CONVENCIÓN SOBRE EL COMERCIO INTERNACIONAL DE ESPECIES AMENAZADAS DE FAUNA Y FLORA SILVESTRES

Sesiones conjuntas de la 33ª reunión del Comité de Fauna y
de la 27ª reunión del Comité de Flora
Ginebra (Suiza), 12 - 13 de julio de 2024

Conservación y comercio de especies

Evaluación de las especies incluidas en el Apéndice I

INFORME DE LA SECRETARÍA

1. Este documento ha sido preparado por la Secretaría.

2. En su 19ª reunión (CoP19, Ciudad de Panamá, 2022), la Conferencia de las Partes adoptó las Decisiones 19.184 y 19.185, sobre *Evaluación de las especies incluidas en el Apéndice I*:

Dirigida a la Secretaría

19.184 *La Secretaría deberá:*

a) en consulta con los Estados del área de distribución pertinentes y los expertos pertinentes, elaborar evaluaciones detalladas sobre el estado de conservación, las amenazas, las repercusiones del comercio legal e ilegal, las estrategias de conservación in situ y ex situ en curso o los planes de recuperación y la financiación/recursos disponibles o necesarios para al menos las diez especies incluidas en el Apéndice I de las enumeradas en el cuadro del párrafo 15 del documento CoP19 Doc. 11, y otras; y

b) presentar un informe, que incluya esas evaluaciones, y recomendaciones sobre posibles acciones dentro del mandato de la CITES que puedan contribuir a la aplicación de la Visión Estratégica 2021-2030 de la CITES *y vincularse a cualquier marco de seguimiento de la biodiversidad mundial que pueda adoptarse como parte de un* Marco Mundial de la Biodiversidad posterior a 2020 *con un proyecto de recomendaciones, para su examen por los Comités de Fauna y de Flora.*

Dirigida a los Comités de Fauna y de Flora

19.185 *Los Comités de Fauna y de Flora deberán:*

a) examinar el informe y el proyecto de recomendaciones preparados por la Secretaría en virtud del párrafo a) de la Decisión 19.184;

b) teniendo en cuenta el párrafo a) de esta decisión, el documento informativo AC31 Inf.6/ PC25 Inf.8 *y las sugerencias del documento AC31/PC25 Com. 1 (Rev. por Sec.) y su Anexo, perfeccionar la metodología y sus criterios para realizar una evaluación de las especies incluidas en el Apéndice I que podrían beneficiarse de las medidas adoptadas por la Conferencia de las Partes; y*

c) formular recomendaciones, según proceda, para su comunicación a los Estados del área de distribución y su consideración en la 20ª reunión de la Conferencia de las Partes.

3. En la 26ª reunión del Comité de Flora (PC26; Ginebra, junio de 2023) y la 32ª reunión del Comité de Fauna (AC32; Ginebra, junio de 2023), los Comités abordaron el documento PC26 Doc. 25 / AC32 Doc. 26 y establecieron un grupo de trabajo conjunto entre reuniones (véanse las actas resumidas PC26 SR y AC32 SR). El grupo de trabajo entre reuniones informa sobre la aplicación de su mandato en el documento PC27 Doc. 23.2 / AC33 Doc. 28.2.

4. De conformidad con el párrafo a) de la Decisión 19.184, la Secretaría realizó evaluaciones detalladas sobre las 10 especies enumeradas en el párrafo 15 del documento CoP19 Doc. 11. Las 10 especies se eligieron basándose en:

   a) las clasificaciones de los tres métodos de puntuación de la evaluación rápida (mostradas en el documento informativo AC31 Inf. 6 / PC25 Inf. 8; la clasificación de cada especie se muestra entre paréntesis después del nombre de la especie en el Figura 1 *infra*);

   b) el cuadrante en el que entra la especie basándose en el sistema de reclasificación propuesto por México en la reunión conjunta de la 31ª reunión del Comité de Fauna y la 25ª reunión del Comité de Flora (AC31/PC25, en línea, mayo-junio de 2021; cuadrantes A, B, C, D en la Figura 1); y

   c) el interés de los estudiantes en la Universidad de Ciencias Aplicadas Van Hall Larenstein (Países Bajos) que ayudaron a la Secretaría a realizar el primer borrador de las evaluaciones detalladas en ausencia de financiación. Los estudiantes no pudieron finalizar las evaluaciones y la Secretaría las finalizó basándose en los primeros borradores.

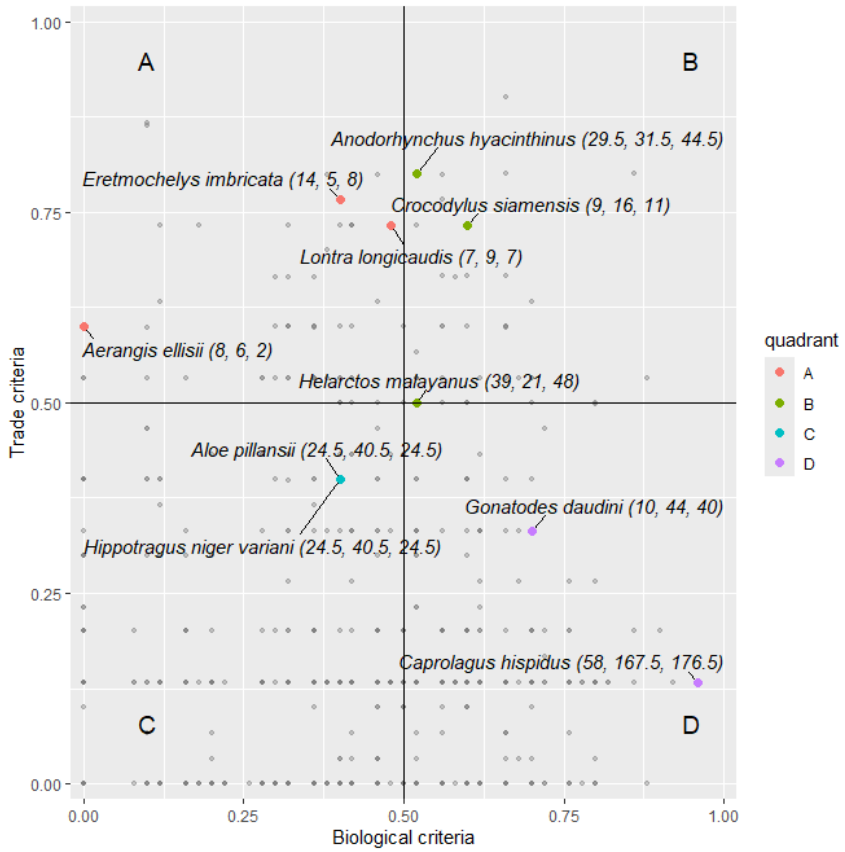

Figura 1. Visión general de los 10 taxa seleccionados en comparación con las 1.130 especies incluidas en el Apéndice I que se examinaron en las evaluaciones rápidas. Los 10 taxa seleccionados se muestran con puntos de colores con el nombre de la especie. Los números entre paréntesis después del nombre de las especies son las clasificaciones basadas en los tres métodos de puntuación de la evaluación rápida como se muestra en el documento informativo AC31 Inf. 6/PC25 Inf. 8. La posición de las especies en la matriz del cuadrante se basa en el sistema de reclasificación propuesto por México en la AC31/PC25 Com. 1 (Rev. by Sec.) Anexo.

5. La finalidad de las evaluaciones detalladas era evaluar los tipos de especies que la evaluación rápida de las especies del Apéndice I y los sistemas de puntuación posteriores estaban identificando como especies prioritarias. Además, las evaluaciones detalladas verificaron si la metodología de la evaluación rápida

identificaba correctamente las especies prioritarias que puedan beneficiarse de las medidas en el marco del mandato de la CITES.

6. Paralelamente al grupo de trabajo conjunto entre reuniones, la Secretaría compartió las evaluaciones detalladas y un cuestionario solicitando información adicional a los Estados o territorios del área de distribución de las especies concernidas (Cuadro 1). Se invitó a los Estados del área de distribución y sus especialistas pertinentes a examinar y editar la evaluación detallada y a proporcionar información sobre las especies que no puede encontrarse en la literatura científica disponible públicamente a través del cuestionario. En el cuestionario se les pidió también que proporcionasen información relativa a las estrategias de conservación *in situ* y *ex situ* en curso o planes de recuperación y financiación/recursos disponibles o requeridos por los Estados del área de distribución para aplicar medidas de conservación.

   Cuadro 1. La lista de 10 especies para las que se realizaron evaluaciones detalladas, sus Estados o territorios del área de distribución basados en Species+ y los Estados del área de distribución que proporcionaron respuestas se muestran en negritas. Los Estados del área de distribución que no son Parte en la Convención se muestran en cursiva.

FAUNA		
Mammalia		
Nombre científico	**Nombre común**	**Estados o territorios del área de distribución (de Species+)**
Caprolagus hispidus	Conejo de Assam	Bangladesh, Bhután, India, **Nepal**
Helarctos malayanus	Oso malayo	Bangladesh, Brunei Darussalam, **Camboya, China,** India, I**ndonesia, Malasia, Myanmar**, República Democrática Popular Lao, **Tailandia,** Viet Nam
Hippotragus niger variani	Antílope sable gigante	**Angola**
Lontra longicaudis	Nutria neotropical	**Argentina,** Belice, Bolivia (Estado Plurinacional de), **Brasil,** Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Guyana, Guayana Francesa [FR], Honduras, **México,** Nicaragua, Panamá, Paraguay, Perú, **Suriname, Trinidad y Tabago**, Uruguay, Venezuela (República Bolivariana de)
Aves		
Anodorhynchus hyacinthinus	Guacamayo jacinto	Bolivia (Estado plurinacional de), **Brasil,** Paraguay
Reptilia		
Crocodylus siamensis	Cocodrilo de Siam	Brunei Darussalam, **Camboya, Indonesia, Malasia,** Myanmar, República Democrática Popular Lao, Tailandia, Viet Nam
Eretmochelys imbricata	Tortuga carey	Albania, Samoa Americana (US), Anguilla (UK), **Antigua y Barbuda**, Aruba (NL), Australia, Bahamas, Bahréin, Bangladesh, Barbados, Belice, Benin, Bermuda (UK), **Brasil**, Islas Vírgenes Británicas (UK), Brunei Darussalam, Cabo Verde, Camboya, Camerún, Islas Caimán (UK), China, **Colombia**, Comoras, Congo, ***Islas Cook***, Costa Rica, Côte d'Ivoire, Cuba, Curasao (NL), Djibouti, Dominica, República Dominicana, Ecuador, Egipto, El Salvador, Guinea Ecuatorial, Eritrea, Fiji, Francia, Guyana Francesa (FR), **Polinesia Francesa (FR)**, Tierras Australes y Antárticas Francesas (FR), Gabón, Gambia, **Ghana**, Granada, Guadalupe (FR), Guam (US), Guatemala, **Guinea**, **Guinea Bissau**, Guyana, *Haití*, Honduras, India, **Indonesia**, Irán (República Islámica de), Iraq, Israel, Italia, **Jamaica**, Japón, Jordania, Kenya, *Kiribati*, Kuwait, Liberia, Macao RAE de China (CN),

		Madagascar, **Malasia**, Maldivas, **Malta**, *Islas Marshall*, Martinica (FR), Mauritania, **Mauricio**, Mayotte (FR), **México**, *Micronesia (Estados Federados de)*, Montserrat (UK), Mozambique, Myanmar, **Namibia**, Antillas Neerlandesas (NL), Nueva Caledonia (FR), Nueva Zelandia, Nicaragua, Nigeria, Islas Marianas del Norte (US), Omán, Pakistán, Palau, Panamá, Papua Nueva Guinea, Perú, Filipinas, Islas Pitcairn (UK), Portugal, Puerto Rico (US), Qatar, Reunión (FR), Santa Helena y Dependencias (UK), Saint Kitts y Nevis, Santa Lucía, San Vicente y las Granadinas, Samoa, Santo Tomé y Príncipe, Arabia Saudita, **Senegal**, **Seychelles**, Sierra Leona, Singapur, San Martín (NL), **Islas Salomón**, **Somalia**, **Sudáfrica**, **España**, Sri Lanka, **Sudán**, Suriname, Tailandia, **Togo**, Tonga, **Trinidad y Tobago**, *Islas Turks y Caicos (UK)*, Emiratos Árabes Unidos, República Unida de Tanzanía, **Estados Unidos de América**, Vanuatu, Venezuela (República Bolivariana de), Viet Nam, Islas Vírgenes Estadounidenses (US), Islas Wallis y Futuna (FR), **Yemen**.
Gonatodes daudini	Gecko de la Isla Unión	**San Vicente y las Granadinas**
FLORA		
Orchidaceae		
Nombre científico	**Nombre común**	**Estados o territorios del área de distribución**
Aerangis ellisii		Madagascar
Liliaceae		
Aloe pillansii	Aloe bastardo	Namibia, **Sudáfrica**

7. Sobre la base de las respuestas de los Estados del área de distribución, las evaluaciones detalladas se actualizaron y compartieron con el grupo de trabajo conjunto entre reuniones para su examen. Las evaluaciones detalladas están disponibles como Anexo al presente documento. La Secretaría expresa su agradecimiento a todos los Estados del área de distribución y a los especialistas pertinentes que sometieron sus respuestas e información adicional para las evaluaciones detalladas.

8. Para cada especie, la Secretaría redactó recomendaciones, que fueron ampliadas por los Estados del área de distribución. La lista completa de las recomendaciones puede encontrarse en cada evaluación detallada en el Anexo. Las recomendaciones incluyen medidas específicas para las especies, pero los temas recurrentes incluyen lo siguiente:

   a) reducción de la demanda para especímenes ilegales;

   b) combatir el comercio ilegal de vida silvestre; y

   c) más investigaciones sobre la biología de las especies para informar medidas de conservación.

9. A tenor de las recomendaciones, la Secretaría formula las siguientes observaciones relacionadas con posibles medidas propuestas teniendo en cuenta la clasificación de las especies basada en la evaluación rápida, así como las evaluaciones detalladas:

   a) *Caprolagus hispidus* no ocupa un lugar prominente en los tres métodos de puntuación, y figura en el cuadrante D (bajo comercio y altos criterios biológicos). La especie se enfrenta a amenazas que no están directamente vinculadas con el mandato de la CITES, como la pérdida del hábitat y el cambio de uso de la tierra. Las recomendaciones para esta especie están relacionadas con la conservación del hábitat y nuevas investigaciones;

b) las recomendaciones para la otra especie en el cuadrante D, *Gonatodes daudini,* se centran de igual modo en la conservación del hábitat. Además, las recomendaciones sobre el fortalecimiento de la legislación nacional para la protección de la especie y su hábitat fueron sugeridas por el Estado del área de distribución. Asimismo, se recomiendan nuevas consideraciones de la reducción de la demanda y las medidas de aplicación de la ley en consonancia con la Resolución Conf. 17.4 (Rev. CoP19), sobre *Estrategias de reducción de la demanda para combatir el comercio ilegal de especies incluidas en la CITES,* y la Resolución Conf. 11.3 (Rev. CoP19), sobre *Observancia y aplicación*;

c) las recomendaciones para las dos especies, *Hippotragus niger variani* y *Aloe pillansii*, difieren a pesar de tener la misma puntuación y, por ende, la misma posición en el diagrama de cuadrante (cuadrante C; bajo comercio y bajos criterios biológicos). La principal recomendación para *H. niger varian*i es recordar a las Partes que la subespecie es endémica de Angola, y está prohibida su entrada en el comercio internacional a través de la exportación o la importación y, por ende, cualquier registro de especímenes en otros países debe comunicarse inmediatamente a la Autoridad Administrativa CITES de Angola y a la Secretaría CITES para tomar las medidas apropiadas. En las recomendaciones adicionales se destaca que la especie puede beneficiarse de las medidas incluidas en la Resolución Conf. 11.3 (Rev. CoP19), sobre *Observancia y aplicación*. Se carece de información sobre los aspectos biológicos y el comercio ilegal de *A. pillansii* y se requiere más investigación, así como posibles programas de reintroducción para apoyar a la especie en el medio silvestre;

d) *Eretmochelys imbricata*, *Lontra longicaudis* y *Aerangis ellisii* tuvieron una puntuación relativamente alta en los tres métodos de puntuación y se colocan en el cuadrante A (alto comercio y bajos criterios biológicos). Las recomendaciones para *E. imbricata* incluyen la reducción de la demanda de productos ilegales y la sensibilización, pero varios Estados del área de distribución también sugirieron que era deseable realizar más investigaciones sobre la biología de la especie, a pesar de la baja puntuación de la especie sobre los criterios biológicos. De igual modo, las recomendaciones para *A. ellisii* se referían a investigar la escala del comercio ilegal y nuevas investigaciones sobre la especie. El estudio de caso sobre *L. longicaudis* concluyó que hay pocas pruebas del comercio de la especie, e incluyó recomendaciones para abordar los conflictos entre los hombres y la vida silvestre y nuevas investigaciones;

e) las recomendaciones para las especies en el cuadrante B (alto comercio y altos criterios biológicos), *Anodorhynchus hyacinthinus* y *Crocodylus siamensis,* incluyen la investigación sobre el nivel de comercio ilegal y las medidas de observancia ulteriores. Las recomendaciones para *C. siamensis* incluyen también más investigaciones, supervisar y garantizar la conservación del hábitat; y

f) *Helarctos malayanus* recibió la puntuación de 0,50 sobre los criterios comerciales y se ubica entre el cuadrante B y el cuadrante D. Las recomendaciones para la especie son una mezcla de reducción de la demanda, aplicación de la ley, más investigaciones, desarrollo de las mejores prácticas para la cría en cautividad y la aplicación de un programa de rehabilitación para los osos malayos en centros de rescate.

10. La recomendación de las posibles medidas dentro del mandato de la CITES identificadas a través de las evaluaciones detalladas contribuye a la aplicación de la *Visión Estratégica de la CITES 2021-2030* y el Marco Mundial de Biodiversidad Kunming-Montreal (GBF). Las recomendaciones para las 10 especies compartían varios temas que están vinculados con los siguientes objetivos de la *Visión Estratégica de la CITES 2021-2030*:

- Objetivo 1.1: Las Partes cumplirán sus obligaciones en virtud de la Convención mediante la adopción y aplicación de legislación, políticas y procedimientos adecuados.

- Objetivo 1.3: La aplicación de la Convención a escala nacional será coherente con las Resoluciones y Decisiones adoptadas por la Conferencia de las Partes.

- Objetivo 1.5: Las Partes habrán mejorado el estado de conservación de los especímenes incluidos en los Apéndices de la CITES, establecido medidas nacionales de conservación, apoyado su uso sostenible y promovido la cooperación en el manejo de los recursos compartidos de vida silvestre.

- Objetivo 2.5: Se identificarán las lagunas de información y las necesidades con relación a especies clave y se las abordará.

- Objetivo 3.3: Se dispondrá de recursos suficientes a nivel nacional e internacional para apoyar los programas de fomento de la capacidad necesarios y para garantizar el cumplimiento, la plena aplicación y la observancia de la Convención.

- Objetivo 3.4: Las Partes reconocerán que el comercio ilegal de especies silvestres es un delito grave y contarán con sistemas adecuados para detectarlo e impedirlo.

11. En relación con el GBF, las recomendaciones pueden vincularse con una serie de metas en el GBF, inclusive las metas para reducir las amenazas para la biodiversidad, siendo las Metas 1, 2, 3 y 4 particularmente pertinentes para las especies identificadas mediante la evaluación rápida.

