfishing for subsistence purposes in marine surveys conducted within the Solomon Islands in 2004. Kinch *et al.* (2006) noted that there were signs of over-exploitation even in those communities where Tridacnidae species were not consumed due to religious reasons, presumably due to local demand from the capital city Honiara's hotels and restaurants. A questionnaire survey conducted in Bellona Island by Thaman *et al.* (2010) found that Tridacnidae were becoming "increasingly rare because of overexploitation and tropical cyclones", but the study did not specify whether the main cause of overexploitation was considered to be commercial or subsistence fishing.

Large-scale commercial harvesting of *Tridacna* spp. was reported to have taken place in Solomon Islands during the 1970s-1980s, reaching a peak catch of about 10.2 tonnes of adductor muscle for export in 1983; these harvesting rates were considered to represent "overfishing of severely depleted populations" (Pauku and Lapo, 2009). Neo *et al.* (2017) noted that, despite legislation forbidding commercial-scale harvest and international export (the possession, sale, trade and export of wild *Tridacna* spp. was prohibited under Fisheries Regulation 1996 Legal Notice (LN) 3/1996 in combination with the 1998 Fisheries Act; see *Management* section), "official records" from the Solomon Islands demonstrated trade in large quantities of some live clams and shells, the majority of which were *T. crocea* and *T. derasa*. Over the most recent 10-year period (2010-2019), direct commercial trade in wild-sourced *Tridacna* spp. was reported in Parties' annual reports to CITES for the years 2010-2015, including 590 live clams, 639 bodies, and 2965 shells as reported by the Solomon Islands. Live clams were reported by Solomon Islands for *T. crocea* and *T. derasa*, whereas trade in shells was reported for *T. gigas* and at the genus level (see *Trade* section for additional details).

Trade: The Solomon Islands published a genus-level zero quota for wild-taken *Tridacna* spp. specimens in 2013, 2014 and 2015; no quotas have since been issued. Note that the 2015 quota did not reflect the recommendation by the Animals Committee in 2014 (AC27) to extend the zero export quota in place to refer to specimens of *Tridacna* spp. of all source codes (see AC27 Doc. 12.3). According to exporter-reported data, the quota for wild-sourced individuals appears to have been exceeded in 2014 and 2015; importers did not report wild-sourced trade in these years (Table 3.4.8).

Table 3.4.8: CITES export quotas published for wild-sourced *Tridacna* spp. from the Solomon Islands, 2013-2015, and global direct exports as reported by the Solomon Islands over this period (specified for each taxon reported in trade). No quotas were published in 2010-2012 or since 2015. Hyphens indicate that there was no direct trade reported by importers 2013-2015.

Wild-taken specimens	Taxon	2013	2014	2015
Genus-level quota		0	0	0
Reported by exporter	*Tridacna crocea*		59	
	Tridacna derasa		54	
	Tridacna spp.			2050
Reported by importer	-	-	-	-

According to the CITES Trade Database, direct trade from the Solomon Islands 2010-2019 was reported in *Tridacna crocea*, *T. derasa*, *T. gigas*, *T. maxima*, *T. squamosa*, and *Tridacna* spp (Table 3.4.9). Across all species of *Tridacna*, direct trade in wild-sourced clams from the Solomon Islands over this period predominantly consisted of 590 live clams, 639 bodies, and 3025 shells according to the Solomon Islands (638 live clams and 2276 shells according to importers). A total of 5659 captive-bred

live clams were also exported according to the Solomon Islands (7112 by importers). All direct trade in *Tridacna* over this period was reported between 2010-2015 (i.e. prior to the recommendation to suspend trade), with the exception of 58 shells reported by the Solomon Islands in 2019 for personal purposes (exported to Australia, New Zealand, United States, and the Netherlands) that were traded in apparent contravention of the trade suspension. The United States of America was the main importer of *Tridacna* from Solomon Islands between 2010 and 2019, accounting for ~98% of live clam imports according to the Solomon Islands and importers, and all of the shells reported by importers.