Observaciones relacionadas con el proceso

12. La Secretaría formula las siguientes observaciones para su consideración por los Comités de Fauna y de Flora:

    a) es necesario aclarar el objetivo global del proceso. Las Partes adoptaron las primeras decisiones relacionadas con este proceso en la 17ª reunión de la Conferencia de las Partes (CoP17; Johannesburgo, 2016) y sobre la base de estas decisiones, parece que el objetivo del proceso era identificar especies incluidas en el Apéndice I con el mayor riesgo de extinción para las que se necesitan planes de recuperación y se desconoce que exista financiación para proyectos de conservación. La aplicación de la CITES tiene un papel que desempeñar para abordar la recuperación de las especies. La aplicación y la observancia del Artículo III de la Convención sobre las especies incluidas en el Apéndice I es de suma importancia para la recuperación de las especies. La Secretaría opina que los resultados del proceso demostraron que también se necesitan medidas de conservación más amplias fuera del alcance de la Convención, la mayoría de las cuales están estrechamente vinculadas con la aplicación del GBF;

    b) en las resoluciones en vigor aprobadas por las Partes se abordan aspectos identificados en el proceso. En consecuencia, las recomendaciones se superponen con los procesos y actividades descritos en las resoluciones de la CITES. Existen superposiciones con las siguientes resoluciones:

        i) en la Resolución Conf. 14.8 (Rev. CoP19), sobre *Examen periódico de las especies incluidas en los Apéndices I y II,* se proporciona un proceso para realizar exámenes periódicos de las especies incluidas en el Apéndice I y II para garantizar que las especies se incluyen debidamente en los Apéndices, basándose en información biológica y comercial actual. Muchas de las especies que obtuvieron una alta puntuación en los tres sistemas de puntuación de la evaluación rápida de las especies incluidas en el Apéndice I (véase el documento informativo AC31 Inf. 6 / PC25 Inf. 8) se incluyeron en las especies identificadas para el examen periódico [véase el documento AC29 Doc. 33.2 (Rev. 1) Anexo; *Scleropages formosus*, *Manis* spp.*, Cacatua goffiniana, Lontra longicaudis*, Crocodylia spp., *Pan troglodytes, Amazona auropalliata, Pongo pygmaeus, Cacatua sulphurea, Tomistoma schlegelii, Amazona oratrix, Ursus thibetanus*, *Eretmochelys imbricata*, *Anodorhynchus hyacinthinus, Oryx leucoryx* y *Panthera pardus*]; y

        ii) en la Resolución Conf. 17.7 (Rev. CoP19), sobre *Examen del comercio de especímenes animales notificados como producidos en cautividad,* se proporciona un proceso para identificar la incorrecta aplicación de los códigos de origen y/o el uso indebido de los códigos de origen que puede resultar en el comercio ilegal de especímenes capturados en el medio silvestre de especies incluidas en la CITES. Los resultados de la *Selección de especies para su inclusión en el Examen de especímenes animales notificados como producidos en cautividad tras la CoP17* (véase el documento AC29 Doc. 14.1) se compararon con los resultados de la evaluación rápida del Apéndice I para identificar superposiciones en los procesos. *Scleropages formosus, Crocodylus siamensis, Amazona auropalliata, Psittacus erithacus, Amazona oratrix* y *Anodorhynchus hyacinthinus* cumplen al menos un criterio de la Resolución Conf. 17.7 (Rev. CoP19). Sin embargo, no hay un proceso correspondiente para las plantas reproducidas artificialmente;

    c) en las resoluciones también se abordan los temas recurrentes identificados en las recomendaciones preliminares y, en este sentido, se destacan las siguientes resoluciones:

        i) en la Resolución Conf. 11.3 (Rev. CoP19), sobre *Observancia y aplicación,* se establecen diversas disposiciones encaminadas a orientar a las Partes para garantizar la observancia de las

disposiciones en el texto de la Convención y para penalizar el comercio en violación de la Convención;

ii) en la Resolución Conf. 17.4 (Rev. CoP19), sobre *Estrategias de reducción de la demanda para combatir el comercio ilegal de especies incluidas en la CITES,* se proporciona orientación a las Partes sobre el desarrollo de estrategias para reducir la demanda de productos ilegales de animales y plantas silvestres*;* y

iii) en las resoluciones sobre especies específicas, como la Resolución Conf. 19.5, sobre *Conservación y comercio de tortugas marinas*, la Resolución Conf. 10.8 (Rev. CoP15), sobre *Conservación y comercio de osos*, y la Resolución Conf. 17.10 (Rev. CoP19), sobre *Conservación y comercio de pangolines,* se incluye orientación, entre otras cosas, sobre conservación, colaboración, fomento de capacidad y medidas de aplicación de la ley; y

d) en general, parecería que la evaluación de las especies incluidas en el Apéndice I proporciona un valor adicional mínimo para los procesos existentes y las áreas prioritarias que ya se destacan en diversas resoluciones aprobadas por las Partes en la CITES. Es más, no se ha logrado financiación para el proceso que dio lugar a que la Secretaría tuviera que asignar tiempo al personal para finalizar el proceso. Si las Partes desean continuar con este proceso, deberían asignarse los recursos adecuados.

Recomendaciones

13. Se invita a los Comités de Fauna y de Flora a:

a) tomar nota de los progresos realizados en relación con la Decisión 19.184 y las evaluaciones detalladas realizadas sobre 10 especies;

b) considerar las observaciones de la Secretaría en el párrafo 12 y la necesidad y mérito de continuar el trabajo de evaluar especies incluidas en el Apéndice I junto con el informe del trabajo entre reuniones en el documento PC27 Doc. 23.2 / AC33 Doc. 28.2; y

c) formular recomendaciones a la 20ª reunión de la Conferencia de las Partes.

Detailed assessments of Appendix I-listed species

Contents

Assam rabbit/hispid hare (*Caprolagus hispidus*)

Taxonomy
Scientific name: *Caprolagus hispidus* (Pearson, 1839)
Common names:

English	Assam rabbit / Hispid hare / Hispid rabbit / Bristly rabbit
French	Lapin de l'Assam
Spanish	Conejo de Assam

Date of listing in Appendix I
1 July 1975

Distribution
Bangladesh, Bhutan, India, Nepal

Habitat
Caprolagus hispidus is primarily found in grasslands and inland wetlands (Maheswaren, 2006; Nath, 2015; Nath and Machary, 2015; Chand *et al.*, 2017; Aryal and Yadav, 2019). The main plant species found in *C. hispidus* habitats in Manas National Park, Assam, India was found to be *Imperata cylindrica* (Nath and Machary, 2015), while the habitat found to best support *C. hispidus* in Jaldapara Wildlife Sanctuary, West Bengal, India was intermediate understorey cover of 25 to 35%, low tree cover and large, continuous grassland (Maheswaren, 2006).

Biological characteristics

Breeding
Pregnant females have been captured in January and February in Nepal while small and large pellets, concluded to be from mothers and young, have been documented in April and June. Additionally, a combination of small and large pellets was documented in December in India, suggesting that the breeding season of *C. hispidus* may vary between locations (Nath and Machary, 2015). Nest beds documented in Manas National Park, Assam, India comprised of shallow depressions of approximately 7.5-10.5 cm deep and 17.5-25.4 cm wide, carpeted with finely chopped grasses (Nath and Machary, 2015).

Diet
Evidence of *C. hispidus* feeding has been recorded on *Saccharum narenga, Imperata cylindrica* and *Themeda arundinacea* (Nath and Machary, 2015). In all cases, *C. hispidus* removed the outer sheath and consumed the inner core of the stem.

Conservation status
C. hispidus is categorised as Endangered (EN) and decreasing on the IUCN Red List of Threatened Species and was last assessed 30 June 2018 (Aryal and Yadav, 2019). *C. hispidus* was listed in Appendix I on 1 July 1975.

Population status varies across different sites. In Jaldapara Wildlife Sanctuary, India, the hispid hare population was estimated to be 25-30 individuals with a density of one individual per 2.35 km^2 (Maheswaren, 2006) whilst the population density in Manas National Park, India was estimated at 3.81 individuals per hectare (Nath and Machary, 2015). *C. hispidus* was considered extinct in Chitwan National Park, Nepal with the last individual sited in 1984 until its rediscovery in the park in January 2016 (Khadka *et al.*, 2017).

Threats
The main reported threats to this species are habitat loss, habitat degradation due to invasive weed species, habitat fragmentation due to the building of roads, overgrazing by cattle, grass cutting, grassland burning, snares, hunting, flooding (both natural and artificial) and lack of local awareness of the presence of *C. hispidus* in the area (Maheswaren, 2006; Nath, 2015; Nath and Machary, 2015; Chand *et al.*, 2017). Of particular note is the threat of dry season burning of grasslands which coincides with the hare's breeding season (Maheswaren, 2006; Nath, 2015; Nath and Machary, 2015) and is used to clear space for cattle grazing (Nath, 2015). Unsustainable grass cutting to supply fodder for elephants

(Maheswaren, 2006) or illegal collection for the construction of houses (Nath, 2015) is also a serious threat (Maheswaren, 2006; Nath, 2015; Nath and Machary, 2015; Chand *et al.*, 2017). Although some hunting was observed, this was primarily for subsistence and local consumption (Nath, 2015). Evidence of snares has also been found in Manas National Park, India however it was reportedly unclear which species were being targeted in this case (Nath and Machary, 2015).

Legal trade
There are no quotas currently in place for this species.

There is no evidence of legal trade in *C. hispidus* in the literature although there have been reports of small-scale hunting for subsistence and local consumption in the north bank landscape of India (Nath, 2015).

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below, and with "comparative tabulation" selected as the output type.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Caprolagus hispidus*

There is only one record of trade in *C. hispidus* in the CITES trade database from the start of records in 1975 to 2022. This concerned the export of one body from Nepal to the United Kingdom and was reported by Nepal in 1986 with purpose code 'S' (scientific).

Trade suspensions
C. hispidus has not been directly subjected to any trade suspensions although it is covered by stricter domestic measures in India, as outlined in CITES Notification to the Parties No. 2018/031, dated 26 March 2018. The Government of India has banned export for commercial purposes of all wild-taken specimens of species included in Appendices I, II and III, except cultivated varieties of plant species included in Appendices I and II accompanied by a CITES Comparable Certificate issued by the competent authorities of India.

Illegal trade
There is no evidence of illegal trade in *C. hispidus* in the literature.

Current conservation actions in place
There is limited evidence of conservation actions directly targeted towards *C. hispidus*, although in Chitwan National Park, Nepal, where *C. hispidus* was rediscovered in 2016 having been believed extinct in the area since 1984, active grassland management, including burning in the winter season, has been implemented. This has created new areas and shoots for grazing animals which may have contributed to the hare's recovery in this area (Khadka *et al.*, 2017).
In November 2023, Nepal provided input to the draft of this case study, and noted that funding for the conservation of hispid hare in Nepal is provided by academia, government bodies, and foundations, among others, but is not considered adequate to address the current need.

National legislation
Nepal
In Nepal, the hispid hare is categorized as a protected priority species under the National Park and Wildlife Conservation Act, 1973, and is also listed as an endangered species in the National Red List series. As such, domestic trade in this species, including its parts and derivatives, is regulated at the national level.

Range States are invited to supply information on national legislation governing *C. hispidus* in their respective countries.

Preliminary conclusions

Threats to *C. hispidus* are primarily related to habitat degradation, which should continue to be a focus of conservation efforts.

In providing input to the draft of this case study, Nepal noted that research on hispid hare is lacking in the country. There is therefore an urgent need for collaborative research in every aspect, including ecological and molecular aspects for the generation of new knowledge.

Range States are invited to make recommendations for possible actions.

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Malayan sun bear (*Helarctos malayanus*)

Taxonomy
Scientific name: *Helarctos malayanus* (Raffles, 1821)
Common names:

English	Malayan sun bear / Sun bear
French	Ours des cocotiers / Ours malais
Spanish	Oso de los cocoteros / Oso de sol / Oso malayo

Date of listing in Appendix I
28 June 1979
NB. This species was listed in Appendix II on 1 July 1975

Distribution
Bangladesh, Brunei Darussalam, Cambodia, China, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Thailand, Viet Nam.

H. malayanus is reportedly extinct in Singapore (Scotson *et al.*, 2017). The species is listed as extinct in Bangladesh on Species+ (based on distribution references for Bangladesh that date back to the early 1980s), however, Scotson *et al.* (2017) note recently confirmed records in 2014 and 2015 in southern Bangladesh, possibly maintained through immigration from western Myanmar. Li *et al.* (2017, in Scotson *et al.*, 2017) considered the existence of *H. malayanus* in China to be doubtful, with only one confirmed record in Yunnan at a location less than 1 km from the Myanmar border. However, according to Wei FW (2022), China is confirmed as part of the distribution of Malayan sun bear.

There are two subspecies of *H. malayanus*. *H. m. malayanus* is found on the Asian mainland and Sumatra, whilst *H. m. euryspillus* is found on Borneo (Meijaard, 2004). Discussions on the taxonomy of *H. malayanus* continue (Kunde, 2017; Lai *et al.*, 2021), however, the current separation into two subspecies following Meijaard (2004) appears to be commonly accepted.

Habitat
H. malayanus is a forest-dependent species with a preference for interior mature and/or heterogeneously structured primary forests (Augeri, 2005 in Scotson *et al.*, 2017). In degraded forest habitats, *H. malayanus* was found to show a preference for areas with lower levels of human disturbance (Sethy and Chauhan, 2010; Guharajan *et al.*, 2018; Lee *et al.*, 2019; Tee *et al.*, 2021) or which have had greater time to recover since logging activities (Lee *et al.*, 2019). The probability of *H. malayanus* occurrence was found to be positively correlated with distance from roads and reserve boundaries (Tee *et al.*, 2021). *H. malayanus* also selected for areas with a higher density of tall and large trees (Guharajan *et al.*, 2018; Lee *et al.*, 2019). Despite its preference for undisturbed forests, sun bears have been observed in plantations, orchards and agricultural lands where these occur near natural forests, and are known to consume oil palm fruits (Nomura *et al.*, 2004 and Cheah, 2013, both in Scotson *et al.*, 2017).

Biological characteristics
The sun bear is a small, stocky bear with a length of 110 – 140 cm and a shoulder height of 70 cm, weighing 27 – 65 kg. It has a short, broad head with small, rounded ears, and very large feet relative to body size. Its short coat is glossy black or very dark brown, while its face and muzzle ranges from light brown, greyish or beige to white. It has a white, cream, or dull orange breast mark, which is highly variable in shape (CITES, 1982). Of the two subspecies, *H. m. euryspillus* is smaller , based on craniometric differences observed by Meijaard (2004).

The diet of sun bears consists primarily of termites, ants, beetle larvae, stingless bee larvae, honey, and a large variety of fruits, with figs (*Ficus* spp.) being particularly important when available (McConkey and Galetti, 1999; Wong *et al.*, 2002; Augeri, 2005; Fredriksson *et al*., 2006; all in Scotson *et al.*, 2017).

Unlike most other bear species, *H. malayanus* does not hibernate, as food is available all year round throughout its range (Scotson *et al.*, 2017). Sun bears can be both diurnal and nocturnal. The preference for either nocturnal or diurnal behaviour appears to be influenced by the presence of human disturbance, as Tee *et al.* (2021) observed that bears detected near reserve boundaries (and roads)

were more active at night, whereas bears detected in the centre of reserves showed more diurnal activity. Guharajan *et al.* (2018) also observed that bears in small forest fragments within large agricultural landscapes (oil palm plantations) were rarely active during the day.

Conservation status
H. malayanus was added to Appendix I on 28 June 1979 based on a proposal from India to up-list the species from Appendix II due to the rarity of the species in India (CITES, 1979). *H. malayanus* is categorised as Vulnerable (VU) on the IUCN Red List of Threatened Species (Scotson *et al.*, 2017).

There is limited information on population sizes of *H. malayanus*, with few reliable estimates being available and few studies having been undertaken to quantify population trends. However, the species is known to be in decline across its range. Experts from the IUCN SSC Bear Specialist Group have made subjective estimates of the rates of population loss in sun bear range States, which resulted in an overall estimated decline of 35% over 30 years, primarily due to high deforestation rates and reported high volumes of hunting and trade throughout its range (Scotson *et al.*, 2017). In February 2024, Indonesia informed the Secretariat that the sun bear population in South Sumatra is estimated at 26 individuals per 100 km^2, while in West Sumatra, the population has decreased by 5% due to habitat destruction over 7 year (Wong *et al.*, 2013). In Kalimantan, in unburnt forest areas, the sun bear population tends to be stable, whereas in fire-affected forest areas, colonization within 10 years reaches 65% (Frediksson, 2012).

Threats
According to the IUCN Red List, the primary threats to sun bears are deforestation and commercial hunting, which occurs to varying degrees throughout the range (Duckworth *et al.*, 2012; Stibig *et al.*, 2014; both in Scotson *et al.*, 2017). The IUCN Red List further highlights active trade in sun bears and their parts as “one of the two most serious threats” to the species, with commercial poaching reported to be a moderate to major threat in all range countries, excluding Brunei Darussalam for which no data were available. Poaching of *H. malayanus* occurs particularly for trade of parts and derivatives (gall bladders and bile) for traditional medicine, as well as meat, especially paws, for sale in restaurants (Shepherd and Shepherd, 2010; Shepherd and Krishnasamy, 2013; Crudge *et al.*, 2019; Gomez *et al.*, 2020). This threat is discussed in more detail in the section “Illegal trade” below. Sun bears may also be killed in human-bear conflict in retaliation for crop damage (Crudge and others, 2019; Gomez and Shepherd, 2019), or in snares set for other species such as wild pigs (*Sus scrofa*) (Gomez and Shepherd, 2019), although targeted snaring of sun bears also occurs (Crudge *et al.*, 2019).

Other significant threats include habitat loss through deforestation and forest degradation as a result of logging and land clearing for plantations and agriculture (Sethy and Chauhan, 2010; Crudge *et al.*, 2019). Associated road construction leads to increased access for poachers and add human disturbance. As forest patches become smaller and separated by agriculture, bears become more vulnerable to human encounters. This is compounded by reduced food availability for bears in degraded forests, which may drive bears to travel longer distances and supplement their natural diet with human-related food sources (Crudge *et al.*, 2019), such as oil palm fruits.
Droughts and (human-caused) fires, which are predicted to increase in frequency with climate change (Timmermann and others, 1999; Fredriksson, Danielsen, and Swenson, 2007) cause bear habitat to be degraded or lost. Even in unburnt forests, droughts may cause fruit failures and therefore reduce food availability for bears (Crudge *et al.*, 2019).

Legal trade
There are no quotas currently in place for this species.

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports and source code I shipments were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1979 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources

Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Helarctos malayanus*

There are 94 shipment records of trade in *H. malayanus* reported by exporters and 102 shipments reported by importers in the CITES Trade Database between 1979 and 2022 (figure 1), with the first record of Appendix I shipment in 1980.

The majority of shipments recorded in the CITES Trade Database are of source code C (captive-bred, 44 exported reported and 44 importer reported shipments), followed by source code W (wild, 27 exporter reported and 33 importer reported shipments).

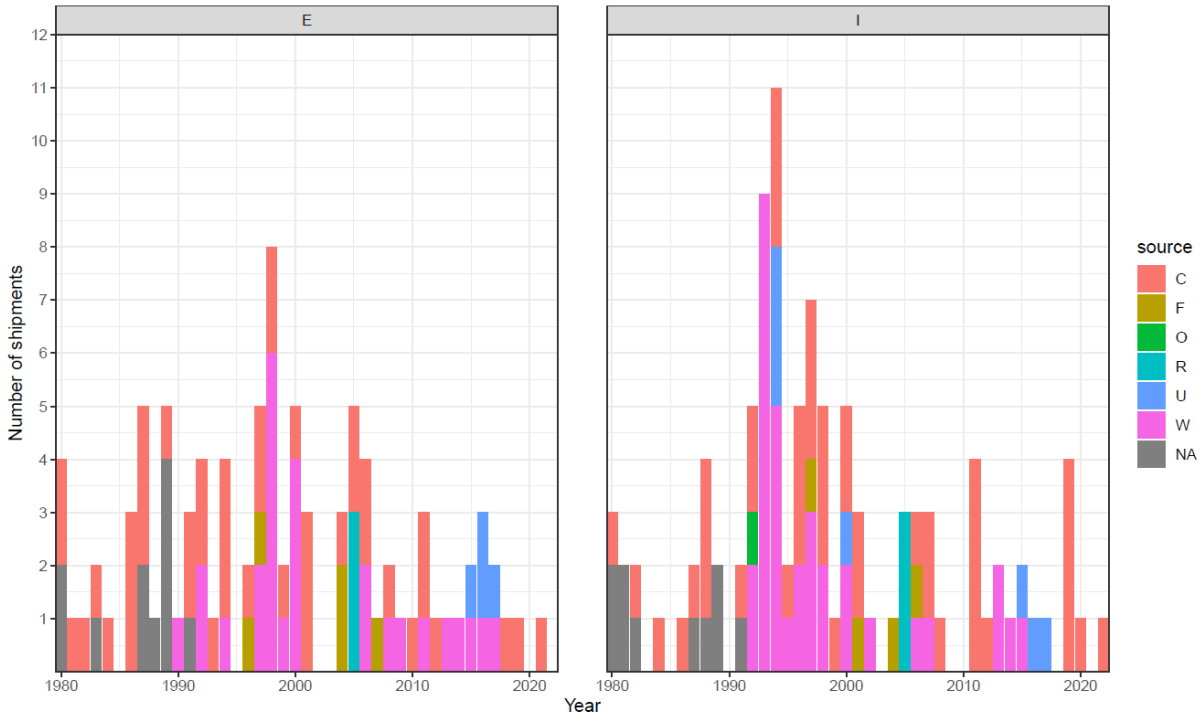

Figure 1. Annual shipments of trade in *H. malayanus* recorded in the CITES Trade Database Between 1975 and 2022, colored by source code.

The majority of captive-bred shipments were of live specimens traded for purpose code Z, Q, T and B while for wild sourced specimens, a variety of specimens such as bodies, claws, gall, live, and teeth were traded for purpose codes T, B, S, T and Z.

The most commonly reported purpose code for legal trade in *H. malayanus* are Z (zoo, 34 exporter reported and 51 imported reported shipments), P (personal, 1 exported reported , 35 importer reported shipments), S (scientific, 30 exported reported and 12 importer reported shipments and T (commercial, 6 exporter reported and 20 importer reported shipments).

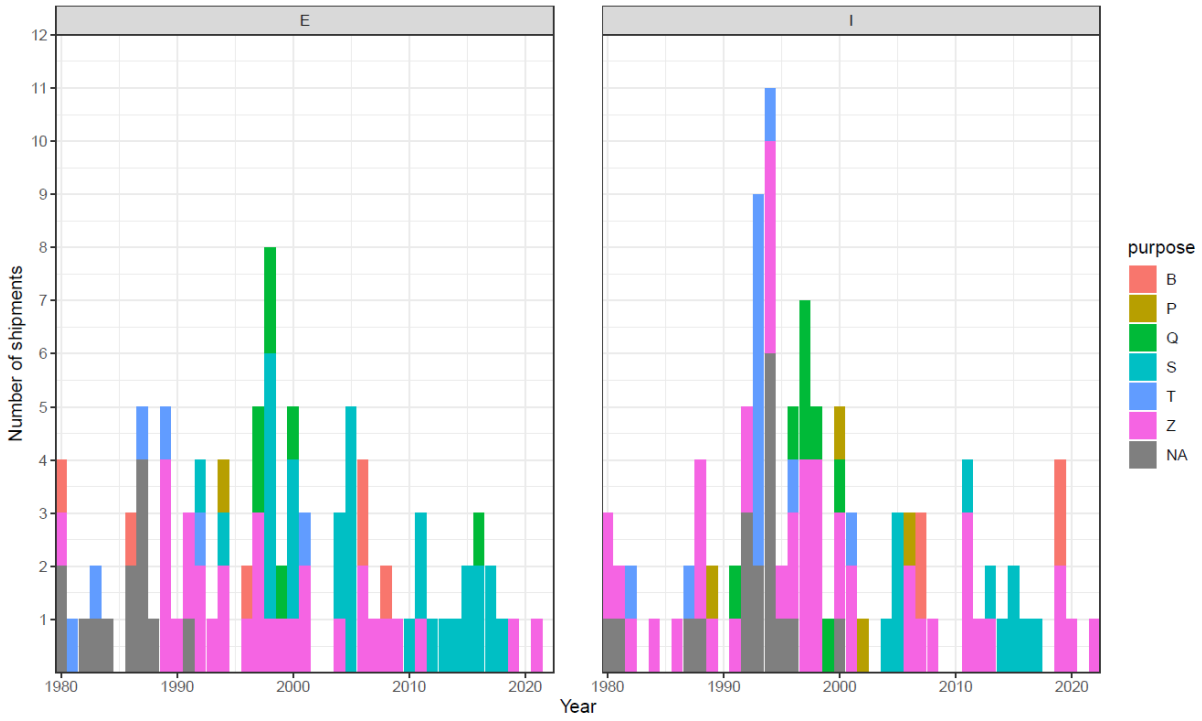

Figure 2. Annual shipments of trade in *H. malayanus* recorded in the CITES Trade Database Between 1975 and 2022, coloured by purpose code.

Illegal trade

High levels of illegal trade in *H. malayanus* and its parts and derivatives occur. There is reportedly high demand for parts for traditional medicine (Shepherd and Shepherd, 2010; Shepherd and Krishnasamy, 2013; Lee *et al.*, 2015), meat and particularly paws for restaurants (Shepherd and Shepherd, 2010; Shepherd and Krishnasamy, 2013; Gomez *et al.*, 2020), trophies (in the form of claws, teeth, skulls or skins) and live animals for pet trade (Gomez *et al.*, 2020). Where such trade occurs only at the domestic level, its legality may differ from one range State to another.

According to Lee *et al.* (2015), Malaysia is a key market for bear products both as a source and a consumer country. In February 2024, Malaysia informed the Secretariat that a seizure of 397 claws and 85 fangs of *H. malayanus* was made in November 2023. Much of the literature consulted for this case study concerns the Malaysian market, however, this does not imply that the trade in bear products is exclusively an issue in Malaysia. Crudge *et al.* (2019) note the existence of a wide and complex network of international bear bile trade, with much cross-border trade in Southeast Asia, as well as exports to China and non-Asian countries. Given that this trade is illegal, and seizures only represent a fraction of the actual trade, it is difficult to estimate its full extent. This is further compounded by the difficulty in differentiating gall bladders and bile to species, including non-bear species whose parts are traded in imitation of bear parts. The species can only be confidently identified if the origin of parts and derivatives is certain to be wild bears from Malaysia or Indonesia, where sun bears are the only native bear species (Crudge *et al.*, 2019).

A variety of traditional medicinal products reportedly containing *H. malayanus* parts or derivatives have been observed for sale in Peninsular Malaysia and the states of Sabah and Sarawak, including whole gall bladders, wine containing gall bladder, pills, bile, dried gall bladder skin and ointments (Shepherd and Shepherd, 2010; Lee *et al.*, 2015; Gomez *et al.*, 2020). Pills were recommended for treating flu, fever and 'heatiness' – an imbalance of 'yin' and 'yang' energy (Lee *et al.*, 2015). Gall bladder was one of the main products for sale (Shepherd and Shepherd, 2010; Lee *et al.*, 2015; Gomez *et al.*, 2020) with imported gall bladders reportedly being more expensive than gall bladders sourced domestically (Lee *et al.*, 2015). Source countries for imported gall bladders for sale in Malaysia reportedly include China, Russia, India, Nepal, Myanmar, Thailand, Viet Nam and Indonesia (Lee *et al.*, 2015). A majority of traders in Sabah and Sarawak reported their gall bladders were sourced from locally hunted sun bears (Lee *et al.*, 2015; Gomez *et al.*, 2020).

In a survey of 128 traditional medicine shops across 24 locations in Malaysia, *H. malayanus* products were found for sale in 25% of shops surveyed and in 54.2% of locations visited in Sabah and Sarawak (Gomez *et al.*, 2020). In another study, *H. malayanus* bladder and/or bile was found for sale in every state in Malaysia (Lee *et al.*, 2015). Some retailers, however, reported that demand for gall bladder is decreasing due to the high price and younger generations favouring conventional medicines (Lee *et al.*, 2015). Demand for bile is also reported to be decreasing according to bile farmers in Viet Nam who cited poor quality bile, customer concern over the authenticity of the bile for sale and customer preference for bile from wild bears as causes for this (Crudge *et al.*, 2020).

Studies suggest that many traders are aware of the illegalities of trading in products containing *H. malayanus* products, with traders claiming to have these products but refusing to show them, and some openly acknowledging the illegality of trading in these products (Lee *et al.*, 2015; Gomez *et al.*, 2020).

Less than 30% of traditional medicine shops surveyed in Malaysia were able and/or willing to recommend alternatives to *H. malayanus* products, despite the existence of at least 54 herbal alternatives to bear bile (Lee *et al.*, 2015). In cases where shops did offer alternatives, parts and derivatives of other animal species were recommended in 80% of cases, including *Pian Tze Huang* (a formula consisting of musk, ox gallstone, snake gall and *Panax notoginseng*) and porcupine bezoar as the most commonly promoted alternatives (Lee *et al.*, 2015).

Crudge *et al.* (2019) state that the inclusion of sun bears in the commercial trade in gall bladders and bile is a recent event, and while sun bears are included in bear farming in Southeast Asia (specifically in Viet Nam, Lao PDR and Myanmar), only 2 – 4% of farmed bears in this region were sun bears. In Viet Nam an estimated 2400 bears are held in caged facilities (Nguyen and Nguyen, 2008; Llanos, 2012; both in Lee *et al.*, 2015), despite this being a violation of the national legislation (Crudge *et al.*, 2020). In a survey of bear bile farmers in Viet Nam, 62% of farmers stated that their bears were wild caught, whilst 26% did not know the origin of the bears on their farm (Crudge *et al.*, 2020). Of note, all respondents reported that bile from wild bears is of higher quality than those in captivity although 93% of respondents maintained that bear bile farming helps to protect wild populations of bears (Crudge *et al.*, 2020).

A study of seizure records involving *H. malayanus* parts in Indonesia over the period 2011 to 2018 found 71 cases, equating to approximately 254 *H. malayanus* individuals (Gomez and Shepherd, 2019). Types of commodities seized include 61 live individuals across 42 seizures, as well as canines, claws, taxidermied specimens, paws, gall bladders, bones and a claw pendant. Claws accounted for the greatest number of commodities seized, with 1387 recorded to have been confiscated over the study period. In all cases, Indonesia was the source country, while destination countries included China, Viet Nam, Cambodia, Kuwait and Malaysia (Gomez and Shepherd, 2019). In February 2024, Indonesia informed the Secretariat that 36 cases of sun bear smuggling in the form of claws were found in 2022. More information is included in Indonesia's annual illegal trade report.
A study took place on seizure records from Peninsular Malaysia from January 2005 to September 2009 (Shepherd and Shepherd, 2010). In this study, records equated to a minimum of 33 bears, the majority of which were seized by the Department of Wildlife and National Parks (DWNP), although some seizures were made by the Marine Police (Shepherd and Shepherd, 2010).
In February 2024, Cambodia informed the Secretariat that it reported an unspecified number of seizures of bears and bear parts over a 12-year period (unspecified), with parts sourced from the wild in Cambodia and destined for markets in neighbouring countries. Furthermore, between 2021 and 2023, Cambodia seized one live bear, sixteen bones or bone pieces, six skins, three canines and five claws. A behaviour change intervention to reduce demand for bear bile as medicine has been implemented at test sites in Cambodia. The impact of the intervention will be assessed using pre- and post-intervention data collected in test sites and control sites in Cambodia.

National legislation
Information on national legislation in force in some of the sun bear range States, as reported in the literature consulted, is presented below. Range States are invited to correct and/or complete this information as required and appropriate.

Cambodia
In February 2024, Cambodia informed the Secretariat that the protection of sun bear and the trade in this species are regulated by the Forestry Law.

China

In February 2024, China informed the Secretariat that since 1989, China has classified Malayan sun bear as a national first-class protected wild animal, and has adopted the strictest measures. It is forbidden to hunt, kill, sell, buy or use Malayan sun bear. Where it is necessary to take activities on it due to scientific research, artificial breeding, or other circumstances, it is necessary to carry out relevant activities after strict approval by the competent departments, and they are subject to supervision from wildlife and law enforcement authorities. Relevant laws include the Wildlife Conservation Law of the People's Republic of China and the Regulations of the People's Republic of China on Administration of Import and Export of Endangered Wild Animals and Plants.

Indonesia

H. malayanus has been a protected species in Indonesia since 1973 and is primarily protected by the Act of the Republic of Indonesia No.5 of 1990 concerning Conservation of Living Resources and their Ecosystems, as well as Minister of Environment and Forestry Regulation No. P.106/MENLHK/SETJEN/KUM.1/12/2018 of 2018 concerning Types of Protected Plants and Animals. This includes penalties of fines up to IDR 100 million (USD 6400), and imprisonment up to five years. *H. malayanus* is also covered under Government Regulation No.7 1999 Concerning the preservation of flora and fauna which prevents all harvest and trade of wild-caught specimens (Gomez and Shepherd, 2019). Other relevant legislation for the protection of *H. malayanus* and the regulation of its international and domestic trade in Indonesia includes:

- Law No. 5 of 1990 concerning Conservation of Biological Natural Resources and Ecosystems;
- Government Regulation No. 7 of 1999 concerning Preservation of Plant and Animal Types;
- Minister of Environment and Forestry Regulation No. P.2/MENLHK/SETJEN/KUM.1/1/2018 concerning Access to Genetic Resources for Wild Species and Profit Sharing from Their Utilization;
- Decree of the Minister of Forestry No. 447/Kpts-II/2003 concerning Administration for the Collection or Capture and Distribution of Wild Plants and Animals;
- Instruction of the Minister of Environment and Forestry No. INS.1/MENLHK/SETJEN/KUM.1/6/2022 dated 17 June 2022 concerning the Protection of Wild Animals against the Threat of Trapping and Poaching inside and outside forest areas.

Malaysia

Peninsular Malaysia

H. malayanus is listed as 'totally protected' in Peninsular Malaysia under the Wildlife Conservation Act 2010 (WCA) (Shepherd and Krishnasamy, 2013). Prior to this, the species was protected under the Protection of Wild Life Act 1972 (PWA) however the PWA did not cover medicinal products claiming to contain *H. malayanus* derivatives and therefore the WCA was implemented to provide stricter regulation (Shepherd and Shepherd, 2010). *H. malayanus* is also covered under the International Trade in Endangered Species Act 2008 (INTESA) in Peninsular Malaysia, which aims to support the enforcement of CITES (Shepherd and Shepherd, 2010).

Of note, enforcement in Peninsular Malaysia was reported to be low prior to the implementation of the WCA. Although 11 seizures involving bear parts having been made over the period January 2005 to September 2009, no prison sentences were handed out and the maximum fine given was USD 1692, despite maximum fines described in the PWA as ranging from MYR 5,000 (USD 1538) to MYR 10,000 (USD 3076) and maximum prison sentences ranging from three to ten years (Shepherd and Shepherd, 2010).

Sabah

H. malayanus is listed as 'totally protected' under the Sabah Wildlife Conservation Enactment 1997. This has fines of MYR 50,000 (USD 12,000) to MYR 250,000 (USD 60,000) and imprisonment of one to five years (Gomez *et al.*, 2020).

Sarawak

H. malayanus is listed as 'protected' under the Sarawak Wildlife Protection Ordinance. This allows for hunting of *H. malayanus* with a permit and can issue fines of MYR 10,000 (USD 2400) and imprisonment of up to one year (Gomez *et al.*, 2020).

Myanmar

In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Myanmar informed the Secretariat that the Conservation of Biodiversity and Protected Areas Law (2018), Notification No. 690/2020 (Categories of Endangered Wild Fauna that Need to be Protected from Extinction), No. 691/2020 (List of Protected Endangered Wild Fauna which can be Bred Commercially) are the major pieces of legislation by which both international and domestic trade in *H. malayanus* is regulated in the country. The identification and disposal of confiscated specimens and the management of confiscated live sun bear poses challenges to the enforcement of the legislation.

Thailand

In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Thailand informed the Secretariat that the import, export, and transit of wild animals is regulated by Sections 22, 23, 24, 25 and 27 of the Wildlife Preservation and Protection Act B.E. 2019, which stipulate that the trade in wild animals and their parts and derivatives is prohibited unless a licence is provided by the competent authorities. Furthermore, *H. malayanus* is a protected animal under the Wildlife conservation and Protection Act, B.E. 2562 (2019) and Ministerial Regulation Prescribing Certain Wildlife Species to be Protected Wildlife B.E. 2546 (2003). As such, exploitation of *H. malayanus* is completely prohibited, although exemptions may be given to certain activities related to non-commercial purposes. Thailand noted that enforcement is sometimes challenging, especially during field inspections, when the identification of species on the basis of parts or derivatives is difficult.

Viet Nam

Domestic regulations introduced in 2005 required bear owners to register and microchip all captive bears by 28 February 2005, making it legal to keep any bears registered on or before this date. Government Decree 32/2006/ND-CP on the Management of Endangered, Precious, and Rare Species of Wild Plants and Animals listed sun bears as a Group 1B protected species which prohibits their exploitation and use for commercial purposes. Therefore, it is illegal to keep unregistered bears, to source new bears from the wild, and to extract or sell bile obtained from captive bears (including those registered prior to 28 February 2005) (Crudge *et al.*, 2020).

Current conservation actions in place

Current conservation actions in place include awareness raising activities with traditional medicine practitioners and education to highlight the illegality of prescribing medicines containing the products of protected species, such as *H. malayanus* (Gomez *et al.*, 2020). Additionally, anti-poaching efforts (snare-clearing) are conducted in a number of protected areas throughout Southeast Asia, although these efforts are limited in geographic scope and in their effectiveness due to challenges in locating snares. On the other hand, demand reduction interventions tend to be ineffective if the drivers of demand and consumer preference are poorly understood (Crudge *et al.*, 2019). Other conservation actions include habitat protection and restoration, population monitoring, and rehabilitation of rescued bears. However, Crudge *et al.* (2019) note that conservation efforts are hampered by (i) a lack of empirical data to inform policy-making; (ii) limited resources to address all threats across sun bear range; and (iii) a general lack of awareness among the public and policy-makers regarding the conservation importance of sun bears.

A 10-year conservation action plan for *H. malayanus* for the years 2019 to 2028 has been developed by Free the Bears, TRAFFIC Southeast Asia, the IUCN SSC Bear Specialist Group, and the IUCN SSC Conservation Planning Specialist Group (Crudge *et al.*, 2019). The five goals of the plan are to eliminate illegal exploitation, protect and restore habitats and populations, devise and employ reliable monitoring methods, maximise ex situ contributions to conservation and to increase cross-sectoral support and collaboration for sun bear conservation. This plan is co-ordinated by the Sun Bear Action Plan Implementation Task Force.

In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Myanmar informed the Secretariat that it has been collaborating with Istituto Oikos since 2010. From 2016 to 2020, the project “Cooperation in the Field of the Conservation of Sun Bear in Myanmar” was implemented in major sun bear habitats. The project contributed to developing the Sun Bear Conservation Action Plan, monitoring, patrolling, and capacity building of the staff and local communities.

In February 2024, Indonesia informed the Secretariat that conservation actions currently focus on patrolling and monitoring, which is carried out routinely, either directly or indirectly, through camera traps or SMART patrols.

Also in February 2024, Cambodia informed the Secretariat that a captive population of sun bear is housed at the Cambodia Bear Sanctuary, Phnom Tamao Wildlife Rescue Center, managed in collaboration between the Cambodian Forestry Administration, Free the Bears, and Wildlife Alliance. However, there is no captive breeding programme. Cambodia notes that much more resources are needed in order to implement the priority actions identified in the Sun Bear Conservation Action Plan, in addition to securing/improving protection of remaining habitat.
In February 2024, Malaysia furthermore informed the Secretariat of the existence of a "Malayan Sun Bear: Management Guideline at National Wildlife Rescue Centre (NWRC) Peninsular Malaysia" since 2022, which is based on the "3R approach" of rescue, rehabilitate and release. Additionally, there is a Sun Bear Action Plan for Sabah. Non-governmental stakeholders in Malaysia that support the government's efforts for the conservation of this species include FGV Holdings Berhad, Malaysian Nature Society, the Borneo Sun Bear Conservation Centre, and the Danau Girang Field Centre. The Sun Bear Conservation Project is a collaboration between Universiti Kebangsaan Malaysia (UKM), Malaysian Nature Society (MNS) and Department of Wildlife and National Parkts (DWNP) Peninsular Malaysia (PERHILITAN). With funding provided by FGV Holdings Berhad, this conservation project has commenced in 205 with a focus to rescue sun bears from human-wildlife conflicts and habitat loss, with the intention to rehabilitate rescued bears before releasing them back into the wild. Activities conduced under this conservation project include three main scopes: i) Sun bear management in Peninsular Malaysia lead by DWNP Peninsular Malaysia; ii) Awareness and educational programmes about sun bear conservation run by MNS; and iii) Research on biology, ecology and behaviour of sun bears in captivity and in the wild by researchers from UKM.

Preliminary conclusions
Additional demand reduction, awareness raising, and/or law enforcement actions could be considered strengthen the outcomes of the existing conservation action plan for sun bears. Reference is made to Resolution Conf. 17.4 (Rev. CoP19) on *Demand reduction strategies to combat illegal trade in CITES-listed species* and the associated CITES guidance, as well as to Resolution Conf. 11.3 (Rev. CoP19) on *Compliance and enforcement*.

In its February 2024 response to a questionnaire sent to the range State by the Secretariat, alongside a draft of this case study, Indonesia made the following recommendations:

- There is a need to develop bioecological research related to this species;
- Increased patrols in online and offline forms;
- The need for bilateral and regional cooperation in this type of conservation effort;
- Population monitoring for this species.

Cambodia made the following recommendations:

- Develop and implement the management and conservation action plans for in situ and ex situ conservation of the species;
- Promote best practice of sun bear captive breeding and husbandry.

Malaysia made the following recommendations:

- Create a network of volunteers among the aborigine and local community to deal with the issue of encroachment and illegal hunting in the protected areas i.e. national parks, state parks and wildlife reserves.
- Assessment survey of Malayan Sun Bear population in the wild is needed to determine the existing number of individuals.
- Malaysia further noted that Sabah has an overpopulation of sun bears in its rescue centre, which need to be urgently rehabilitated, which requires expert advice to implement the rehabilitation programme and funding for the post-release programme, as well as a dedicated researcher to conduct the programme.

Range States are invited to propose additional recommendations on possible actions.

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Giant sable antelope (*Hippotragus niger variani*)

Taxonomy
Scientific name: *Hippotragus niger variani* (Thomas, 1916)
Common names:

English	Giant sable antelope
French	Hippotrague noir géant / Hippotrague géant de l'Angola
Spanish	Antílope sable negro / Antílope negro gigante

Date of listing in Appendix I
1 July 1975

Distribution
Angola

H. n. variani is restricted to Cangandala National Park and the Luando Integral Nature Reserve in Angola (Vaz Pinto *et al.*, 2016).

Cultural significance
H. n. variani is considered flagship species and a national heritage symbol for Angola (Pitra *et al.*, 2006; Vaz Pinto, 2019). It encourages a strong sense of ownership and pride nationally, featuring on the national currency, national airliner and as the icon for the national football team, the Giant Sables (Vaz Pinto, 2018).

Habitat
The main habitat of *H. n. variani* consists of miombo woodland and mesic savannah. They preferentially use the edge of woodland and grassland. Main tree species are from the genus *Brachystegia*, *Julbernardia* and *Isoberlinia*. Notably, large areas of the *H. n. variani* habitat are covered with termite mounds (Vaz Pinto, 2019).