When considering wild-sourced trade only, the most highly traded species as reported by the Solomon Islands were *T. derasa* (mostly traded as 530 live clams), *T. gigas* (915 shells), and *T. squamosa* (536 bodies); an additional 2108 wild-sourced shells were also reported at the genus level which accounted for 70% of shells reported over this period (Table 3.4.9). The most highly traded species across all sources was *T. derasa*, for which trade consisted primarily of 5659 captive-bred live clams exported for commercial purposes according to the Solomon Islands (7111 clams as reported by importers).

The Solomon Islands' CITES annual reports for 2015, 2016, and 2019 were submitted in an aggregated format without export permit numbers, providing total quantities and a list of countries of destination for each species/term/purpose/source combination. This affected reporting of the 2050 and 58 wild-sourced shells reported at the genus level by the Solomon Islands in 2015 and 2019, respectively; the specific quantities traded to each importer were not specified, and thus the importers for these data are represented as 'various' in the CITES Trade Database.

Indirect trade in *Tridacna* from the Solomon Islands over the period 2010-2019 predominantly consisted of live *T. derasa* traded for commercial purposes, totalling 345 live clams as reported by exporters and 587 according to importers (Table 3.4.10). According to exporters, 179 live *T. derasa* (52% of live trade) were wild-sourced with the remainder captive-bred, whereas importers reported 517 live *T. derasa* (88%) as wild-sourced with the remainder captive-bred (7%) and pre-Convention (6%). All live *T. derasa* were re-exported by the United States, mostly to Mexico (predominantly wild-sourced) and Canada (primarily captive-bred). Re-exports of *T. gigas* were also reported in the 10-year period, which was traded mostly as wild-sourced (20%) and pre-Convention (80%) carvings re-exported by France. Low levels of indirect trade in shells were also reported for both *T. derasa* and *T. gigas* over this period.

Table 3.4.9: Direct exports of *Tridacna* spp. from the Solomon Islands. Hyphens indicate years for which exporter CITES annual reports have not yet been received.

Taxon	Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Tridacna crocea	live	-	T	W	Exporter		-	-		59			-	-		59
					Importer											
	shells	-	T	W	Exporter		-	-					-	-		
					Importer	177										177
	specimens	-	S	W	Exporter		-	-					-	-		
					Importer	20										20
Tridacna derasa	live	-	T	C	Exporter	5659	-	-					-	-		5659
					Importer	7101	10									7111
				F	Exporter		-	-					-	-		
					Importer	100	1									101
				I	Exporter		-	-					-	-		
					Importer	27										27
				W	Exporter	476	-	-		54			-	-		530
					Importer		638									638
	shells	-	P	W	Exporter	2	-	-					-	-		2
					Importer											
			T	W	Exporter		-	-					-	-		
					Importer	23	158									181
Tridacna gigas	bodies	-	T	W	Exporter	103	-	-					-	-		103
					Importer											
	derivatives	-	T	W	Exporter	30	-	-					-	-		30
					Importer											
	shells	-	T	W	Exporter	915	-	-					-	-		915
					Importer	668	38									706
Tridacna maxima	live	-	T	C	Exporter		-	-					-	-		
					Importer	1										1
				W	Exporter	1	-	-					-	-		1
					Importer											
	specimens	-	S	W	Exporter		-	-					-	-		
					Importer	30										30
Tridacna spp.	shells	-	P	W	Exporter		-	-					-	-	58	58
					Importer											
			T	W	Exporter		-	-			2050		-	-		2050
					Importer											

Taxon	Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Tridacna squamosa	bodies	-	T	W	Exporter	536	-	-					-	-		536
					Importer											
	shells	-	T	W	Exporter		-	-					-	-		
					Importer	1106	106									1212
	specimens	-	S	W	Exporter		-	-					-	-		
					Importer	30										30

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Table 3.4.10: Indirect exports of *Tridacna* originating from the Solomon Islands, 2010-2019.

Taxon	Term	Unit	Purpose	Source	Reported by	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Tridacna derasa	live	-	T	C	Exporter	166										166
					Importer		40									40
				O	Exporter											
					Importer		30									30
				W	Exporter	121	20	38								179
					Importer	289	162	66								517
	shells	-	T	W	Exporter			9								9
					Importer											
Tridacna gigas	carvings	kg	P	O	Exporter	0.3		2	47							49.3
					Importer											
			T	W	Exporter				12							12
					Importer											
	shells	-	P	W	Exporter			1								1
					Importer			1								1
			T	O	Exporter											
					Importer								1			1
				W	Exporter			7								7
					Importer	4										4

Source: CITES Trade Database, UNEP-WCMC, Cambridge, UK, downloaded on 21/09/2021

Management:

Legislation: The possession, sale, trade and export of wild *Tridacna* spp. was reported to have been previously prohibited under Fisheries Regulation 1996 Legal Notice (LN) 3/1996, Protection of Wild Clams (AC27 Doc. 12.3) in combination with the 1998 Fisheries Act and the Fisheries Management Act 2015 that subsequently replaced it (AC27 Doc 12.3; Tua and Schwarz, 2021). Although it is unclear if the Fisheries Regulation 1996 Legal Notice (LN) 3/1996 has since been repealed, the Fisheries Management (Prohibited Activities Regulations 2018) states that the sale, purchase or export of clam meat or clam products of the genus *Tridacna* and *Hippopus* not under a management plan is prohibited. Trade and export of farmed specimens was reported to still be allowed (Solomon Islands, 2009); the draft NDF provided by the Solomon Islands also notes that the ban does not cover "aquaculture clams" (Tua and Schwarz, 2021). Subsistence harvesting was reported to be exempted from restrictions where taboos or Community Based Fisheries Management rules are implemented, under the Fisheries Management Act 2015 (Tua and Schwarz, 2021).

From 2006 to 2015, some companies were permitted under the discretionary authority of the Ministry of Fisheries and Marine Resources Director (Scientific Authority) to trade 'empty clam shells' under a quota system that did not distinguish by species (Tua and Schwarz, 2021). No exports of *Tridacna* spp. were reported to have been approved after 2015 (Tua and Schwarz, 2021); however, see section above on *Trade*.

A new Fisheries Management Plan for *Tridacna* spp. was implemented on 4th February 2021 (Solomon Islands Gazette, 2021), with the purpose of enabling "a limited export trade of clam shells under a licensing system" (Fisheries Management Plan (Tridacna and Hippopus Clams) 2020). This legislation states that there may only be three licences for the export of clams in operation at any one time; that licences must only be issued providing that an adequate non-detriment finding for the clam species has been obtained; and that the export is indicated to be sustainable. Licences may also implement harvesting conditions, such as size limits or maximum quotas (Fisheries Management Plan (Tridacna and Hippopus Clams) 2020), and an onsite assessment to verify suppliers' stock is required (Tua and Schwarz, 2021).

The draft NDF provided by the Solomon Islands noted that public awareness campaigns had been put in place to inform coastal communities of the new fisheries regulations (Tua and Schwarz, 2021). The programs were focused on informing communities of the importance of conservation and management of clam fisheries; data from the Ministry of Fisheries and Marine Resources enforcement and compliance office was reported to show a decline in local sale of wild harvested clams, suggesting that these campaigns had seen signs of success (Tua and Schwarz, 2021).

The CITES national legislation project currently classifies the Solomon Islands as a Category 1 Party (Parties that have legislation that is believed generally to meet the requirements for the implementation of CITES).

Subsistence harvest management: Green *et al.* (2006) noted that, although subsistence harvesting was not regulated in the Solomon Islands, local, traditional management practices were practiced in some areas. These were reported to include temporal and spatial fishing restrictions stemming from traditional taboos (Kinch *et al.*, 2006; Tua and Schwarz, 2021), as well as the establishment of clam gardens near communities (Tua and Schwarz, 2021). Further details of these measures, including the locations where they are currently implemented, could not be located; Tua and Schwarz (2021) noted that some of these measures had had conservation benefits, but that measures had worked better in some areas than others.