Biological characteristics
H. n. variani is primarily a selective grazer, favouring perennial grass species such as *Brachiaria*, *Digitaria*, *Panicum* or *Setaria* spp. and generally only eats the outer tender portion of the plant. *H. n. variani* is also sometimes a browser, with *Diplorhynchus condylocarpon* being a particularly important shrub in its diet, being abundant and available all year round across Cangandala National Park and the Luando Integral Nature Reserve (Vaz Pinto, 2018).

H. n. variani has been observed to consume the soil of *Macrotermes termitarial,* which has been suggested as a potential source of sodium to supplement their relatively sodium-poor diet (Baptista *et al.*, 2012). This may explain the apparent preference of *H. n. variani* for areas with termite mounds (Vaz Pinto, 2018).

There is pronounced sexual dimorphism in this sub-species, with males being black with white bellies and females having a light brown colouration with white bellies (Blaine, 1922).

The subspecies forms three main social groupings; breeding or nursery herds consisting of females and juveniles, bachelor groups, and territorial males of approximately six years old or older (Vaz Pinto, 2019).

Conservation status
H. n. variani is categorised as Critically Endangered (CR) and decreasing on the IUCN Red List of Threatened Species and was last assessed 7 August 2016 (IUCN SSC Antelope Specialist Group, 2017). It was listed in Appendix I on 1 July 1975.

Population numbers were reported to be high in the early 1920s, with Blaine (1922) claiming to have seen “at least 100 individuals” during a three-month trip. However, high levels of trophy, subsistence and commercial hunting in the 1920s and 1930s, coupled with high levels of poaching during the Angolan civil war, resulted in a large population bottleneck in this subspecies (Vaz Pinto, 2018; Vaz

Pinto, 2019). Additionally, the Luando population is reported to be recovering poorly which has been attributed to poaching (Vaz Pinto, 2018).

The subspecies was feared to be extinct after the Angolan civil war (Pitra *et al.*, 2006), with aerial surveys from 2002 to 2004 failing to detect any individuals (Vaz Pinto, 2018) however DNA analyses of dung samples from Luando Integral Nature Reserve and the Cangandala National Park have since confirmed its survival (Pitra *et al.*, 2006). Despite this rediscovery, high levels of hybridisation have occurred in the Cangandala population with roan antelope (*Hippotragus equinus*) due to a lack of *H. n. variani* males, causing the population to be considered technically extinct with no prospects of natural recruitment of male *H. n. variani* (Vaz Pinto *et al.*, 2016). *H. n. variani* bulls have since been translocated into the Cangandala population from the Luando population (Vaz Pinto *et al.*, 2016).

The population size of *H. n. variani* from the 1950s to the 1970s was estimated to be between 1,500 and 2,500 in the Luando Integral Nature Reserve and less than 200 in Cangandala National Park, equating to a density of approximately 0.25 sable per km^2 (Vaz Pinto, 2018). The IUCN Red List assessment (IUCN SSC Antelope Specialist Group, 2017) estimates the global population to be between 70 and 100 individuals. In January 2024, Angola informed the Secretariat that the most recent population survey (2022) estimated there to be 270 individuals, and that the population appears to be stable, rather than increasing, despite still being only around 10% of the pre-1975 numbers.

Threats
Threats to *H. n. variani* include poaching, habitat loss and low genetic diversity (Vaz Pinto *et al.*, 2015; Vaz Pinto *et al.*, 2016; Vaz Pinto, 2018; Vaz Pinto, 2019). Historically, trophy hunting, subsistence hunting, and hybridisation also occurred, but in January 2024, Angola informed the Secretariat that these issues have been resolved.

Evidence of poaching has been found across the species' range, and is cited as a cause for the poor recovery of the Luando population since the civil war and a skewed sex ratio in this population, with a scarcity of individuals in the young and middle age categories (Vaz Pinto, 2018). In January 2024, Angola informed the Secretariat that poaching of *H. n. variani* occurs to supply the bush meat trade, and is carried out mostly with snares and gin traps, but also with guns at night. However, *H. n. variani* does not appear to be the primary target for bushmeat, but to be collateral damage of this trade.

In January 2024, Angola informed the Secretariat that the available habitat is still in very good condition and fully included in protected areas. Nevertheless, over the last 20 years, around 30% of the habitat was lost to human encroachment, which is putting increasing pressure on the remining blocks of habitat.

Of particular concern in this subspecies is the low genetic diversity resulting from the severe population bottleneck that both populations have undergone (Vaz Pinto *et al.*, 2015) and the subsequent hybridisation with roan antelope. Hybridisation primarily between female *H. n. variani* and male roan antelope has been observed (Vaz Pinto *et al.*, 2016), possibly due to a lack of male *H. n. variani* (potentially due to males being at greater risk to poachers due to their colouration, solitary behaviours and tendency to travel longer distances). Hybrid offspring have reduced viability and fertility and may have contributed to further population decline. All surviving hybrids were collected and placed in captivity, and *H. n. variani* bulls were translocated into the population from the Luando population (Vaz Pinto *et al.*, 2016).

Legal trade
There are no quotas or trade suspensions currently in place for *H. n. variani.*

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports and source code I records were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources

Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Hippotragus niger variani*

Excluding re-exports, a total of 75 shipments records involving *H. n. variani* (4 shipments reportered by exporter and 71 shipments reported by importers) are recorded in the CITES trade database in the period 1975-2021, with the first record in 1982. Importers reported the import of 71 hunting trophies and exporters reporting the export of three hunting trophies. Records also included small numbers of skins, live animals and skulls. The majority of the import/export records did not have a source code or purpose code.

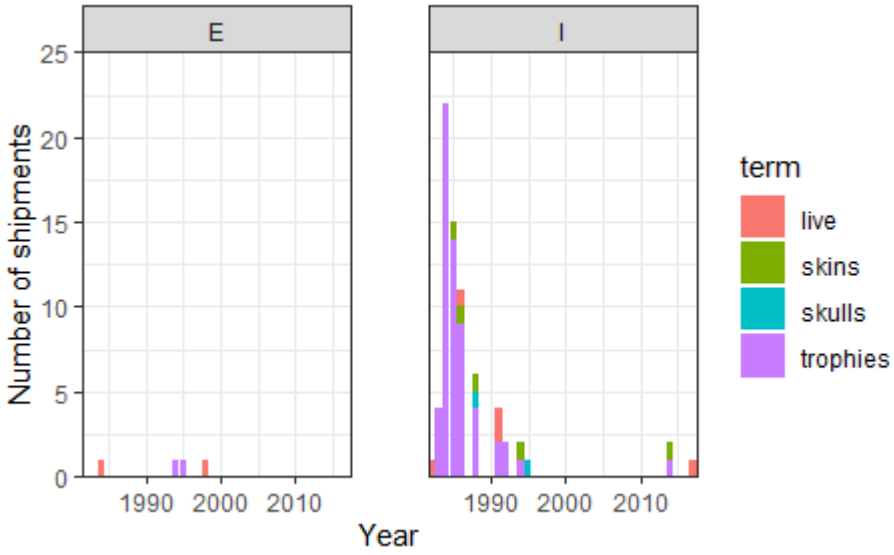

Figure 1: Types of specimens of H. n. variani exported and imported between 1975 and 2021 as recorded in the CITES trade database. The exporter reported shipments (E) and imported reported shipments (I) are shown separately.

None of the recorded shipments in the CITES Trade Database were exported from the range State, Angola, and in its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Angola noted its doubts that the reported trade concerns *H. n. variani*. All four exporter reported shipments were exported from the United States of America to KP, CA and MX. For importer reported shipments, the majority were exported by Zimbabwe (28 shipments), followed by Tanzania (18 shipments), Botswana (8 shipments), Zambia (7 shipments), South Africa (5 shipments), Netherlands (2 shipments) and Canada and Czech Republic (1 shipment each).

Illegal trade

Evidence of poaching, including encounters with poachers, apprehension of shotguns and AK-47s, discovery of traps and the observation of snare wounds on the legs of both *H. n. variani* and roan, has been found in both the Cangandala and Luando populations (Vaz Pinto *et al.*, 2016; Vaz Pinto, 2018). Poaching in the Luando population has been linked to the bushmeat trade and primarily occurs through night stalking on foot or through trapping around grazing patches or water holes (Vaz Pinto, 2018).

Current conservation actions in place

The Giant Sable Conservation Project was started in 2003 by the Catholic University of Angola and has been led by the Kissama Foundation since 2010 (Vaz Pinto, 2019). This assists the Angolan government in implementing conservation management practices in protected areas and has set up camera traps to help with monitoring and identification. In January 2024, Angola informed the Secretariat that the population in Cangandala National Park occurs in a large, fenced area. The animals wear VHF collars and are monitored regularly, allowing for almost complete counts. On the other hand, the population in Luando Strict Nature Reserve are censed through aerial counts (helicopter) every three years, and since 2013 some of the Luando sables have been equipped with GPS satellite collars, allowing for both ground observations and drone counts in years without helicopter-based aerial census.

Angola (January 2024) further notes that the two protected areas where the species occurs are severely underfunded, and that an annual budget of at least 1 million USD would be required to address its conservation needs. Human resources are also considered a limiting factor, with Angola experiencing challenges in wildlife and park management expertise and training.

National legislation
In January 2024, the Secretariat invited the range State to provide information on the national legislation in force governing *H. n. variani*. While there is no specific legislation in place for the conservation of this species, all trade in CITES Appendix I-listed species is prohibited in Angola, as stipulated in Article 282 of the Penal Code. In its response, Angola recognized the need to draw up specific legislation for the conservation of *H. n. variani* and noted its intention to address this need.

Preliminary conclusions
In light of the threat posed by poaching, and the small remaining population in only two locations, actions as recommended in Resolution Conf. 11.3 (Rev. CoP19) on *Compliance and enforcement* could be considered. Further measures in identification and/or reporting of the subspecies could be considered as all trade data in the CITES Trade Database are not from the range State.

Following an invitation by the Secretariat to the range State to propose additional recommendations on possible actions, in January 2024 Angola noted that effective protection and management of this species will require significant funding and, more importantly, strong political support and a collaborative effort with international partners. Angola proposed the following additional recommendations:

- That all Parties be reminded, via a Notification to the Parties, that *Hippotragus niger variani*, which only occurs in Angola, is prohibited from entering into international trade through export or import;
- That anyone who comes across specimens of this species in other countries must immediately inform the CITES Management Authority of Angola and the CITES Secretariat to take appropriate action.

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Long-tailed otter (*Lontra longicaudis*)

Taxonomy
Scientific name: *Lontra longicaudis* (Olfers, 1818)
Common names:
English Neotropical Otter / La Plata otter / Neotropical River Otter / South American River Otter / Long-tailed Otter
French Loutre de La Plata / Loutre d'Amérique du Sud / Loutre à longue queue
Spanish Nutria de cola larga / Perro de agua / Nutria de agua / Lobito de río, Gato de agua / Taira / Lobito del Plata / Nutria neotropical

Date of listing in Appendix I
1 July 1975

Distribution
Argentina, Belize, Bolivia (Plurinational State of), Brazil, Colombia, Costa Rica, Ecuador, El Salvador, French Guiana [FR], Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, Trinidad and Tobago (distribution uncertain), Uruguay, Venezuela (Bolivarian Republic of)

Habitat
L. longicaudis has been reported to show high flexibility and adaptability regarding habitat use (Alarcon and Simões-Lopes, 2003; Rheingantz *et al.*, 2016). The major reported habitat types are wetlands, coastal marine ecosystems, river ecosystems, mangroves, lakes, lagoons and marshes (Alarcon and Simões-Lopes, 2003; Kruuk, 2006; Gomez *et al.*, 2014) although the species has been documented at altitudes as high as 3885 m in the Llanganates National Park, Ecuador (Castro-Revelo and Zapata-Ríos, 2001). The species has also been observed in areas of high urban expansion in close proximity to human disturbance (Alarcon and Simões-Lopes, 2003). For example, it has been reported that individuals studied in the Osa Peninsula, Costa Rica were found to favour areas of pasture and selected against habitat with forest within 100 m of the river (Smith *et al.*, 2020). Additionally, it has also been reported that favoured feeding sites of individuals in the Environmental Protection Area of Anhatomirim, Southern Brazil were sites of aquaculture (Alarcon and Simões-Lopes, 2003).

In its response to the questionnaire sent to range States by the Secretariat in January 2024, Argentina informed the Secretariat that the species was observed in different types of habitat, including: i) terrestrial (jungles/forests, shrublands, grasslands); ii) freshwater (lakes/lagoons, rivers/streams, marsh habitats); and iii) anthropic habitats (agricultural crops, forest plantations, livestock pastures, reservoirs/dams, artificial canals, urban/peri-urban areas).

Biological characteristics
L. longicaudis is a top predator in many aquatic freshwater systems across Central and South America (Gomez *et al.*, 2014). *L. longicaudis* has shown highly flexible feeding behaviour and an adaptive diet (Rheingantz *et al.*, 2012). Although its diet is primarily composed of fish and crustaceans (Quadros and Monteiro-Filho, 2010; Rheingantz *et al.*, 2012), other prey items have been documented including amphibians, mammals (mainly small rodents), reptiles, insects and birds (Colares and Waldemarin, 2000; Quadros and Monteiro-Filho, 2010; Rheingantz *et al.*, 2011). A study in Santa Catarina State, southern Brazil found the main fish species in the diet of *L. londicaudis* to be *Hoplias malabaricus* and *Geophagus brasiliensis*, while *Trichodactylus fluviatilis* was the main crustacean in its diet. This study found that fruits, reptiles, birds and mammals were only occasionally eaten (Quadros and Monteiro-Filho, 2010).

Females exclusively carry out parental care (De Almeida and Ramos Pereira, 2017). There is no specific breeding season (although a study in Trinidad (Larivière, 1999, in Devenish and Sayer, 2007) identified March to May as the mains reproduction period) and delayed implantation can occur to allow for breeding at more favourable times in the year (Kruuk, 2006). In its response to the questionnaire sent to range States by the Secretariat in January 2024, Argentina noted that the species breeds once a year, although the breeding season varies geographically; some populations only present reproductive activity during spring while others do so at any time of the year.

Diurnal activity levels appear to vary between populations, with populations in the Brazilian portion of the Pantanal reportedly most active during the daytime, whilst populations in the Atlantic Forests of Brazil were more active during dawn and at night (Rheingantz *et al.*, 2016). This variability has been proposed to be an adaptation to levels of human activity in the local area, or to the activity levels of local prey species (Rheingantz *et al.*, 2016).

Conservation status

L. longicaudis is listed as Near Threatened (NT) and decreasing on the IUCN Red List of Threatened Species and was last assessed 24 January 2020 (Rheingantz *et al.*, 2022). At the national level, geographically distinct populations may be assessed differently.

L. longicaudis was added to Appendix I on 1 July 1975. High levels of hunting of *L. longicaudis* for its pelt in the 20th century have been reported as a major threat to the species at the time and contributed to its listing on Appendix I (Antunes *et al.*, 2016; De Almeida and Ramos Pereira, 2017; Pimenta *et al.*, 2018). However, no reference has been made in recent years to large scale hunting of *L. longicaudis*.

Spatial distribution models have found that there is more suitable habitat for *L. longicaudis* inside protected areas than outside of protected areas (Rheingantz *et al.*, 2014), while Alarcon and Simões-Lopes (2003) observed a higher density of *L. longicaudis* burrows inside protected areas. Rheingantz *et al.* (2014) also found that areas with higher annual temperatures were preferred, with the most suitable habitats being the Amazon, Atlantic Forest and the Pantanal. Habitat quality was also positively correlated with heterozygosity of *L. longicaudis* (Trigila *et al.*, 2016).

In January/February 2024, some range States responded to a questionnaire sent by the Secretariat, alongside a draft of this case study, providing the following information regarding the conservation status of *L. longicaudis* in their respective countries:

Argentina noted that this elusive species is relatively difficult to observe, so trends based on occasional records can lead to unrealistic inferences. However, most of the evidence obtained in Argentina corresponds to occasional records, since there are no quantitative or demographic data for any population. In some areas where it is monitored (although not as a focal species), such as in the Paraná Delta (since 2007) or the Iguazú National Park (since 2011), its trend seems stable.

On the other hand, Mexico noted that the species is considered Threatened nationally due to its complex ecological niche, which is highly associated with waterbodies and particular characteristics of each one, state of the vegetation surrounding waterbodies, low reproductive rate and long parental care, low population abundance and population isolation, and high sensitivity to human presence and activities.

In Brazil, a national assessment carried out in 2018 and adjusted in 2019 did not consider the species as threatened, due to its broad distribution in the Neotropical region, occurring in almost all the regions of Brazil that possess perennial water bodies with food resources availability, and the species' apparent tolerance to some disturbance. Nevertheless, the species is considered threatened in some parts of Brazil, including in Minas Gerais, São Paulo, Espirito Santo, Bahia, and the Atlantic Forest biome. Notwithstanding the species' non-threatened status in the country, there is strong evidence of population decline throughout Brazil as a result of degradation and habitat destruction, such as riverbanks and lakes (Rheingantz & Trinca 2015; Leuchtenberger *et al.*, 2023).

Ecuador informed the Secretariat in January 2024 that according to the Ecuadorian Mammal RedList of 2021, the species is considered threatened in the country, with the Amazonian population (*L. l. longicaudis*) assessed as Vulnerable (VU) and the Pacific (coastal) and Andean populations (*L. l. annectens*) assessed as Endangered (EN), and that the population of the species in the country has decreased by approximately 20% between 2012 and 2021.

Similarly, Trinidad and Tobago informed the Secretariat that *L. longicaudis* is considered Vulnerable in Trinidad, although additional research is required to obtain more information about the Trinidadian population and its habitat.

Suriname noted that the conservation status of *L. longicaudis* in the country was assessed in 2009, 2012 and 2021, based on available reports, communication with locals and field surveys. However, there is currently insufficient data to assess the population trend of the species in Suriname, nor the trend of its habitat.

Threats

Anthropogenic factors are the greatest threat to *L. longicaudis*. In particular, human disturbance (Alarcon and Simões-Lopes, 2003; Gomez *et al.*, 2014; Rheingantz *et al.*, 2014), habitat loss and fragmentation (De Almeida and Ramos Pereira, 2017) and conflict with fishermen (Barbieri *et al.*, 2012; De Almeida and Ramos Pereira, 2017; Andrade *et al.*, 2019). Intense hunting for fur has historically led to the extirpation of *L. longicaudis* in many parts of its range (Devenish and Sayer, 2007). Regarding habitat loss and fragmentation, Ecuador informed the Secretariat in January 2024 that the extent of suitable habitat for coastal populations of *L. longicaudis* is only 5% of what it used to be in 1980, whereas for Andean and Amazonian populations the extent of suitable habitat is 50% and 90%, respectively, of the 1980 extent. Mexico estimated that between 1997 and 2021 some 33% of the primary vegetation available for this species was lost. While a significant quantity of suitable habitat remains available in Mexico, it continues to be in decline. By 2009, it was estimated that 73% of waterbodies in Mexico were contaminated to some degree, since 80% of wastewater from towns and cities, and 85% of industrial water, are discharged without prior treatment. Considering that *L. longicaudis* depends on good water quality, it can be deduced that this resource is not adequate.

Conflicts between *L. longicaudis* and fishermen have been reported to occasionally result in the illegal killing of otters (De Almeida and Ramos Pereira, 2017). *L. longicaudis* has been observed congregating in areas with fishing gear or near fishing boats as well as feeding on fish caught in gillnets, damaging fishing nets and releasing captured fish (Barbieri *et al.*, 2012; Andrade *et al.*, 2019). Incidental capture of otters in fishing gear has also been reported (Barbieri *et al.*, 2012). In a survey of two fishing communities in southern Brazil, 97.2% of respondents reported that otters negatively impacted their fishing activities whilst 30.5% reported that they would kill otters if it was not prohibited (Barbieri *et al.*, 2012).

Other threats include road accidents (De Almeida and Ramos Pereira, 2017), predation by species such as piranha, anaconda and caiman (Kruuk, 2006) and dogs, and loss of genetic diversity (Trigila *et al.*, 2016; Latorre-Cardenas *et al.*, 2020). Ecuador informed the Secretariat in January 2024 that its Pacific (coastal) and Andean populations are also threatened by feral dogs and water pollution from nearby crop farms and cattle ranching.

Legal trade
There are no quotas currently in place for this species.

Literature search
Historically, there have been high levels of trade in *L. longicaudis*, particularly in pelts (Antunes *et al.*, 2016; De Almeida and Ramos Pereira, 2017; Pimenta *et al.*, 2018). An estimated 370,000 individuals were killed for their pelts in the central-western Brazilian Amazon from 1904 to 1969 (Antunes *et al.*, 2016), while approximately 110,000 pelts of *L. longicaudis* are reported to have been exported from Peru in the period 1959 to 1979. According to reports of local people, commercial pelt hunting was also common on the Içana River in the 1950s, becoming the main commercial activity in the area by the 1960s (Pimenta *et al.*, 2018). Locals noted that *L. longicaudis* was not targeted initially due to its low value compared to that of the giant otter (*Pteronura brasiliensis*), however as giant otter populations decreased, *L. longicaudis* pelts were increasingly used as a substitute.