Mariculture: The Solomon Islands was previously one of the world's largest producers of cultured clams (Teitelbaum and Friedman, 2008); between 1997-2001, for example, over 60 000 Tridacnidae

specimens (consisting of *T. gigas*, *T. derasa*, *T. squamosa*, *T. maxima*, *T. crocea* and *Hippopus hippopus*) were reported to have been exported from 25 village farms (Ministry of Fisheries and Marine Resources, 2009). *T. crocea* and *T. derasa* appear to have been the principal species cultured, grown in coastal village communities for the food and aquarium trade (Hean and Cacho, 2002); in 2010, pilot hatcheries were also reported to have been set up for *T. gigas* and *T. derasa* to supply the marine aquarium trade (Kinch and Teitelbaum, 2010). Recently, however, Mies *et al.* (2017) and Neo *et al.* (2017) reported that mariculture operations had been shut down as long distances from the markets had caused operations to no longer be cost effective; this was confirmed by the Solomon Islands in 2014 (AC27 Doc. 12.3). Mariculture therefore does not currently appear to be carried out in the country.

Protected areas: Tridacnidae spp. have been recorded, *inter alia,* in the Arnavon Marine Conservation Area (Lovell *et al.*, 2004), the Marapa and Simeruka MPAs in Marau Sound, Central Province (Ramohia, 2004), the Sisili and Taburu MPAs in Ngella (Ramohia *et al.*, 2005a) and the Maravaghi MPA in Ngella in the Central Province (Ramohia *et al.*, 2005a).

Progress on recommendations: Table 3.4.11 shows a summary of progress towards the recommendations issued to the Solomon Islands at AC26 and SC65, based on information submitted by the MA of the Solomon Islands *in litt.* to UNEP-WCMC, 2021.

Table 3.4.11 Recommendations and deadlines regarding ***Tridacna derasa, T. crocea, T. gigas, T. maxima*** and ***T. squamosa*** from the Solomon Islands issued at AC26 and SC65, summary of the response received from the Solomon Islands where provided , determination of implementation and actions recommended by the Secretariat and Chair of the Animals Committee, and updated determination of implementation on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions as well as information from literature. Note: recommendations apply to all species except for recommendation f), which applied only to *T. derasa*.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
AC26/ Within 90 days (by 22 June 2012)	a) Clarify to the Secretariat the legal status of the species in the Solomon Islands and inform the Secretariat whether present policy or legislation allows for the export of wild-taken specimens of the species	– Trade in wild clams was reported to be prohibited and regulated under Fisheries Regulation 1996 Legal Notice (LN) 3/1996, Protection of Wild Clams, which read "Any person who has in his possession for sale, sells or buys or exports any clam meat or the product of clams of the genus *Tridacna* and *Hippoppus* harvested from the wild, shall be guilty of an offence and liable to a fine of one hundred dollars or to imprisonment for three months or to both such fine and imprisonment". – The Regulation was therefore considered to constitute a management measure restricting any exports and local sales of wild-taken specimens of *Tridacna* spp. from and within Solomon Islands. – Legal Notice (LN) 3/1996 was not noted to have been amended and to still be in force. This Regulation was reported to have been	Recommendation a) was considered to have been complied with.	An updated overview of legislation is included in the draft NDF provided by the Solomon Islands in response to the consultation on the RST; this states that the Fisheries Management (Prohibited Activities and Amendments) Regulations 2018 prohibits the sale, purchase or export of clam meat of clam products of the genus *Tridacna* and *Hippopus* not under a management plan (see *Management* section). Subsistence harvesting was reported to be exempted from restrictions where taboos or Community Based Fisheries Management rules are implemented, under the Fisheries Management Act 2015.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
AC26/ Within 90 days (by 22 June 2012)	*a) continued*	introduced following the unsustainable harvest of these species in the country in the past.		
	b) Establish immediately a zero export quota for wild-taken specimens	This Recommendation was no longer considered relevant by the Solomon Islands because of the validity of Legal Notice (LN) 3/1996 protection of Wild Clams.	As a consequence of the existing prohibition to export wild specimens of *Tridacna* spp. from the Solomon Islands this recommendation was no longer considered relevant.	Trade in wild-caught *Tridacna* spp. was reported to remain prohibited with the exception of products under a management plan and subsistence harvest (see response above to *recommendation a).* However, the 2020 management plan for *Tridacna* and *Hippopus* clams notes that "a limited export trade of clam shells" is intended and the draft NDF relates to export of dead clam shells. The trade suspension makes this recommendation superfluous, but it should be noted that 58 wild-sourced clam shells were exported in 2019 in contravention of the suspension.
	c) Provide to the Secretariat the justification for, and details of, the scientific basis by which it has been established that any exports will not be detrimental to the survival	This Recommendation was no longer considered relevant by the Solomon Islands because of the validity of Legal Notice (LN) 3/1996 protection of Wild Clams.	As a consequence of the existing prohibition to export wild specimens of *Tridacna* spp. from the Solomon Islands this recommendation was no longer considered relevant.	As the 2020 management plan for *Tridacna* and *Hippopus* clams states that "a limited export trade of clam shells" is intended, this recommendation is once more relevant. Given that (1) *Tridacna* spp. populations are reported to remain below healthy population thresholds in the Solomon Islands, that (2) the average size of individuals is in decline

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
AC26/ Within 90 days (by 22 June 2012)	of the species and are in compliance with Article IV, paragraphs 2 (a) and 3			(see *Population status and trends* section), and (3) a lack of clarity on how the Solomon Islands assessed trade in dead clam shells to be non-detrimental (see *Management* section), it is not considered that this recommendation has been fulfilled.
	d) Provide details to the Secretariat of the methods and facilities used to produce *Tridacna* spp. in captivity, and current and anticipated levels of production	It was reported that the World Fish Centre had established a breeding facility for *Tridacna* spp. in the western part of the country to supply certain farmers with aquarium-size specimens.	Recommendation d) was considered partially complied with, although it was noted that the Management Authority did not provide details on production levels of *Tridacna* spp. in captivity, as recommended.	No information was included in the draft NDF provided by the Solomon Islands regarding current and anticipated production of captive *Tridacna* spp., however in 2014 the Solomon Islands reported that there were no facilities in operation that produced *Tridacna* spp. in captivity. This recommendation may therefore no longer be relevant.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
	e) Initiate measures to ensure that descriptions on all CITES permits are standardized so that trade is only permitted at the species level and that, in compliance with Resolution Conf. 12.3 (Rev. CoP15), Section XIV, paragraph e), trade ceases to be reported or permitted at higher taxon levels (genus or family)	The New Zealand government, through the Department of Conservation, was noted to have been very helpful to the Management Authority of Solomon Islands over the past several years by providing technical and financial support for effective implementation of CITES in the Solomon Islands. During a high level meeting in Honiara in December 2012, the New Zealand government offered to assist Solomon Islands to review and subsequently draft new CITES implementing legislation for the country to replace the Wildlife Protection and Management Act 1998. – Drafting of the new legislation was considered by the Solomon Islands to ensure that the Solomon Islands' permitting system would fully comply with CITES requirements; this was expected to commence in the second quarter of 2013.	The implementation of recommendations e) and f) was noted to be related to the development of a new permitting system and legislation, which at the time was ongoing.	From 2010-2014, all exports of *Tridacna* spp. reported by the Solomon Islands were identified at species level. However, exports since 2015 (2050 wild-sourced shells in 2015 and 58 wild-sourced shells in 2019) were reported at genus level. The Solomon Islands' CITES annual reports for 2015, 2016 and 2019 were submitted in an aggregated format without export permit numbers, providing total quantities and a list of countries of destination for each species/term/purpose/source combination. This affected reporting of the shells reported at the genus level in 2015 and 2019; the specific quantities traded to each importer were not specified, and thus the importers for these data are represented as 'various' in the CITES Trade Database. Recommendation e) is therefore not yet considered to have been met.
	f) Ensure that appropriate units are recorded on permits for trade in specimens of *Tridacna* spp., namely to record meat in kilograms, live			A joint unit/description column was included in CITES annual report submissions for 2013 and 2014 and units were specified for the majority of records. However it is still recommended that columns for trade term codes and unit