Pelt harvest on the Rio Negro is reported to have increased until the late 1960s when the Fauna Protection Law of 1967 was passed in Brazil (Pimenta *et al.*, 2018). Despite this, records from commercial boats owned by J. G. Araujo Ltda, a large trading company based in Manaus at the time to whom the Baniwa hunters of the Rio Içana reportedly sold otter pelts and who reportedly controlled commerce on the Rio Negro, show that the number of *L. longicaudis* pelts traded by this company decreased by 76% from 1936 to 1953 (Pimenta *et al.*, 2018).

In its response to the questionnaire sent to range States by the Secretariat in January 2024, Mexico notes that sustainable use of the species, including for commercial purposes, may be permitted, as long as the legal origin of specimens, parts or derivatives is demonstrated, or that they are a product of captive breeding.

CITES trade database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports and source code I shipments were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Lontra longicaudis*

There are 26 exporter reported and 21 importer reported shipments of trade in *L. longicaudis* recorded in the CITES Trade Database between 1975 and 2021. The first record is dated 1979 and the last is dated 2021. There are no reported trade records between 2014 and 2021.

There are only a few records of shipments of import/export in *L. longicaudis.* The recorded import and export of *L. longicaud*is are of source code C (captive-bred; 3 exporter reported shipments) and W (wild; 15 exporter reported and 6 importer reported shipments) with 8 and 15 exporter and importer reported shipments with no specified source codes. The majority of the trade is for scientific purposes of specimens, bodies, live, bone pieces and skins.

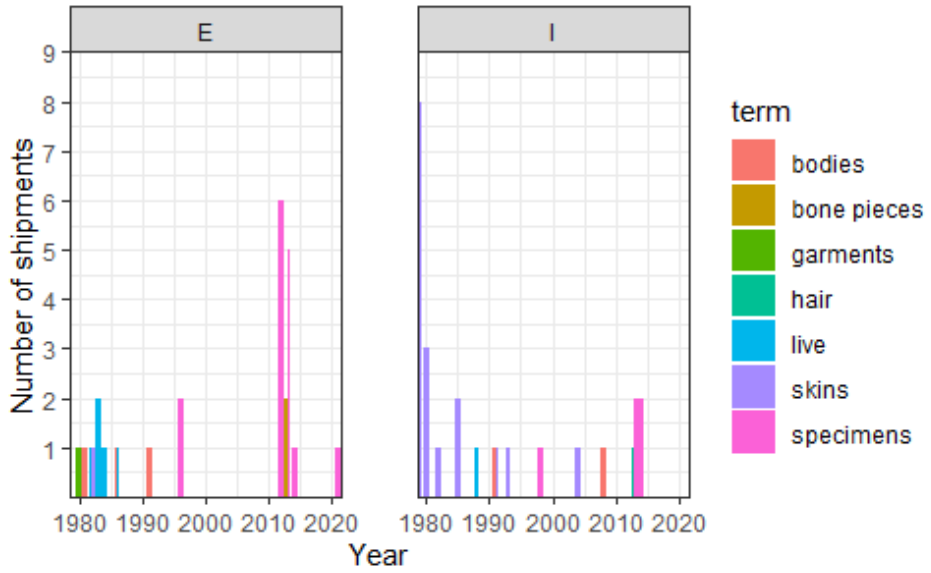

Figure 1. Shipment records per year of import/export in *L longicaudis* as recorded in the CITES Trade Database between 1975 and 2022 colored by the term used in trade.

Illegal trade

No specific records of poaching or illegal trade in *L. longicaudis* was found in published literature.

In its response to the questionnaire sent to range States by the Secretariat in January 2024, Argentina noted that during the 1990s, two cases of collection of *Lontra longicaudis* hides were recorded in tanneries around Buenos Aires. In one of the cases, 90 hides were seized. Many of these hides were hidden between *Myocastor coypus* hides (trade in this species is permitted), using the same “staking” method that is used for the latter. Argentina also highlighted that *L. longicaudis* hides have been detected on other occasions, mixed with *L. provocax* hides.
Brazil noted that *L. longicaudis* is occasionally captured from the wild for personal use (pet, medicinal, consumption), but that it does not appear to be commercialized. Such harvesting is illegal according to current legislation.

Range States are invited to provide additional information on the presence and extent of illegal trade in this species.

Current conservation actions in place

L. longicaudis is currently held in several zoos across South America including in Brazil, Colombia, Ecuador, Mexico (Duplaix and Savage, 2018) and Trinidad and Tobago.

Argentina
In its response to the questionnaire sent to range States by the Secretariat in January 2024, Argentina noted that the species is present in 26 protected areas, both national and provincial (https://sib.gob.ar/especies/lontra-longicaudis). In the Iberá wetlands, it is one of the species that attracts eco-tourism.

Brazil
The neotropical otter is included in three National Action Plans for the Conservation of Endangered Species (PAN). These plans are management instruments built by ICMBio with the participation of various actors with the aim of ordering and prioritizing actions for the conservation of biodiversity and its natural environments:
PAN giant otter 1st and 2nd cycle (Available at: https://www.gov.br/icmbio/pt-br/assuntos/biodiversidade/pan/pan-ariranha) - Completed 2020, 3rd cycle planned;
PAN Baixo Iguaçu 1st cycle (Available at: https://www.gov.br/icmbio/pt-br/assuntos/biodiversidade/pan/pan- Baixo-iguacu) - Completed 2022;
PAN Amazon Aquatic Mammals 1st cycle (Available at: https://www.gov.br/icmbio/pt-br/assuntos/biodiversidade/pan/pan-mamiferos-aquaticos-amazonicos) - In progress 2024.
Results of these PANs include increased knowledge about the species, production of content and environmental education actions and protocols aimed at protecting the species, in addition to carrying out conservation actions for this species in situ.

Mexico
In its response to the questionnaire sent to range States by the Secretariat in January 2024, Mexico noted that the species and its habitat are protected through the establishment and operation of protected areas, Areas Voluntarily Destined for Conservation and with the support of subsidy programmes such as the Programme for the Protection and Restoration of Ecosystems and Priotiry Species (PROREST) with federal government funds administered by the National Commission of Protected Natural Areas (CONANP). CONANP has elaborated a Programme of Action for the Conservation of *L. longicaudis*.

Range States are invited to provide additional information on current conservation actions in place for *L. longicaudis*.

National legislation
Range States are invited to provide information on national legislation in force governing *L. longicaudis* in their respective countries.

L. longicaudis is legally protected in Argentina, Bolivia, Brazil, Colombia, Costa Rica, Guatemala, Ecuador, El Salvador, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Suriname, French Guiana, Trinidad, Tobago, Uruguay, and Venezuela (Rheingantz *et al.*, 2021).

Argentina
Export of live specimens of *L. longicaudis* from Argentina is prohibited in accordance with Resolution No. 62 issued by the former Secretaría de Agricultura, Ganadería y Pesca (Secretariat of Agriculture, Livestock and Fisheries) of 14 March 1986 as informed by CITES Notification No. 2006/006. The hunting, capture or trade of this species (specimens, products and byproducts) is prohibited in Argentina by Resolution SAyDS 513/2007. Law for the Protection and Conservation of Wild Fauna: Law 22.421/1981. Law of approval of the CITES Convention: Law 22.344/1980. *L. longicaudis* has been declared a Provincial Natural Monument of public interest in the province of Corrientes (Decree 1.555/92).

Brazil
The Fauna Protection Law (Law No. 5197/67) was published in 1967 and prohibits professional hunting and capture, trade and breeding of any wild species without authorization. Authorized enterprises must be registered in the Fauna Use Management Systems, created by IBAMA. All Brazilian states use the system, except for São Paulo. No commercial enterprise is authorized to commercialize *Lontra*

longicaudis. The only management authorizations for this species are held by zoos, conservationist breeders, fauna maintainers or wildlife screening centers (rescue and rehabilitation centers).
Regarding national legislation, IBAMA published Ordinance No. 93 in 1998, which regulates the import and export of wild fauna. To import or export specimens, one must have authorization issued by IBAMA and the specimen must be marked. The import of Appendix-I CITES species and live specimens, products and by-products of Brazilian wildlife is only permitted for specimens bred in captivity. This ordinance also prohibits the importation of live specimens of the order Carnivora for breeding purposes for commercial purposes, as pets or ornamentation and for exhibition in traveling and fixed shows, except in zoos. The export of live specimens, products and by-products of Brazilian wildlife from institutions registered or officially recognized by IBAMA, will only be authorized when they are the subject of technical-scientific exchange with similar institutions abroad, in accordance with specific legislation.
Importing specimen without a favorable official technical opinion and license issued by a competent authority is a crime according to the Brazilian Environmental Crimes Law (Law 9605/98).
Trade is not regulated specifically, because hunting, capture and commercialization of this species and its parts is prohibited under national legislation.

Guyana
Apparently the species is not legally protected in Guyana (De Almeida and Ramos Pereira, 2017).

Mexico
In its response to the questionnaire sent to range States by the Secretariat in January 2024, Mexico lists the following laws and regulations that bear relevance to the conservation of *L. longicaudis*:

- General Wildlife Law and its Regulations
- General Law of Ecological Balance and Environmental Protection
- Foreign Trade Law
- Law of General Import and Export Taxes
- Customs Law
- Federal Penal Code
- Official Mexican Standard NOM-059-SEMARNAT-2010, Environmental Protection – Mexican native species of wild flora and fauna – Risk categories and specifications for their inclusion, exclusion or change – List of species at risk and its modifications to the Annex Regulations III
- Agreement that establishes the merchandise whose import and export is subject to regulation by the Ministry of Environment and Natural Resources.

Suriname
The species is protected by the Game Law of 1954.

Trinidad and Tobago
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Trinidad and Tobago notes that the absence of specific CITES legislation within Trinidad poses a challenge. However, the Conservation of Wildlife Act, Chapter 67:01, currently acts as a barrier against various challenges. This Act automatically protects any wild animal that is not specifically listed in the Act.

Preliminary conclusions
As there is little evidence of trade in this species, be it legal or illegal, additional actions within the CITES mandate do not appear necessary at present.

In its response to the questionnaire sent to range States by the Secretariat in January 2024, Argentina recommended that the distribution and population density of the species would need to be further elaborated to properly assess it status at the national level. Although it is a species tolerant to anthropogenic disturbance, it is not well understood how different human activities affect its ecology or demography. For example, contamination of water bodies with phytosanitary products (a process that is occurring in much of the country) could have implications for the species' habitat suitability, population health and prey base, although this has not been properly documented. Alteration or pollution of water bodies could diminish or disrupt connectivity between adjacent cores or populations, with consequent demographic and genetic effects. Finally, the development of strategies to prevent or minimise impacts on fisheries and fish farming could reduce conflicts with humans.

Ecuador noted that even though trade is not a main threat for this species, trade limitations may still be beneficial as a means to raise awareness of other conservation challenges faced by this species.

Mexico made the following recommendations:

- Development and implementation of national action plans for the conservation of the species (including the identification of optimal habitat characteristics to plan appropriate restorations);
- Awareness campaigns, especially on habitat conservation;
- Strategies to improve water quality;
- Campaigns to improve water use;
- Promotion and financing of scientific studies aimed at population estimation and trend analysis;
- Development of capacities and institutional strengthening within the country;
- Improvement in coordination and linkage with national and international authorities in charge of monitoring and verifying compliance with the law.

Suriname made the following recommendation:

- To improve the conservation status and management of this species the studies mentioned below should be conducted:
    - Population size
    - Threats
    - Role of *L. longicaudis* in its ecosystem
    - Yearly monitoring

Trinidad and Tobago also made the following recommendations:

- Human-Wildlife Conflict Management: Develop strategies to minimize human-wildlife conflicts, considering factors such as disturbance tolerance and the availability of sufficient shelter. Ensure that habitat features are preserved, addressing potential limiting factors and supporting the coexistence of otters and humans.
- Mitigation of Anthropogenic Impacts: Mitigate anthropogenic impacts on otter habitats, particularly in areas with disturbed catchments. Address factors such as habitat fragmentation and declining otter populations, which may affect spraining behaviour and communication among otters.
- Research and Monitoring Programs: Establish ongoing research and monitoring programs to gather data on otter behaviour, habitat use, and potential threats. This information is crucial for adapting conservation strategies over time and ensuring the long-term viability of otter populations.
- Legislation and Enforcement: Strengthen existing wildlife protection laws and ensure their effective enforcement. Emphasize the legal protection of the Neotropical River Otter, as it is listed on Appendix I of CITES and is considered 'vulnerable' in various countries.
- Watershed Management: Adopt a watershed approach to conservation, considering both riverine and terrestrial habitat requirements. Develop conservation strategies that protect the Neotropical River Otter within the broader context of watershed management.
- International Collaboration: Collaborate with international organizations and experts in otter conservation to benefit from global expertise and resources. Share information and best practices to ensure a holistic and effective approach to the conservation of Lontra longicaudis in Trinidad.

Range States are invited to make recommendations on possible actions.

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Hyacinth Macaw (*Anodorhynchus hyacinthinus*)

Taxonomy
Scientific name: *Anodorhynchus hyacinthinus* (Latham, 1790)
Common names:

English	Hyacinth macaw
French	Ara hyacinthe / Ara jacinthe / Ara bleu
Spanish	Guacamayo azul / Guacamayo jacinto

Date of listing in Appendix I
22 October 1987
NB. The species is included in Appendix-II in 1981 under Psittaciformes spp. and transferred to Appendix I in 1987 under of *Anodorhynchus* spp.

Distribution
Bolivia (Plurinational State of), Brazil, Paraguay

The Brazilian population is located primarily in three main areas; the Pantanal, East Amazonia and north-eastern Brazil (Presti *et al.*, 2015; De Almeida *et al.*, 2019).

Habitat
A. hyacinthinus is found in gallery forests and semi-open areas, particularly marshes and palm groves (CITES, 1987). The habitat of the Pantanal population is a periodically flooded alluvial plain, the population in the north is found in the Amazon rainforest in an area of dense primary rainforest and the north-east Brazil population is found in the Cerrado, which is made up of grassland with small scattered trees (Presti *et al.*, 2015).

Biological characteristics
The *A. hyacinthinus* breeding season runs from July to December/January (Guedes, 2009; Rueness *et al.*, 2020). The species nests in tree cavities, preferentially in the manduvi tree (*Streculia apetala*), and lays two to three eggs at a time. It feeds on nuts of large palm fruits (Rueness *et al.*, 2020). It should be noted that the main seed disperses for the manduvi tree are toco toucans (*Ramphastos toco*) and chestnut-eared aracaris (*Pteroglossus castanotis*), and toco toucans are also a main predator of *A. hyacinthinus* eggs (Pizo *et al.*, 2008).

Conservation status
A. hyacinthinus is currently listed as Vulnerable (VU) and decreasing according to the IUCN Red List of Threatened Species and was last assessed 1 October 2016 (BirdLife International, 2016). It was added to Appendix II in 1981 grouped with *Psittaciformes* spp. (CITES, 1981), and up-listed to Appendix I on 22 October 1987, along with all other species in the genus *Anodorhynchus*, after a proposal from Brazil (CITES, 1987). The Brazilian proposal cited difficulty in distinguishing between the legal and illegal trade, mismatch of trade levels with reports of hunting and smuggling in Brazil, and the possibility of hyacinth macaw chicks being confused with other species at customs as reasons for the Appendix I listing proposal.

The population size of *A. hyacinthinus* is estimated at approximately 6,500 individuals (equivalent to 4,300 mature individuals (BirdLife International, 2016)) in the wild (Guedes, 2004; Presti *et al.*, 2015; Rueness *et al.*, 2020), comprised of approximately 5,000 individuals in the Pantanal, Brazil, approximately 1,000 individuals in east Amazonia and the Gerais and approximately 200-300 individuals in Bolivia (IUCN, 2000; Rueness *et al.*, 2020). There is also reportedly a small population in Concepción department, Paraguay (BirdLife International, 2016). Of note, approximately 1,000 individuals were observed at one ranch in the Barão do Melgaço sub-region of the Pantanal in a study conducted from 2013 to 2015, making this the highest concentration of the species across its range (Scherer-Neto *et al.*, 2019) and representing approximately 20% of the Pantanal population.

Although an overall decline has been reported in the species (IUCN, 2000), an increasing population trend has been reported in the Pantanal, Brazil (Guedes, 2004; Guedes, 2009; Ortiz-von Halle, 2018; Scherer-Neto *et al.*, 2019; Develey, 2021), with the population reportedly having more than doubled and subsequently expanded out to other areas (Guedes, 2004). For example, the population in the

Mato Grosso do Sul State has increased from an estimated 1,500 to approximately 5,000 individuals (Ortiz-von Halle, 2018). The observed recovery in the Pantanal population resulted in the removal of the hyacinth macaw from the list of threatened birds in the Brazilian review conducted by the Ministry of the Environment in 2014 (Portaria No. 444/2014) (Develey, 2021). However, in its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil noted that its most recent assessment of the conservation status of *A. hyacinthinus* was completed in April 2022. According to this assessment, the species lost 11.3% of its suitable habitat in the Pantanal between 2002 and 2017, and 9.7% of its habitat in the Amazon and Central Brazil. Extrapolating these data to subsequent years and into the future (from 2002 to 2036), habitat loss in these regions are estimated at 39% and 21%, respectively. It is suspected that the sub-populations of *A. hyacinthinus* in these regions have declined at similar rates. On average, the decline of the Brazilian population is suspected to be 34% in three generations.

Threats

The main threats to *A. hyacinthinus* are poaching for the pet trade, both domestic and international, and habitat loss/fragmentation (CITES, 1987; IUCN, 2000; Presti *et al.*, 2015; Berkunsky *et al.*, 2017; de Almeida *et al.*, 2019; Rueness *et al.*, 2020). Habitat loss has been attributed to burning and clearing of areas for cattle pasture (Rueness *et al.*, 2020). Severe drought and fires in 2019 and 2020 in the Pantanal have also further contributed to habitat loss, with fires destroying important feeding and breeding grounds in the area (Develey, 2021; Marengo *et al.*, 2021). In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil notes that habitat loss and degradation are further compounded by indiscriminate use of pesticides, climate change, and invasive alien species, which hamper the macaw's highly specialized feeding and nesting habits.

Of additional concern is the isolation of populations and the associated genetic differentiation that has been observed between Brazilian populations of *A. hyacinthinus* (Faria *et al.*, 2008; Presti *et al.*, 2015; De Almeida *et al.*, 2019). One study found genetic differentiation between four Brazilian *A. hyacinthinus* populations (the north and south Pantanal, Pará State and Northeast Brazil), suggesting that they should be treated as evolutionarily distinct units requiring independent management (De Almeida *et al.*, 2019). It has also been reported that the Brazilian *A. hyacinthinus* populations have low genetic diversity in comparison to other neotropical parrot species (Faria *et al.*, 2008; Presti *et al.*, 2015; De Almeida *et al.*, 2019).

Climate change also poses a threat to this species as lower rainfall and higher temperatures have been found to correlate with lower breeding success (Guedes, 2009).

Legal trade

There are no quotas or trade suspensions currently in place for this species.

CITES Trade Database

The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1981 To: 2023
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Anodorhynchus hyacinthinus*

There are 23 exporter-reported shipments of *A. hyacinthinus* recorded in the CITES Trade Database during the period it was listed in Appendix II (1981 to 1987) and 675 exporter-reported shipments since it was included in Appendix I (1988 to 2022).

The majority of recorded trade was in live specimens, accounting for 617 shipments with 1,025 birds reported by exporters. The remaining trade was comprised of low numbers of other products, with

specimens (29 shipments) and feathers (21 shipments) accounting for the second and third highest number of shipments.

The top exporter was the Philippines (276 shipments reported by exporters), followed by the United States and Switzerland (64 and 44 shipments, respectively).

The main source codes reported were captive bred animals with source codes C (561 shipments reported by exporters) and F (73 shipments reported by exporters). Source code W (wild) accounted for 14 shipments reported by exporters, all of which were for purpose code S (scientific) or E (educational).

In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil notes there is legal domestic trade in the species, which is supplied by animals born in captivity. Domestic demand for the species mostly concerns the pet trade and cultural or ceremonial uses.

Illegal trade

Illegal trade in *A. hyacinthinus* has been documented in the past with an estimated 2,000 individuals being traded internationally from 1981 to 1992 despite trade being illegal at the time according to both CITES and Brazilian regulations (IUCN, 2000). Brazil banned the export of *A. hyacinthinus* in 1967 along with many other species of wildlife, however it has been reported that many *A. hyacinthinus* individuals were smuggled through other countries such as Bolivia, Paraguay and the Philippines (IUCN, 2000). In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil notes that illegal trafficking in the species is entirely supplied by eggs and offspring taken from the wild. However, clear data on the scale and extent of illegal trade in *A. hyacinthinus* in Brazil are not available.

Range States are invited to provide additional information on suspected, inferred, or confirmed current levels of illegal trade in *A. hyacinthinus* affecting their respective countries.