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
	specimens by number, and shells by number of pieces (weight as secondary unit).			codes are reported separately, and that three-character unit codes are reported (as outlined in Notification to the Parties 2021/044 Annex 1 *Guidelines for the preparation and submission of CITES annual reports*). The CITES annual reports submitted by the Solomon Islands in 2015, 2016, and 2019 did not include unit columns; the reported trade in *Tridacna* shells in 2015 and 2019 was assumed to be in number of pieces. Recommendation f) is therefore not yet considered to have been met.
AC26/ Within 180 days (by 20 September 2012)	g) Ensure that specimens produced from captive production systems are distinguished in trade from genuine wild harvested specimens, that separate export quotas are established and that, with the assistance of Secretariat, source codes appropriate to the	– See replies to recommendation a).	As a consequence of the existing prohibition to export wild specimens of *Tridacna* spp. from the Solomon Islands, this recommendation was no longer considered relevant.	No information was included in the draft NDF provided by the Solomon Islands regarding current and anticipated production of captive *Tridacna* spp.; however, in 2014 the Solomon Islands reported that there were no facilities in operation that produced *Tridacna* spp. in captivity. This recommendation may therefore no longer be relevant.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
	production system are used on CITES permits.			
AC26/ Within 2 years (by 24 March 2014)	h) Prepare, adopt and implement a fishery management plan for *Tridacna* spp. which should include the following: i) stock assessments of clam populations subject to harvest including estimates of abundance, distribution and age/size classes; ii) adaptive management measures including sustainable catch and export quotas based on monitoring of fishery-dependent and fishery-independent data including catch and effort data and a long-term population monitoring programme;	No response provided	This recommendation was not considered to have yet been implemented, but it was noted that it may not be relevant if the Solomon Islands' regulations for trade in *Tridacna* spp. remained in effect.	A Fisheries Management Plan 2020 for *Tridacna* and *Hippopus* Clams was adopted on 4 February 2021. i) While the fisheries management plan itself does not include a stock assessment, details of density surveys carried out across six provinces in the Solomon Islands were provided in the draft NDF provided in response to the consultation on the RST. ii and iii) The management plan states that an assessment must be made in the harvest areas proposed to ensure that harvesting of clams in that area is sustainable; export licences may additionally not be issued without conditions, including size limits and quotas, to ensure that exports in specified areas are sustainable. However, detail was not provided within the draft NDF provided by the Solomon Islands on what specific size limits or quotas were proposed to be issued, the scientific criteria upon which these would be based, or the proposed data

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
AC26/ Within 2 years (by 24 March 2014)	iii) appropriate regulatory measures, such as limited entry, licensing of fishermen, size limitations, fishing seasons and no take zones, compatible with any customary systems of marine tenure, and ensure sufficient provisions for the enforcement of such regulations; and iv) measures to enable the recovery of depleted populations, including re-stocking with hatchery produced specimens and restoring population densities to enable effective reproduction.			to be used to assess whether trade remains sustainable. iv) no information regarding recovery and re-stocking was provided in either the management plan or in the draft NDF provided by the Solomon Islands. This recommendation is considered to be partially fulfilled; however, key data gaps remain regarding the management measures proposed to be in place to ensure trade is sustainable, as well as the fishery-dependent and fishery-independent data that will be used to underpin them.
	i) The management plan and supporting evidence of implementation should	No response provided	This recommendation was not considered to have yet been implemented, but it was	It is unclear if the Fisheries Management Plan 2020 for *Tridacna* and *Hippopus* Clams has been submitted to the Secretariat for validation.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
AC26/ Within 2 years (by 24 March 2014)	be supplied to Secretariat for validation.		noted that it may not be relevant if the Solomon Islands' regulations for trade in *Tridacna* spp. remained in effect.	
	j) Based on the management plan, establish precautionary export quotas, separately for wild and captive-produced specimens (if export of wild specimens is permitted), on a species-specific basis	No response provided	This recommendation was not considered to have yet been implemented, but it was noted that it may not be relevant if the Solomon Islands' regulations for trade in *Tridacna* spp. remained in effect.	The management plan states that export licences may not be issued without conditions, including quotas, to ensure that exports in specified areas are sustainable. However, detail was not provided within the draft NDF provided by the Solomon Islands on what specific quotas were proposed to be issued, the scientific criteria upon which these would be based, or the specific data proposed to be used to assess whether trade remains sustainable.
SC65 (no deadline provided)	i) the zero export quota in place for the Solomon Islands should be extended to refer to specimens of *Tridacna* spp. of all source codes and that the Solomon Islands be reminded that	No response provided		This recommendation was issued in 2014; however, a genus level zero-quotas for *Tridacna* spp. issued by the Solomon Islands in 2015 was for wild-taken specimens only. No quotas have since been issued; this recommendation has therefore not been fulfilled.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
SC65 (no deadline provided)	the zero export quota for *Tridacna* spp. of wild origin applies to all specimens, including "dead clam shells";			
	ii. the Solomon Islands, prior to allowing the export of "dead clam shells", provide information to the Secretariat on: the number of shells of each species to be exported; the source of the shells; the period over which the exports might take place; and ,for wild-sourced specimens, the means by which it was determined that the export would be non-detrimental to the species concerned, in compliance with Article IV, paragraphs 2 (a) and 3. The Secretariat should seek the approval of the Standing Committee	No response provided		Neither the Fisheries Management Plan 2020 for *Tridacna* and *Hippopus* Clams or the draft NDF provided by the Solomon Islands provide detailed information on the number of shells of each species to be exported; the source of the shells; the period over which the exports might take place; and, for wild-sourced specimens, the means by which it was determined that the export would be non-detrimental to the species concerned, in compliance with Article IV, paragraphs 2 (a) and 3. This recommendation is therefore not considered to have been fulfilled.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
SC65 (no deadline provided)	before any exports can takes place and, as appropriate, amend the information on trade in *Tridacna* spp. from the Solomon Island on the CITES website.;			
	iii. the Solomon Islands be asked to clarify its future intentions regarding the establishment of captive production systems for *Tridacna* spp., and if any measures would be put in place to distinguish wild-taken from captive-bred specimens; and	No response provided		No information was included in the draft NDF provided by the Solomon Islands regarding current and anticipated production of captive *Tridacna* spp., however in 2014 the Solomon Islands reported that there were no facilities in operation that produced *Tridacna* spp. in captivity. This recommendation may therefore no longer be relevant.
	iv. the Solomon Islands be asked if it envisages developing fishery	No response provided		A Fisheries Management Plan 2020 for *Tridacna* and *Hippopus* Clams was published on 4 February 2021; this recommendation has therefore been fulfilled.

Meeting at which recommendations were issued and recommendation deadline	Recommendation	Summary of response from the Solomon Islands (based on AC27 Doc. 12.3 and SC65 Doc. 26.1)	Determination of implementation and actions recommended by the Secretariat and AC Chair (based on AC27 Doc. 12.3)	Updated determination of implementation of recommendations, on the basis of the Solomon Islands' response to the UNEP-WCMC consultation on long-standing suspensions, as well as information from literature
	management plans for *Tridacna* spp.			
	v. the Secretariat should report on the responses from Solomon Islands at the next regular meeting of the Standing Committee.	No response provided		Recommendation was implemented; see SC66 Doc 31.1
	vi.The Secretariat should issue a Notification to the Parties to state that no ranching or captive breeding of *Tridacna* species currently takes place in Solomon Islands and that, until further notice from the Secretariat, Parties should not authorize the importation of specimens from these sources from Solomon Islands	No response provided		It is unclear if this notification was issued.

Challenges faced and identification of needs: A CITES Regional Workshop conducted in 2009 that aimed to ensure the ecological, social and economic sustainability of Tridacnidae fisheries (Kinch and Teitelbaum, 2010) outlined the following challenges in the Solomon Islands and in the Pacific region more generally:

> (1) a lack of capacity for i) conducting stock assessments, ii) promoting giant clam culture, iii) enforcing harvesting regulations and iv) managing and monitoring harvests;
>
> (2) a lack of capacity for implementation and enforcement of CITES, and
>
> (3) a lack of education and awareness.

Furthermore, the Secretariat of the Pacific Regional Environmental Programme and Environmental Defenders Office (2018) considered that one of the difficulties of addressing environmental issues in the Solomon Islands was the need to accommodate traditional practices and local management alongside formal environmental regulation. It was suggested that improvements in the management of Tridacnidae in the Pacific region could include strengthening legislation at the national level and producing National Giant Clam Management Plans in each Pacific Island Country and Territory (PICT), where these are currently lacking (Kinch and Teitelbaum, 2010).