Current conservation actions in place

There are several conservation programmes currently in place for *A. hyacinthinus*. One of the most commonly cited is the Hyacinth Macaw Project (Projeto Arara Azul), started in 1990, which monitors the Brazilian Pantanal *A. hyacinthinus* populations (Rueness *et al.*, 2020). Management practices used include the installation of artificial nests, cavity management, artificial incubation of eggs, management of chicks, promotion of ecotourism, public awareness campaigns and collaboration with various stakeholders including local communities (Guedes, 2004; Ortiz-von Halle, 2018; Rueness *et al.*, 2020; Develey, 2021). Since the beginning of the project, the *A. hyacinthinus* population in Mato Grosso do Sul State has increased from an estimated 1,500 individuals to approximately 5,000 (Ortiz-von Halle, 2018). Recolonisation of nests has been observed (Ortiz-von Halle, 2018) and there is evidence that poaching has decreased in the Pantanal (Ortiz-von Halle, 2018; Develey, 2021), which has been partly contributed to awareness raising campaigns (Develey, 2021). The project also uses *A. hyacinthinus* as an umbrella species to promote the protection of the whole Pantanal (Ortiz-von Halle, 2018; Rueness *et al.*, 2020). Other non-governmental institutions supporting the conservation of *A. hyacinthinus* in Brazil include the Pedro Scherer Neto Foundation and the Wildlife Conservation Society (WCS).

In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil reports that in 2022, the Brazilian government promoted, together with the Instituto Arara Azul and other partners, a unique planning workshop for the conservation of the Hyacinth Macaw, in which representatives from Paraguay and Bolivia were present. Actions are currently being developed by the group, which maintains contact with each other, exchanging information on monitoring, reproduction and illegal capture of the species. The Arara Azul Institute is mainly responsible for contact with foreign partners and has helped the teams with its extensive experience in field work. On the other hand, partners inform the Brazilian government (Instituto Chico Mendes de Conservação da Biodiversidade - ICMBio) about reports and seizures of Hyacinth Macaw that have occurred in their countries.

Brazil also notes that a Plan for the conservation of the Hyacinth Macaw was prepared in 2022, within the scope of the National Action Plan for the Conservation of Birds of the Cerrado and Pantanal. As

soon as the Plan is published, it will be available on the Action Plan website[1]. Efforts are focused on in-situ conservation, with ex-situ conservation not being considered essential for the maintenance of the species in the wild, for the time being. Nevertheless, there are commercial and conservation breeding facilities that maintain and reproduce the species legally in Brazil. Occasionally, wild animal rehabilitation centers also receive individuals originating from seizures or voluntary surrender.

On a ranch in the Barão do Melgaço sub-region of the Pantanal, home to the highest concentration of the species anywhere across its range, management actions include protection of dedicated areas for vegetation recovery and particularly of native species, to maintain food sources and roosting sites for macaws (Scherer-Neto *et al.*, 2019). Additionally, traditional cattle management with rotational grazing is used, along with low numbers of employees and an absence of free-ranging pets to reduce disturbance (Scherer-Neto *et al.*, 2019). These management practices also protect other threatened species in the area such as the jaguar (*Panthera onca*) and the maned wolf (*Chrysocyon brachyurus*) (Scherer-Neto *et al.*, 2019).

Other conservation strategies have included education and local income generation through bird-watching (Ortiz-von Halle, 2018). The most common management practice for neotropical parrots is the use of nest boxes, followed by nest/roost surveillance (Berkunsky *et al.*, 2017).

In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil notes that funding available for the conservation of this species in Brazil is not yet adequate. Financing of conservation actions for this species has occurred mainly through fundraising carried out by the Arara Azul Institute, with some support from the Pedro Scherer Neto Foundation and the Brazilian government, especially via the GEF-Terrestre Program, which finances actions only in the Pantanal biome.

National legislation

Brazil
Legislation relevant to the conservation of *A. hyacinthinus* includes Law 5197 of 1967 on the trade in specimens of wild fauna and products and objects that involve their hunting, persecution, destruction or capture and the corresponding sanctions established by Law 9605 of 1998 and Decree 3607 of 2000 against the use of wild fauna carried out in violation of current legislation. Law 5197 of 1967 establishes that the export of live wild animals, their parts or products depends on a document issued by the Competent Government Authority. The CITES permits issued by IBAMA as the CITES Management Authority comply with both CITES requirements and Law 5197 of 1967. The same law establishes that the import of wild animals depends on a permit from the competent agency, which is IBAMA.
The same law also prohibits (domestic) trade in specimens of wild fauna and products and objects that involve their hunting, persecution, destruction or capture. It allows, upon authorization of the competent agency, the collection of eggs, larvae and chicks destined for breeding facilities, as well as the trade of specimens from allowed facilities. The CONAMA (National Environment Council) Resolution 489, October 26, 2018 establishes the categories of facilities for the use of wild fauna in captivity and the criteria for their authorization.
Law 9605 of 1998 and Decree 6514 of 2008 penalize the use of fauna carried out in violation of current legislation.

Preliminary conclusions
In light of past illegal trade, investigation of the level of illegal trade and trafficking routes for *Anodorhynchus* spp., including *A. hyacinthinus* and identifying appropriate management and law enforcement action might be useful.

In its November 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Brazil notes the need for joint work of the various police forces that work to prevent and combat the trafficking of Hyacinth Macaw, with intelligence work that could be carried out with neighbouring countries (Bolivia and Paraguay). These countries have served as a transit for animals taken from the wild in Brazil.

[1] https://www.gov.br/icmbio/pt-br/assuntos/biodiversidade/pan/pan-aves-docerrado-e-pantanal

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Siamese crocodile (*Crocodylus siamensis*)

Taxonomy
Scientific name: *Crocodylus siamensis* (Schneider, 1801)
Common names:

English	Siamese crocodile
French	Crocodile du Siam
Spanish	Cocodrilo de Siam

Date of listing in Appendix I
1 July 1975

Distribution
Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar (uncertain), Thailand, Viet Nam

Habitat
C. siamensis is found in freshwater wetlands including slow-moving rivers and streams, lakes, marshes and swamps (CITES, 2013; Platt *et al.*, 2019). Floating mats of vegetation appear to be an important part of the *C. siamensis* habitat (Platt *et al.*, 2006; Behler *et al.*, 2018). In a survey of *C. siamensis* in Mesangat swamp, East Kalimantan, Indonesia, 91% of individuals sighted were located within 2m of floating mats of vegetation, while nests have also been observed on these mats (Behler *et al.*, 2018).

Of note, habitat suitability models have identified the largest proportion of suitable habitat to be in Cambodia (Ihlow *et al.*, 2015). It was additionally reported that only 11% of identified suitable habitat was located within protected areas.

Biological characteristics
C. siamensis piles together soil, leaves and woody debris, to build large nests of approximately 1.5 m wide and 0.3 m high (Platt *et al.*, 2006; Behler *et al.*, 2018). These are commonly built on floating mats of vegetation. It has been noted by local fishermen that *C. siamensis* build their nests in the same location every year (Behler *et al.*, 2018).

C. siamensis appear to be dietary generalists, consuming a variety of taxa including reptiles and mammals (Behler *et al.*, 2018). Analysis of the stomach contents of one individual in Mesangat swamp observed necrophagic ants, suggesting that *C. siamensis* may also consume carrion (Behler *et al.*, 2018).

Tracking data of captive-reared, reintroduced individuals in the Cardamom mountains, Cambodia, found a mean distance travelled of 280 m per day by adults, although longer distances have been recorded with two individuals travelling over 10 km downstream from the release site (Eam *et al.*, 2017).

Conservation status
C. siamensis is categorised as Critically Endangered (CR) and decreasing on the IUCN Red List of Threatened Species and was last assessed 23 February 2012 (Bezuijen *et al.*, 2012). It was listed in Appendix I on 1 July 1975.

The global wild population of *C. siamensis* was estimated to be fewer than 1,000 mature individuals in 2019 (Platt *et al.*, 2019). The largest known extant population is thought to occur in Lake Mesangat, Kalimantan, Indonesia (Platt *et al.*, 2019), with an estimated population of 75 individuals (not including hatchlings) and an estimated population density of 28 individuals per km^2 (Behler *et al.*, 2018). In its February 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Indonesia informed the Secretariat that Lake Mesangat in Muara Ancalong sub-district is thought to be the last remaining habitat of this species in Indonesia, where it is sympatric with *C. tomistoma* in the juvenile stage. Nevertheless, a recent survey by the Indonesian Equator Foundation also found *C. siamensis* in Kenohan (Lake) Suwi, also in Muara Ancalong sub-district.
In 2013, there were an estimated 200 individuals in the wild in Thailand across five protected areas (CITES, 2013). The wild Vietnamese population of *C. siamensis* was estimated to be approximately 100 individuals in 2005 however the species was later categorised as 'possibly extinct in the wild' (Ha

et al., 2007). In Lao People's Democratic Republic (Lao PDR), there were no official reports of observations of *C. siamensis* in the wild for over 30 years until 2001 when a juvenile was documented in Savannakhet province (Mateus, 2001). In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cambodia informed the Secretariat that the wild population of *C. siamensis* in the country is estimated at 350-500 individuals. It is unknown to what extent the overall population has declined within Cambodia. Global populations have been severely reduced, almost certainly by over 80% in the past 75 years (Bezuijen et al., 2012). Cambodia is undoubtedly no exception. Tonle Sap Biosphere Reserve was likely once home to the largest contiguous population of the species but is largely extirpated. Since wild *C. siamensis* populations were confirmed in Cambodia in 2000, it is likely that populations have remained largely stable overall. Many smaller remnant populations have likely been lost, but the largest populations have recovered slightly, and conservation actions in the form of releases have bolstered extant populations in the Cardamoms (Cardamom National Park and Phnom Samkos Wildlife Sanctuary), Royal Turtle and Crocodile Management Area in Prek Sre Ambel System and in 2022 a population of Siamese crocodiles were reintroduced to Siem Pang Wildlife Sanctuary.
In February 2024, Malaysia informed the Secretariat that the conservation status of *C. siamensis* in Malaysia is uncertain, and may be locally extinct in Peninsular Malaysia. A crocodile eyeshine survey conducted from 2016 to 2020 in Peninsular Malaysia only recorded *C. porosus*. Only two individuals of *C. siamensis* are known to be kept in captivity in Peninsular Malaysia.

Despite its low population in the wild, *C. siamensis* is well established in captivity both in farms across Asia and in zoos across Europe, North America and Asia (Platt *et al.*, 2019). Farmed crocodile populations in Cambodia were estimated at 257,000 in 2010, but hybridization with *C. porosus* and *C. rhombifer* is common.

Remnant habitats and populations of *C. siamensis* in Lao PDR and Cambodia are reportedly of high conservation value due to habitat suitability, accessibility, coverage by protected areas and connectivity between habitats (Ihlow *et al.*, 2015). Nevertheless, in its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cambodia informed the Secretariat that remaining populations of *C. siamensis* in the country are highly fragmented and in low numbers, with many smaller subpopulations (often likely numbering 1-5 individuals) having since been extirpated. Large suitable areas remain (Tonle Sap) but are heavily frequented by human activity. Smaller rivers and wetlands that remain have been heavily fragmented. Ilhow et al. (2015) determined that 63% of Cambodia was suitable habitat at that time, and this has certainly decreased in the interim.

Threats
Commercial hunting of *C. siamensis* for the skin trade is considered the main cause of its population decline (CITES, 2013; Behler *et al.*, 2018), however, this appears to be less of a concern in recent years. For example, no significant harvest was recorded for 10 years at Lake Mesangat (Behler *et al.*, 2018).

The major current threats to *C. siamensis* are habitat loss and fragmentation, incidental capture in fishing equipment, human-wildlife conflict, illegal capture for stocking of farms and low genetic diversity (Platt *et al.*, 2006; CITES, 2013; Ihlow *et al.*, 2015; Behler *et al.*, 2018; Chattopadhyay *et al.*, 2019; Platt *et al.*, 2019). There have also been reports of low levels of opportunistic egg collection for subsistence use (Behler *et al.*, 2018).

Habitat loss and fragmentation are of major concern, with particularly disconnected populations found in Myanmar, Thailand and Viet Nam (Ihlow *et al.*, 2015). This further reduces genetic diversity, with simulations on the current population size and genetic diversity of Cambodia populations predicting that the species could become extinct in many nesting areas in the next 100 years (Chattopadhyay *et al.*, 2019). Habitat loss and fragmentation have been exacerbated by the construction of hydroelectric dams, which decrease connectivity between populations, affect food supplies by altering migratory pathways of prey species, and alter natural flooding levels, which in turn affects breeding grounds (Ihlow *et al.*, 2015).

Several recent studies have reported on possible medicinal properties of products from *C. siamensis,* such as antibacterial, antioxidant, anti-inflammatory and anti-carcinogenic properties (Preecharram *et al.*, 2010; Pata *et al.*, 2011; Hao *et al.*, 2012; Song *et al.*, 2012; Phosri *et al.*, 2014; Jangpromma *et al.*,

2016; Theansungnoen *et al.*, 2016; Maijaroen *et al.*, 2018). Although demand for parts for medicine does not appear to currently be a significant threat to this species, this should be monitored closely.

Of additional concern are reports of hybridisation occurring in crocodile farms between *C. siamensis* and *C. porosus* or *C. rhombifer* (Ihlow *et al.*, 2015). Reintroduction projects have used *C. siamensis* from farms to restock wild populations, and therefore it is vital that genetic assessment is carried out prior to reintroduction, to prevent the reintroduction of hybrid individuals into the wild population.

Legal trade
There are no quotas or suspensions currently in place for this species.

Literature search
Levels of trade in *C. siamensis* have been high for several decades. Over the period 1975 to 2010, *C. siamensis* accounted for 96% of all trade in live Appendix I reptiles, equating to 568,733 individuals. It was the main live Appendix I species exported from Thailand and the only live Appendix I reptile exported from Cambodia and Viet Nam in this time. All of these countries have CITES-registered breeders for the Appendix I species being traded as live exports. China accounted for 88% of all imports in live specimens of Appendix I species (UNEP-WCMC, 2013).

In addition to live specimens, meat of *C. siamensis* has also been traded at high levels with the species accounting for 89% of all trade in meat of Appendix I-listed species over the period 1975 to 2010, equivalent to 1,734,731 kg exported under source code D (bred in captivity). Thailand was the main exporter, accounting for 87% of all meat exports, most of which came from *C. siamensis* (UNEP-WCMC, 2013).

In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cambodia informed the Secretariat that legal domestic trade in the species exists, primarily for leather products, with meat for consumption being a by-product of the leather industry. However, domestic trade is relatively low, and fully supplied by captive-bred and farmed crocodiles.

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports and source code I shipments were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2023
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Crocodylus siamensis*

In the CITES Trade Database between 1975 and 2022, there are 95452 shipments reported by exporters and 11812 shipments reported by importers of *C. siamensis* i. Annual records remained relatively low until the 2000s when they rose dramatically (figure 1). Trade has been dominated primarily by records with source code D (bred in captivity) and purpose code T (commercial) (figure 1).

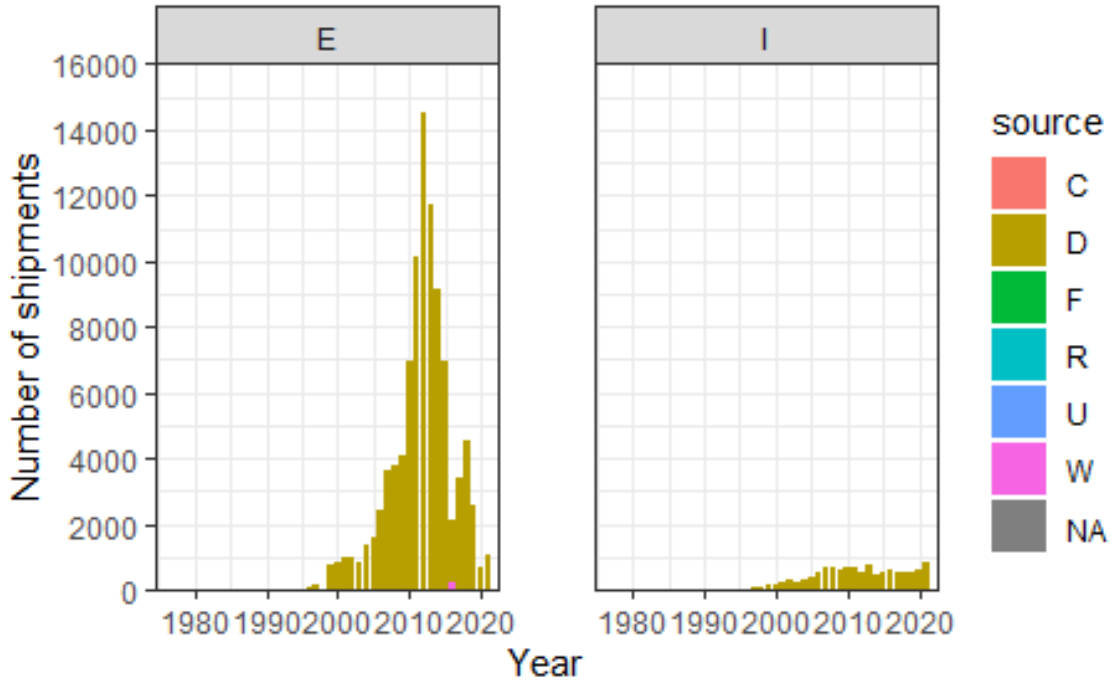

Figure 1. Annual shipments of trade in C. siamensis *recorded in the CITES Trade Database Between 1975 and 2022* colored by source code with the exporter reported shipments (E) and imported reported shipments (I) shown separately.

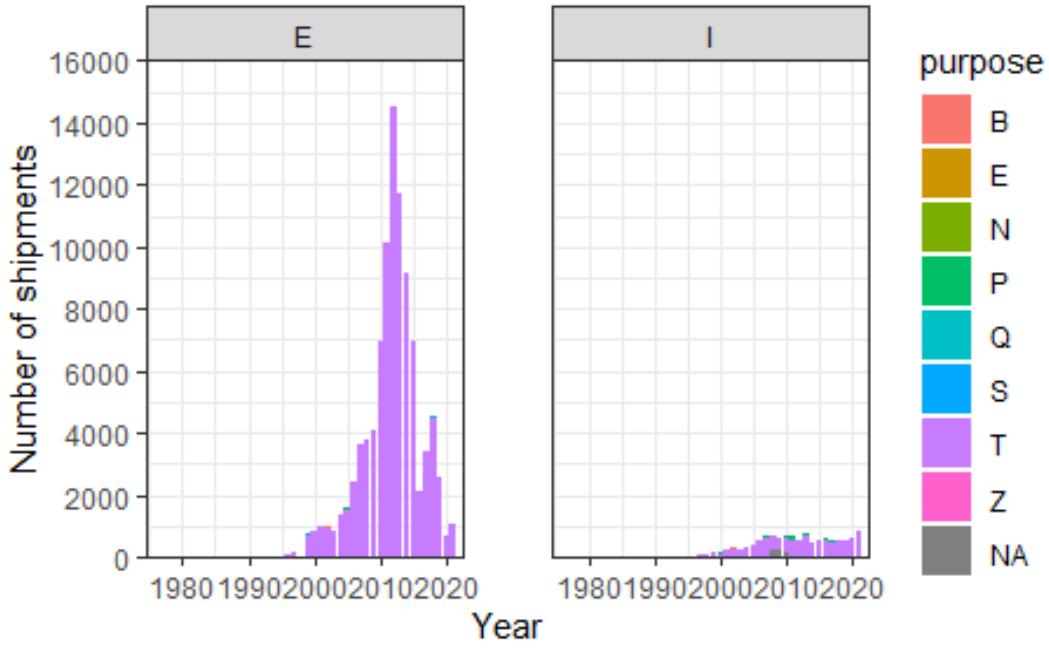

Figure 2. Annual shipments of trade in C. siamensis *recorded in the CITES Trade Database Between 1975 and 2022,* colored by purpose code with the exporter reported shipments (E) and imported reported shipments (I) shown separately.

The main source code reported by both exporters and importers was D (bred in captivity), with 95059 and 11528 shipments respectively. The second most commonly reported source code by exporters was W (wild, 202 shipments) followed by C (captive-bred, 71 shipments), while for 118 exporter-reported shipments, the source code was left blank. For importers, the second most commonly reported source code was C (captive-bred, 166 shipments), while for 73 importer-reported shipments, the source code was left blank.

The top two purpose codes reported by both exporters and importers were T (commercial, 95133 shipments reported by exporters, 10313 shipments reported by importers) and P (personal, 3 shipments reported by exporters, 667 shipments reported by importers). The most commonly traded products by number of records as reported by exporters were small leather products (79135shipments), followed by skins (5624 shipments), bodies (2986 shipments) and meat (2266 shipments). Most commonly traded as reported by importers were small leather products (4480 shipments), skins (3424 shipments), meat (1808 shipments) and live specimens (1324 shipments).

The total number of small leather products reported by exporters are 593337, while the total number of products reported by importers are around 341652. For live animals, exporters reported 1090833 individuals in 1984 shipments and importers reported 733648 individuals in 1324 shipments.

The main exporters by number of shipments reported by exporters were Thailand (92522 shipments), Viet Nam (2617 shipments). The main exporters by number of shipments reported by importers were Thailand (9689 shipments) and Viet Nam (1826 shipments). The main importers by number of records as reported by exporters were China (47829 shipments) and Japan (10042 shipments). The main importers by number of shipments as reported by importers were Japan (4924 shipments), China (1843 shipments) and Hong Kong, Special Administrative Region of China (1635 shipments).

Illegal trade

Historically, commercial hunting for the skin trade was a principal cause for the species' decline in the mid-twentieth century (Bezuijen *et al.,* 2012). According to Bezuijen *et al*. (2012), illegal collection of eggs and crocodiles remained an ongoing threat in all range states at the time, and illegal collection of crocodiles from the wild to re-stock crocodile farms continued in Cambodia.

Range States are invited to provide additional information on the current presence and extent of illegal trade in Siamese crocodile.

Current conservation actions in place

Reintroductions of individuals from captive breeding facilities have been reported in Viet Nam and the Cardamom Mountains, Cambodia (Fitzsimmons *et al.*, 2002; Ha *et al.*, 2007; Eam *et al.*, 2017). Guidance for a tagging system for trade in crocodile skins has also been published by CITES with the ID code SIA for *C. siamensis* (CITES, 2000).

Cambodia

In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cambodia informed the Secretariat that it has a Cardamom Mountain Siamese Crocodile Action Plan 2017-2026 (in Khmer only, not available online) and that a national level action plan is being developed. Additionnally, A breeding programme of genetically-pure (tested) *C. siamensis* is operated at Phnom Tamao Zoological Park, Protected Forest and Botanical Garden by the Cambodian Crocodile Conservation Program, (CCCP) a joint initiative by Fauna & Flora Cambodia and the Forestry Administration, founded in 2011.

There is collaboration with various NGOs on crocodile conservation in the country, including:

- **Fauna & Flora:** partners with the Forestryt Administration in the CCCP and engaged in Siamese crocodile conservation for 23 years; survey for *C. siamensis* across the country, conduct annual monitoring in the Cardamoms, assisted in founding the *ex situ* breeding facilities at Phnom Tamao In 2011 and provide technical and financial support; conduct community patrolling in key crocodile sites in the Cardamoms; support wild releases across the country; engage crocodile-adjacent communities in sustainable alternative livelihoods and establish crocodile sanctuaries with no-fishing zones.
- **WCS:** A small-scale conservation project being supported by WCS has been underway along the lower Sre Ambel River (Cardamoms) since 2017. Support protection of Prek Toal in the Tonle Sap, whichh may contain small remnant populations of *C. siamensis.* More broadly, WCS are leaders of *C. siamensis* conservation in Laos (particularly in the Xe Champhone wetlands).
- **Rising Phoenix Co. Ltd.:** a social enterprise organization focusing on wildlife conservation in Siem Pang Wildlife Sanctuary in northern Cambodia. Supported the reintroduction of a founder population of 40 crocodiles into Siem Pang in 2022.

- **WWF:** conducted surveys in Eastern Plains Landscape in 2021 confirmed the presence of breeding Siamese crocodiles in the Srepok river, where WWF-supported Ministry of Environment rangers patrol. Possible releases are being explored.
- **Wildlife Alliance:** Broad habitat protection throughout the Cardamoms, including supporting Ministry of Environment ranger patrolling that covers key wild crocodile habitat and alternative livelihood activities.
- **Conservation International:** Broad habitat protection throughout the Cardamoms, including supporting Ministry of Environment ranger patrolling that covers key wild crocodile habitat and alternative livelihood activities.

Indonesia
Conservation of *C. siamensis* in Indonesia is carried out by the government, and consists of patrolling and monitoring activities in the conservation area. There is some captive breeding carried out by zoos as well. Financial resources are not sufficient to meet the conservation needs of the species, and Indonesia does not currently receive support from non-governmental organizations for the conservation of Siamese crocodile.

Range States are invited to provide additional information, as appropriate, on current conservation actions in place for *C. siamensis*.

National legislation
Range States are invited to supplement and/or correct the information below regarding national legislation in force governing *C. siamensis*.

Cambodia
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cambodia informed the Secretariat that farming crocodiles and subsequent trade within Cambodia is regulated via the Fisheries Law (2006) and CITES Authority in Cambodia by the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries. Long delays with registering crocodile farms with the CITES Secretariat have caused challenges for farmers and government officials. Many farms are not yet properly registered.
Wild populations are protected by both the Fisheries Law and in protected areas by the Protected Areas Law, which is the jurisdiction of the Ministry of Environment.

Indonesia
C. siamensis is included in the list of protected species based on Minister of Environment and Forestry Regulation No. P.106/MENLHK/SETJEN/KUM.1/12/2018 of 2018 concerning Types of Protected Plants and Animals. Other relevant legislation for the protection of the species and regulation of its trade at international and domestic levels includes:

- Law No. 5 of 1990 concerning Conservation of Biological Natural Resources and Ecosystems;
- Government Regulation No. 7 of 1999 concerning Preservation of Plant and Animal Types;
- Minister of Environment and Forestry Regulation No. P.2/MENLHK/SETJEN/KUM.1/1/2018 concerning Access to Genetic Resources for Wild Species and Profit Sharing from Their Utilization;
- Decree of the Minister of Forestry No. 447/Kpts-II/2003 concerning the Protection of Wild Animals against the Threat of Trapping and Poaching inside and outside forest areas.

Challenges experienced by Indonesia with regard to the enforcement of these laws include the difficulty to reveal the main perpetrators in illegal trade cases, especially those involving international networks. In addition, raising public awareness comes with its own challenges.

Malaysia
C. siamensis is legally protected by the Wildlife Conservation Act 2010 (Act 716), and is also covered by the International Trade in Endangered Species Act 2008 (Act 686), which implements CITES in the country.

Thailand

- Wild Animal Reservation and Protection Act 1992 allows legal domestic and international trade in captive bred specimens of this species (CITES, 2013)

Preliminary conclusions

Given reports of extensive poaching of *C. siamensis* to stock crocodile farms, assessment of the scale of such harvesting, and based on the results of such assessments, take appropriate management and law enforcement action. Range States could also consider taking additional actions in accordance with Resolution Conf. 11.3 (Rev. CoP19) on *Compliance and enforcement*.

Cambodia made the following recommendations:

- External funding from other sources should be mobilised.
- Further protection of key habitats from destruction are sorely needed.
- Breeding and release is key to ensure that wild natural breeding levels are sufficient to avoid inbreeding and create robust populations.
- Priority must be given to re-establishing connectivity of fragmented populations, and releases should be considered to reintroduce crocodiles into large wetland areas, such as Prek Toal on the Tonle Sap.
- If wild populations rebound, careful attention must be given to ensure that illegal capture and trade does not resume.

Indonesia made the following recommendations:

- There is a need to develop bioecological research related to this species;
- Increased patrols in online and offline forms;
- The need for bilateral and regional cooperation in this type of conservation effort;
- Population monitoring for this species.

Malaysia made the following recommendations:

- Expand the survey area of future crocodile eyeshine surveys, as previously only 28 of the 74 major river basins were covered.

Range States are invited to make recommendations on possible additional actions.

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Hawksbill turtle (*Eretmochelys imbricata*)

Taxonomy
Scientific name: *Eretmochelys imbricata* (Linnaeus, 1766)
Common names:

English	Hawksbill turtle
French	Tortue imbriquée / Tortue à bec de faucon / Tortue à écailles / Caret
Spanish	Tortuga de carey / Tortuga carey

Date of listing in Appendix I
4 February 1977

Historically, the subspecies *E. i. imbricata* and *E. i. bissa* were separately listed on Appendix I and Appendix II, respectively, on 1 July 1975. On 4 February 1977, the entire species *E. imbricata* was listed on Appendix I. On 6 June 1981, the entire family Cheloniidae spp. was listed on Appendix I.

Distribution
Global

Habitat
E. imbricata nests on insular and mainland sandy beaches throughout the tropics and subtropics, are highly migratory, and use a wide range of habitats throughout their lives. From the moment hatchlings enter the sea they swim and are carried by offshore currents and spend their time in major gyre systems. When they reach a carapace length of 20 to 30 cm, they may use a range of foraging habitats, including coral reefs or other hard bottom habitats, sea grass, algal beds, or mangrove bays and creeks. Upon reaching sexual maturity, they undertake breeding migrations between foraging habitats and breeding areas, at multi-year intervals. Female sea turtles return to breed at the nesting beaches where they were born, sometimes migrating thousands of kilometres to do so (Mortimer and Donelly, 2008).

Like other sea turtles, *E. imbricata* plays an important role in its ecosystems, supporting healthy coral reefs through their foraging behaviour (eg. by controlling sponges which would otherwise out-compete reef-building corals for space in the Caribbean) (Mortimer and Donelly, 2008).

Biological characteristics
Moderately small-sized sea turtle with distinctly overlapping horny plates on the carapace. Head relatively narrow, with two pairs of prefrontal scutes and a strong beak. Carapace length of an adult hawksbill is up to 90 cm (CITES, 1982).

Cultural significance
Use of marine turtles for cultural purposes has been documented in several countries. In Buenaventura, Colombia, and in Panama, marine turtle penis is believed to have aphrodisiac properties, whilst the Wayuú people in Colombia believe that eating turtle meat early in the morning helps to reduce the effects of alcohol. It is also believed in Panama that turtle oil can help to alleviate respiratory problems. Marine turtles have been used in Indonesia by different ethnic groups, for examples in Hindu religious ceremonies (WWF, 2018). Conversely, the consumption of marine turtle meat is forbidden in Islamic culture in Sumatra (TRAFFIC, 2018).

In Japanese culture, hawksbill turtle shell (also known as ‘tortoiseshell’) is referred to as ‘bekko’ (Bustard, 2016; Kitade *et al.*, 2021). Japan has historically been one of the largest markets for trade in hawksbill shell (Kitade *et al.*, 2021). The Japanese Bekko Association (JBA) is reportedly concerned that the decline in bekko stocks in Japan will make it difficult to train new apprentices in the art of bekko craftsmanship. The JBA has reportedly established a hawksbill ranching project under the administration of Fisheries Research Agency and the Nagoya Port Aquarium to address this concern (Lam *et al.*, 2011).

Conservation status
The hawksbill turtle is categorised as Critically Endangered (CR) and decreasing on the IUCN Red List of Threatened Species and was last assessed on 30 June 2008 (Mortimer and Donnelly, 2008).

The global population of hawksbills is estimated to be between 20,000 and 30,000 individuals (Bustard, 2016), with an estimated decline of over 60% since 1980 (Humber *et al.*, 2014). The Mexican Atlantic population was considered to be the largest population until a drastic decline in numbers after the year 2000 (CITES, 2010). In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Mexico notes that there has been an 80% decline in nesting over three generations, although an increase has been observed more recently. Based on a rough count there are about 5000 nestings in Campeche, 5000 in Quintana Roo, 5000 in Yucatán, and 1000 on other beaches, for 16,000 nests in total. This equates to approximately 5300 nesting females in Mexico. Hawksbills in the eastern Pacific Ocean are considered one of the least resilient (Fuentes *et al.*, 2013) and most threatened marine turtle regional management units in the world (Wallace *et al.*, 2011), with fewer than 700 adult females nesting along 15,000 km of Latin American coastline (Gaos *et al.*, 2017). In Mozambique, it has been reported that current nesting numbers are not sufficient to sustain the levels of take occurring in the country (Pilcher and Williams, 2018).

A study on marine turtle nesting in the Cayman Islands reported that 4901 hawksbill nests were recorded across the Cayman Islands during the period 1998 to 2019. Although numbers of nests of both green turtles and loggerheads have reportedly dramatically increased on Grand Cayman, hawksbill turtle nesting numbers have remained low, with only one nest recorded between 2015 and 2019. The highest number of hawksbill turtle nests was recorded on Little Cayman with 29 nests between 2015 and 2019 (Blumenthal *et al.*, 2021).

A study on hawksbill populations on Milman Island, Australia during the nesting season between 1990 and 2017 found that the number of clutches laid declined with 58% between the 1990-1991 season and the 2016-2017 season (Bell *et al.*, 2020). The overall number of turtles nesting correspondingly decreased by 57% between the same seasons. Models predicted that should the decline continue, nesting extirpation would occur between the 2032-2033 and 2036-2037 nesting seasons.

Threats

The main threats to hawksbill turtles are anthropogenic, in particular; directed take, bycatch, habitat loss, egg poaching, domestic and international trade, human disturbance and climate change (CITES, 2010; Wallace *et al.*, 2013; Humber *et al.*, 2014; Bustard, 2016; Pilcher and Williams, 2018; TRAFFIC, 2018; Williams and Pilcher, 2018; WWF, 2018; Blumenthal *et al.*, 2021; Fuentes *et al.*, 2023).

One of the most significant threats is take (both directed, opportunistic and as bycatch) for both domestic and international trade in hawksbills, which occurs across their range (see sections below for more details on trade). There is demand for a wide range of hawksbill turtle products including penis for its believed aphrodisiac properties, meat, flippers, whole carapace, handicrafts made from carapace, eggs, live turtles, taxidermied specimens and glue (a paste used in traditional medicine) (Lam *et al.*, 2011; TRAFFIC, 2018; WWF, 2018).

High levels of non-selective catch by artisanal fisheries in Madagascar and Mozambique are reported to be significant threats to marine turtles, including hawkbills, in these countries (Pilcher and Williams, 2018; Williams and Pilcher, 2018). Additionally, fishers in Madagascar indicated that they tended to retain anything caught, including marine turtles (Williams and Pilcher, 2018). Of particular concern is the report that the use of non-selective fishing nets is increasing in Mozambique (Pilcher and Williams, 2018). The commercial shrimp industry is also of concern although in Madagascar this is reportedly less of a threat than take by the artisanal fishery (Williams and Pilcher, 2018). Fishermen interviewed in Hainan Province also reported that although they generally regarded marine turtles as bycatch, any caught would be retained (Lam *et al.*, 2011).

Meat and/or eggs are consumed domestically in Madagascar, Mozambique, Panama, Malaysia, Nicaragua and Jamaica (Pilcher and Williams, 2018; TRAFFIC, 2018; Williams and Pilcher, 2018; WWF, 2018; CITES, 2021). Individuals interviewed in Madagascar and Mozambique have reported a preference for hawksbill turtle meat over other marine turtle species based on their taste (Pilcher and Williams, 2018; Williams and Pilcher, 2018). Conversely, in Nicaragua green turtle meat was reported by some to taste better (WWF, 2018). Of note, levels of turtle meat consumption and targeted catch of marine turtles in Colombia was higher in areas with higher levels of poverty, such as in La Guajira where poverty is almost twice the national average (WWF, 2018). As a result of their sponge-based diet,

hawksbill meat may contain toxins that cause illness or death; however, this has not deterred its continued consumption (Gomez and Krishnasamy, 2019).

Habitat deterioration and human disturbance are also major threats to hawksbill turtles including entanglement in fishing gear, artificial lighting near nesting beaches which can cause hatchling misorientation, predation of nests by non-native animals such as dogs, and increasing human populations and tourism putting pressure on nesting beaches (CITES, 2010; TRAFFIC, 2018; Blumenthal *et al.*, 2021). Fishing gear attached to the ocean floor had higher mortality rates in marine turtles than gear deployed close to the surface, although this was not significant (Wallace *et al.*, 2013).

Climate change is an increasing threat to all life stages of hawksbills because their life history, physiology, and behaviour are extremely sensitive to environmental temperatures (Poloczanska et al., 2009). For example, hawksbills are vulnerable to climate-driven loss of nesting beaches due to sea level rise (Fish et al., 2005), feminization of populations from elevated incubation temperatures (Chatting et al., 2021), shifts in adult distribution (Pike 2013) and impacts on marine habitat suitability and food availability (Patricio et al., 2021). The ability of hawksbills to cope with projected increases in ambient temperatures remains unclear and will depend on their capacity to adapt to shifts in climatic regimes (Fuentes et al., 2023).
In its response to the questionnaire sent to range States by the Secretariat in January 2024,Antigua and Barbuda note that nesting habitat loss through coastal development, rising sea levels, and increased Sargassum influxes poses a threat. Nesting habitat degradation through heavy machinery use causing sand compaction as well as nest disturbance due to sand mining, and nest loss due to severe storm events. Foraging habitat loss from coral bleaching, foraging habitat degradation due to natural and anthropogenic threats. Increased risk of female-skewed populations from global increases in temperature, mongoose and domestic dog predation, abandoned fishing gear, boat strikes, beach lighting, and harvest of eggs and meat.

The Regional Workshop for the Hawksbill Turtle in the Wider Caribbean and Western Atlantic was convened in September 2009, Puerto Morelos, Mexico, following the adoption of Decision 14.86 at the 14th meeting of the Conference of the Parties to CITES (CoP14, The Hague, 2007). This directed the Secretariat to provide support to, and collaborate with, the Inter-American Convention for the protection and conservation of sea turtles (IAC) and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean region (Cartagena Convention) and its Protocol Concerning Specially Protected Areas and Wildlife (SPAW Protocol), to raise funds to conduct a meeting about hawksbill turtles for the Wider Caribbean region and Western Atlantic. The objectives of the workshop were to evaluate the status of hawksbills in the Wider Caribbean and Western Atlantic, address threats to populations and habitat, prepare a draft regional conservation strategy to identify gaps and priorities, and encourage regional governmental collaboration (CITES, 2010).

The workshop identified the top 10 threats to hawksbills in the region as the following:

1. Directed take of turtles by turtle fisheries
2. Directed opportunistic take by other fisheries
3. Gillnet bycatch and entanglement in fishing gear
4. Habitat deterioration from lost fishing gear
5. Habitat deterioration from beach infrastructure
6. Habitat deterioration from lights
7. Habitat deterioration from non-native mammals (raccoons, dogs, cats, mongoose, pigs)
8. Habitat deterioration from oil spills and response
9. Lack of community collaboration incentives for conservation
10. Change in open ocean conditions including temperature and currents

During the workshop, lack of community collaboration incentives for conservation, and change in open ocean conditions were ranked as ‘very high’ threats, while gillnet bycatch, habitat deterioration from lost fishing gear, beach infrastructure, non-native animals and oil spills and response, were all ranked as ‘high’ threats.

Legal trade
There are no quotas currently in place for this species.

Literature search
Between the 1950s and 1992, a total of 1,374,242 hawksbill turtle shells and 575,000 stuffed hawksbill juveniles were legally imported by Japan (Bustard, 2016). Although hawksbills were listed on Appendix I in 1977, Japan took out a reservation on this species when it became a Party to CITES in 1980, maintaining a 30-tonne import quota until 1993 at which time a zero-import quota was established. The reservation was withdrawn on 29 July 1994. Following this, legal domestic trade in stockpiles remained high (Bustard, 2016) as businesses dealing in finished hawksbill shell products are not covered by national legislation. Notably, 8,202 sales of hawksbill shell products were recorded online in 2019, of which over 99% were legal (Kitade *et al.*, 2021). A survey carried out in 2009 in Japan observed a total of 11,080 bekko items for sale in 58 shops surveyed across Tokyo, Nagasaki, and Okinawa (Lam *et al.*, 2011). Nagasaki had the highest number of products for sale; however, the best quality and highest priced products were for sale in Tokyo. It was also noted that item price was largely affected by the colour of scutes used, with 'Shiroko' (unpatterned whitish yellow) being the most valuable.

As of 1 January 2013, 42 countries allowed directed take of marine turtles, with over 42,000 marine turtles legally taken each year. Although the majority of these were green turtles, this included an estimated 3456 hawksbills every year, mainly from small islands in the Caribbean and Pacific (Humber *et al.*, 2014).

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports were excluded from the analysis as well as shipments with source code I due to uneven reporting of source code I specimens by Parties.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Eretmochelys imbricata*

There are 836 exporter-reported shipment records and 1957 importer-reported shipment records of Appendix-I trade in hawksbill turtles in the CITES Trade Database, between 1977 and 2022.

The most commonly imported items were of bodies (510 shipments), carvings (349 shipments), specimens (338 shipments), and carapaces (316 shipments). The most commonly exported items were specimens (375 shipments), carvings (170 shipments) and carapaces (93 shipments).

The top importers by number of shipments reported by both importers and exporters were the USA (1530 shipments reported by importers, 347 shipments reported by exporters) followed by Japan (74 shipments reported by importers, 104 shipments reported by exporters).). The main exporters reported by importers were Unknown (347 shipments), Mexico (317 shipments), Dominican Republic (107 shipments), the Philippines (100 shipments) and Viet Nam (92 shipments). The main exporters reported by exporters were Seychelles (103 shipments, Argentina (53 shipments, France (49 shipments), Bahamas (46 shipments) and Mexico (46 shipments and Nicaragua (45 shipments).