Notable progress in the Solomon Islands in addressing these challenges includes the newly adopted CITES legislation and the Solomon Islands' status as a Category 1 country in the CITES National Legislation project, as well as the adoption of the Fisheries Management Plan 2020 for *Tridacna* and *Hippopus* Clams. Tua and Schwarz (2021) additionally reported progress towards increased enforcement, stating that there are sufficient responsible officers employed by the Ministry of Fisheries and Marine Resources to enforce fisheries legal instruments, and that the Management Authority also used local rangers associations to protect species from illegal harvesting (Tua and Schwarz, 2021).

However, there are a number of key information gaps regarding the management strategy to be adopted for *Tridacna* spp. going forward, including:

(1) Whether the three licences outlined in the Fisheries Management Plan (Tridacna and Hippopus Clams) 2020 would allow the export of *Tridacna* from all sources, including wild-sourced specimens.

(2) Whether these licences will include only dead clam shells produced as by-products for subsistence harvesting, or whether they will include clams that were primarily harvested in order to export their shells.

(3) What monitoring measures will be used to establish that quotas and size limits are appropriate and non-detrimental.

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Trade in 58 shells for personal purposes was reported by Solomon Islands in 2019 in apparent contravention of the trade suspension; these shells were reported as exports to Australia, New Zealand, United States, and the Netherlands.

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Annex 1

Table 3.4.12: Species specific data on size, annual growth rates, reproductive parameters and habitat preferences of *Tridacna* spp.

Species	Length and weight	Annual growth rate	Reproductive parameters	Habitat	Depth	Sources
T. crocea	11cm, max 15 cm	Year1: 2 cm Years 2 and 3: 1.5 cm After year 3 the growth rate is reported to decline.	No information located.	Usually found deeply burrowed in coral substrate, in lagoons that experience runoff of fresh water. Appears to be well adapted to lower salinity levels.	From shallow water, up to 20 m depth in clear water.	Hamner and Jones, 1976; Hart *et al.*, 1998; Kinch and Teitelbaum, 2010
T. derasa	50 cm, max 60 cm	No information located.	Maturity as male: 5 years. Maturity as hermaphrodite: 10-11 years.	Outer edge areas of coral reefs.	From shallow water, up to 20 m.	Raymakers *et al.*, 2003; Kinch and Teitelbaum, 2010
T. gigas	80 cm, max 137 cm 260 kg	Mean growth rates of 4.1 mm per month. Fastest-growing Tridacnidae species. May reach 50 cm length and 6 kg flesh weight in 5–7.5 years.	Maturity as male: 2-3 years, 37 cm shell length. Maturity as hermaphrodite: 10 years. An individual of 70-80 cm shell length may produce up to 40 million eggs.	Sandy bottoms or coral rubble on shallow lagoons and coral reef flats.	No information located.	Pernetta, 1987; Munro, 1993; Bell *et al.*, 1997; Tervo and Csomos, 2001; Kinch, 2002: 20; Kinch and Teitelbaum, 2010; Larson, 2016
T. maxima	25 cm, max 35–40 cm	8–11 mm per year in the juvenile stages, becoming slower and stochastic in the older individuals.	Maturity as male and hermaphrodite: 2 years. Minimum density for successful recruitment: 60–100 adult ind./ha.	Lagoons and seaward reefs, burrowed into coral and rubble. Sometimes also found on sandy beds.	From shallow water, up to 20 m.	Newman and Gomez, 2000; Raymakers *et al.*, 2003; Apte *et al.*, 2004; Kinch and Teitelbaum, 2010

T. noae/T. ningaloo	6–20 cm, max 28 cm (*T. noae*)	No information located.	No information located.	Burrowing species. Similar habitats to *T. maxima.*	1–15 m, maximum 20 m.	Su *et al.*, 2014; Neo *et al.*, 2017, 2018
T. squamosa	30 cm, max 40–45 cm	No information located.	Maturity as male: 4 years. Maturity as hermaphrodite: 6 years.	Often found attached to the surface of coral reefs, preferring protected habitats.	From shallow water, up to 20 m.	Raymakers *et al.*, 2003; Kinch and Teitelbaum, 2010