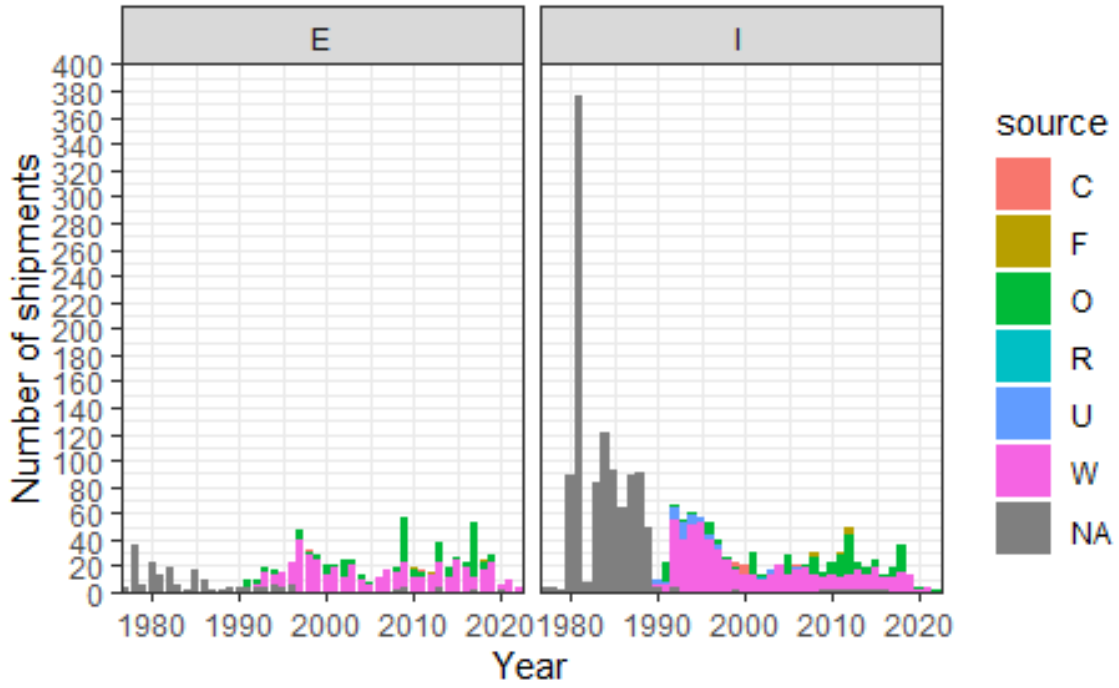

Figure 1. Types of specimens of E. imbricata *exported and imported between 1977 and 2022 as recorded in the CITES trade database. The exporter reported data and imported specimens were shown separately. The high number of imports in 1981 is of purpose code P reported by the US.*

The most common source code, excluding 1264 shipments of missing source codes, was W (wild), with 465 shipment reported by exporters and 590 shipments reported by importers, followed by O (pre-Convention) with 189 shipment reported by exporters and 199 shipments reported by importers (Figure 1). The most common purpose code, where it was provided, was S (scientific) with 422 shipments reported by exporters and 340 shipments reported by importers, followed by P (personal) with 65 shipments reported by exporters and 533 shipments reported by importers. A total of 141 shipments by exporters and 191 shipments by importers were recorded with a purpose code T (commerical).

Trade suspensions

There are no trade suspensions that specifically target *E. imbricata.*

Illegal trade

Evidence of illegal trade (both domestic and international) in hawksbill turtle products has been widely reported, including online trade (Pilcher and Williams, 2018; TRAFFIC, 2018; WWF, 2018; CITES, 2021; Kitade *et al.*, 2021, Senko *et al.*, 2022).

The main illegal trade in hawksbill turtle products appears to be in carapace, both raw and processed, on a domestic and international scale. Carapace products have been observed for sale in tourist markets in Mozambique, Colombia, Nicaragua and Jamaica, suggesting that tourists may subsequently be transporting these products across international borders, possibly unaware of the illegal nature of those products (Pilcher and Williams, 2018; WWF, 2018; CITES, 2021). This possibility is further supported by the observation of products for sale at two international airports; Managua, Nicaragua and Okinawa, Japan (Lam *et al.*, 2011; WWF, 2018). It was noted that there was no reference to, or signage about the regulations of CITES in the shops selling hawksbill products at Okinawa International Airport (Lam *et al.*, 2011). Although hawksbill shell jewellery has been seen for sale in resort towns such as Negril, Jamaica, this is believed to be mainly a by-product of turtles poached for meat (CITES, 2021). In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Spain informed the Secretariat that it seizes around 10 to 15 carved objects and shells almost every year.

A study by WWF (2018) found that the demand for cockfighting spurs made from hawksbill turtle shell is growing in Central and South America, particularly in the Colombian Caribbean, Nicaragua and Panama, where hawksbill turtle shell cockfighting spurs have been observed for sale both physically

and online. The Caribbean coast appears to play a large role in supply, with reports of the export of whole carapace from Panama to Colombia, where it is processed, and then re-exported back to Panama as more valuable cockfighting spurs, and similar reports of whole carapace being exported from Nicaragua to Colombia. Anecdotal evidence has suggested other potential destinations for these spurs to include Ecuador, Guyana, Suriname and Venezuela (WWF, 2018). Anecdotal evidence also suggests that poaching of sea turtles, including hawksbills, occurs in Jamaica (CITES, 2021).

Domestic and international trade in hawksbill products has also been documented in both Indonesia and Malaysia, with reports of specimens openly for sale in Sulawesi and Bali (Gomez and Krishnasamy, 2019). In a study of seizure records of marine turtles in Indonesia from 2015 to May 2018, Bali was found to account for the highest number of seizures, with mostly live turtles but also meat and eggs. Destinations were found to be both domestic and international, whilst suggestions have been made that trade may have moved to Sulawesi once trade in Bali became more closely monitored and controlled. The most common transport routes in seizure cases in Indonesia were by sea, followed by domestic air travel (Gomez and Krishnasamy, 2019).

A survey by Lam *et al.* (2011) carried out in 2009 found hawksbill turtle shell for sale in eight traditional medicine shops in mainland China while 117 souvenir shops were observed selling hawksbill products, including 94 hawksbill specimens. Hainan Province had the highest number of shops selling marine turtle products, as well as the highest number of observed products made from hawksbill, accounting for 67% of hawksbill products across the whole survey area. Items for sale made from hawksbill included jewellery (accounting for 93% of items for sale), spectacle frames, fans and a birdcage which was also made from ivory. Interviews with fishermen in Hainan Province found that some fishermen were known to directly target marine turtles, previously travelling to the Philippines or Viet Nam until enforcement deterrents in those waters pushed them towards Malaysian waters. The fishermen interviewed were reported to have an adequate understanding of the Chinese laws regarding marine turtles and reported that if they encountered law enforcement units, they would either throw the turtle back into the sea or move it to a smaller boat to avoid detection during inspections of the main vessel. They also stated that Hainan's enforcement officers only occasionally check the catch on board when vessels return to port.

According to Japan Customs seizure records, an estimated 564 kg of hawksbill shell was seized in 71 illegal importation incidents between 2000 and 2019, equating to 530 hawksbills (Kitade *et al.*, 2021). Types of items seized included raw material, taxidermied specimens, bone, jewelry, musical instruments and medicine. The majority of these seizures (301 kg) were seized between 2010 and 2019, of which 91% came from the Dominican Republic or Haiti.

A study on the illegal import of marine turtle products into the United States of America between 1994 and 2003 found that the total number of marine turtle cases and the number of products seized decreased significantly over the study period (Wallace *et al.*, 2013). Eggs represented the largest proportion of products seized, followed by boots, jewellery, body (including just shell), meat, oil and medicine. In total, 79,486 products across 4,983 cases were seized, however, only 129 cases resulted in penalties such as fines and/or jail time. Total cumulative fines handed out were $60,030 and cumulative jail time was 255 months.

In 2020, the USA reported to the Secretariat that since 2018, the FWS Office of Law Enforcement (FWS/OLE) had seized over 200 imports into the USA containing marine turtle parts or products. Eighty-six percent (86%) of these seizures involved shells, shell products and carapaces, jewellery and meat originating from the Federated States of Micronesia, Mexico, and Palau. The remaining 14% of the seizures reported for the time period were sea turtle eggs, leather products, bodies (bones or skull mounts) and medicinals from other countries (CITES, 2021). FWS/OLE reported that they have noticed a trend in commercial shipments of marine turtle parts from the Caribbean and South America, transiting through the USA and destined to Asia. Of note, the FWS/OLE intercepted an in-transit shipment of 1,423 green and hawksbill turtle scutes coated in blue chalk and declared as "plastic recycle" which were destined for Asia (CITES, 2021).

Current conservation actions in place

There are a range of conservation actions in place globally for the hawksbill turtle. Below follows a summary of information gathered from literature, and of responses provided by Parties to Notifications to the Parties No. 2020/035 and No. 2021/065 (see also SC74 Doc. 66.1).

Antigua and Barbuda
While there are no active programs for the management and conservation of transboundary populations of *E. imbricata*, Antigua and Barbuda is a member of the WIDECAST; the Wider Caribbean Sea Turtle Network, which facilitates regional capacity, training, outreach and awareness building. Under WIDECAST, a Sea Turtle Recovery Action Plan for Antigua and Barbuda was elaborated in 1992. Monitoring of hawksbill populations is carried out with the assistance of several non-governmental organisations including the Environmental Awareness Group, AB Sea Turtles and the Jumby Bay Hawksbill Project, which has the longest running hawksbill continuous monitoring programmes in existence. Jumby Bay has also undertaken genetics analysis, stable isotope studies and satellite tracking.
Current conservation priorities include, invasive predator management on key nesting beaches, habitat management and protection, and education and awareness. It is estimated that annual additional funding of US100, 000.00 is needed to effectively manage these programmes as well as to undertake additional areas of work. Additional areas of immediate priority are baseline studies of in-water populations, and the evaluation of key foraging habitats and rookeries around Antigua.

Australia
In response to Notification to the Parties No. 2020/035, Australia informed the CITES Secretariat that the Recovery Plan for Marine Turtles in Australia (2017) coordinates the management of marine turtles in Australia and recognises the threat of illegal take as a high priority (CITES, 2021). The recovery plan identifies priority actions to address illegal take and to reduce illegal trade in marine turtle products, such as through increased education and communication regarding marine turtle conservation. Australia also reported that it is a member of the Illegal Trade Working Group to the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA Marine Turtle MOU) and has provided funding to CITES, through the Convention on the Conservation of Migratory Species of Wild Animals (CMS), to facilitate the development of the study on the *"Status, scope and trends of the legal and illegal international trade in marine turtles, its conservation impacts, management options and mitigation priorities"* (CITES, 2021). Additionally, Australia informed the Secretariat that the Queensland Government was carrying out an assessment of hawksbill turtles in IOSEA region, while in 2016, the Australian Criminal Intelligence Commission (ACIC) completed an investigation into the illegal killing, poaching and transportation of turtle and dugong meat. Australia also reported that monitoring of marine turtle population demographics is carried out for all marine turtle species in Australia. In response to Notification to the Parties No. 2021/065, Australia further noted its recent announcement of an investment of 11 million AUD in the protection of migratory marine species as part of the Ocean Leadership Package. This includes 5 million AUD for projects to reduce bycatch of threatened species, including marine turtles, as well as projects to protect nesting turtles and to address the impacts of light pollution and underwater noise on marine turtles.

Barbados
In response to Notification to the Parties No. 2021/065, Barbados informed the Secretariat that the Barbados Sea Turtle Project, which has been ongoing for over 25 years, works on the conservation of marine turtles through research, education and public outreach, and monitoring of nesting females, juveniles and hatchlings. Its mission is the recovery of marine turtle populations through the implementation of scientifically sound conservation measures and monitoring programmes and the support and active participation of stakeholders. It operates a 24-hour marine turtle hotline to monitor sightings and respond to emergencies.

Brazil
In February 2024, Brazil informed the Secretariat that it is a member of the Inter-American Convention (IAC) for the Protection and Conservation of Sea Turtles. This Convention is an intergovernmental treaty that provides the legal framework for countries in the Americas and the Caribbean to take actions for the benefit of sea turtles. The IAC promotes the protection, conservation and recovery of sea turtles and the habitats they depend on, based on the best available data and the environmental, socioeconomic, and cultural characteristics of the IAC's parties. The Convention offers trainings, monitors compliance with protective measures and provides technical assistance to its Member Countries.
Brazil has a National Action Plan for the Conservation of Sea Turtles, which has been implemented since 2010 and is currently in its third cycle. More information is available at:

https://www.gov.br/icmbio/pt-br/assuntos/biodiversidade/pan/pan/pan-tartarugas-marinhas. Fundação Pró-Tamar (a private, non-profit entity) is a co-executor of the National Action Plan. Researchers from Brazilian universities also support national conservation efforts for the species.

Cambodia
In response to Notification to the Parties No. 2021/065, Cambodia informed the Secretariat that the Fisheries Administration has been collaborating with Fauna and Flora International (FFI) and other NGOs in the operation of the Cambodian Marine Turtle Network (CMTN) for more than ten years. The aim of the CMTN is to improve national level knowledge of marine turtle biology and threats, while strengthening the protection of nesting and foraging grounds. A National Marine Turtle Action Plan has been put in place, as well as a marine habitat monitoring programme of key foraging grounds along the coast. Coastal communities are actively engaged in marine turtle conservation, having benefited from educational outreach and various trainings. An online marine turtle database has been developed, and local university students participate in data collection. Efforts to reduce marine turtle bycatch are ongoing, and while local fishers cooperate in the release of incidentally captured turtles, more awareness raising is required to increase understanding of the importance of marine turtles to the environment and to local livelihoods.

China
In response to Notification to the Parties No. 2020/035, China informed the Secretariat that the 'Marine Turtles Conservation Action Plan (2019-2033)' was issued, which outlines a roadmap for the conservation of marine turtles and provides guidance for conservation and effective management of marine turtles (CITES, 2021). China also noted that preliminary studies have been carried out to assess marine turtle activity and distribution, providing support for conservation. A nature reserve and two conservation stations have been established along the coast to provide additional protection to marine turtles and their habitats. China has also held several international meetings and workshops for the conservation of marine turtles, including the academic exchange meeting on sea turtle conservation. China has established the 'Marine Rare and Endangered Wildlife Rescue Network' and 'China Sea Turtle Conservation Union' to allow for coordination between governmental agencies, NGOs, scientific institutes in the protection of sea turtles. Regarding public awareness raising, notable public figures have been invited to act as ambassador for the Image of Aquatic Wildlife Conservation, while the Marine Wildlife Conservation Aware has also been established. Annual celebration of World Turtle Day, Aquatic Wildlife Science Promotion Month, and World Wildlife Day is encouraged with promotion of activities to raise awareness of the protection of marine turtles and other aquatic wildlife (CITES, 2021). Multiple agencies in China including the Ministry of Agriculture and Rural Affairs, General Administration of Customs, State Administration for Market Regulation, Marine Guard, and the China CITES Management Authority, work together on joint annual special enforcement actions called the 'China Fishery Sword', allowing for more effective law enforcement on aquatic wildlife (CITES, 2021).

Colombia
WWF has trained law enforcement agencies in Colombia to identify products made of hawksbill carapace, whilst local associations in Bahía Solano are working to discourage meat consumption as they rely on marine turtle ecotourism (WWF, 2018).
In February 2024, Colombia informed the Secretariat that national efforts for the conservation of hawksbill are, among others, guided by international conventions, including CITES, the Convention for the Protection of the Marine Environment and the Coastal Zone of the Southeast Pacific, the Convention on Biological Diversity, and the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region. In addition, the following tools seek to contribute to the conservation of the species regardless of whether it is *in situ* or *ex situ*:

- National Programme for the Conservation of Marine and Continental Turtles (2002);
- Reproductive activity of sea turtles in Colombia, collection of standardized national information for monitoring and follow-up (2019).

The Jorge Tadeo Lozano University has a conservation-oriented programme, but it is on a very small and local scale. Non-governmental organizations involved in marine turtle conservation include:

- WWF Colombia;
- Tortugas del mar;
- Just Sea;
- Fundación Coriacea;
- Fundación Ecósfera;

- Fundación Mama Basilia;
- Fundación Tortugas Marinas de Santa Marta;
- Conservation Colombia

Cook Islands
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cook Islands noted that the Ministry of Marine Resources responds to sick/injured/stranded/dead turtles (all species). They coordinate with the Wildlife Centre and Vet to temporarily diagnose, house, rehabilitate, release of preform necropsies on these turtles.

France
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, the government of French Polynesia informed the Secretariat that there are two rescue centres for marine turtles in Tahiti and Bora Bora. A local foundation monitors nesting of *E. imbricata* on an island in the Tuamotu archipelago, however, little is known about the distribution of *E. imbricata* in French Polynesian waters.

Ghana
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Ghana notes the existence of programmes for the captive breeding of hawksbill turtles in Ghana. An initiative to preserve the Hawksbill turtle population in Ghana is underway at the Forestry Commission of Ghana's Wildlife Division. The effort entails raising turtles in captivity and releasing them into the wild. The project's objectives are to increase the Hawksbill turtle's population in Ghana and raise local resident's awareness of the value of the species' conservation. Ghana Wildlife Society is a non-governmental organization that works with the Wildlife Division to conserve wildlife like the hawksbill turtle.

Global
The organisation SEE Turtles runs a 'Too Rare To Wear' works to educate tourists on the illegality of trade in hawksbill products and provides teaching materials to help tourists distinguish hawksbill turtle products from alternatives. Additionally, the group has also launched a new app, supported by WWF, which uses machine learning to identify whether products are made of hawksbill shell. This will be useful for tourists in identifying whether souvenirs are made of hawksbill shell, and also for law enforcement agencies and wildlife officers (WWF, 2022).

Hawksbill turtles are included on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS). In June 2022, range states who are Party to CMS agreed to a Single Species Action Plan (SSAP) for the Hawksbill Turtle in South-East Asia and the Western Pacific Ocean Region. The SSAP has been adopted by Cambodia, Myanmar, Philippines, and Viet Nam, and other range states have indicated their readiness to do so. The SSAP seeks to address unsustainable use and trade at both the domestic and international levels, with the following key objectives:

1. Review and where necessary improve legislation, policy, compliance and enforcement of hawksbill turtle take, use and trade in at least half of SSAP countries in South-East Asia and the Adjacent Western Pacific by 2025.
2. Increase action and improve accountability to further monitor and report on hawksbill take, use and trade nationally and cooperate regionally to exchange data, share intelligence and strengthen collaborations.
3. Further research and evaluate the level of impact trade and fishery activity have on hawksbill populations and deliver on-ground implementation projects by 2027.

The SSAP provides a framework for governments to implement, in a cohesive manner, their ongoing commitments under CMS, the IOSEA Marine Turtle MOU, CITES, regional initiatives and fisheries bodies, to ensure effective conservation of hawksbill turtles.

Guinea-Bissau
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Guinea-Bissau informed the Secretariat of various avenues of international collaboration on the management and preservation of marine resources, including *E. imbricata*. These include collaboration with ECOWAS States, African Union Charter on Marine Resources, bilateral fisheries agreements, the West Africa Marine Protected Areas network and the Abidjan Convention.

Indonesia
There are several marine turtle hatcheries in Indonesia although there is concern that some facilities may be using these as a way to generate revenue from tourism with little conservation benefit (TRAFFIC, 2018).
In February 2024, Indonesia informed the Secretariat of the following ongoing conservation actions in coordination with other range States:

- In connection with protecting key marine species, four countries (Australia, Indonesia, Papua New Guinea, and Timor Leste) under that ATSEA-2 Project have produced two documents in regard to improving regional collaboration and management in the Arafura and Timor Seas (ATS) for marine turtles, namely: 1) Status of Sea Turtles in the ATS; and 2) the Regional Action Plan (RAP) for Sea Turtles in the ATS. These documents, especially the RAP, focus on strengthening coordination and management within governments and communities engaged in marine turtle conservation. The RAP comprises six proposed priority themes: 1) addressing discards of fishing gear given the impact on sea turtles (regional); 2) establish a funding mechanism (regional); 3) addressing turtle bycatch in the Arafura Sea prawn fisheries (Indonesia); 4) enhanced conservation of sea turtles in Timor-Lest (Timor-Leste); 5) enhanced conservation of sea turtles in Indonesia with a focus in Aru Island (Indonesia); and 6) enhanced conservation of sea turtles in Papua New Guinea (PNG).
- Indonesia is part of a regional conservation initiative along with five other countries of the Coral Triangle called Coral Triangle Initiative on Coral Reefs, Fisheries, and Food Security (CTI-CFF), where marine turtles are one of the conservation targets in the threatened species working group.
- Implementing measures of RFMOs, particularly WCPFC, IOTC, and CCSBT, to avoid bycatch of marine turtles in fisheries activities.

Non-governmental stakeholders supporting national conservation efforts for *E. imbricata* include:

- WWF Indonesia;
- Yayasan Penyu Indonesia (Indonesian Turtle Foundation);
- Yayasan Konservasi Indonesia (Conservation Indonesia);
- Yayasan Konservasi Alam Nusantara (Foundation for the Conservation of Nature of the Archipelago)
- Universities;
- Corporate Social Responsibility (CSR) programmes of private entities;
- Local community conservation groups focusing on marine turtle conservation.

Israel
A 12-year captive breeding programme for hawksbill turtles was carried out at the Underwater Observatory Marine Park in Eilat, over which time, 161 captive bred hawksbills were reintroduced to the Red Sea. It was noted that successful mating in captivity only occurred when pre-breeding separation of males and females was carried out (Maggeni and Feeney, 2020).

Jamaica
In response to Notification to the Parties No. 2020/035, Jamaica informed the Secretariat that the Sea Turtle Recovery Action Plan for Jamaica was prepared in 2011, providing a framework and direction for activities to conservation Jamaica's marine turtle populations. Additionally, the National Environment and Planning Agency (NEPA) monitors sea turtle nesting annually, typically between June and November, coinciding the with peak nesting seasons of the main nesting turtle species on Jamaica – the hawksbill. NEPA also collects data on nesting activity from NGOs, private individuals and hotels. NEPA also currently has Memoranda of Understanding (MOUs) with two community-based NGOs which also help to monitor nesting beaches and share data with NEPA, as well as NEPA providing training for community members of these NGOs in 2017, with assistance from The Nature Conservancy (TNC).

Japan
Japan has been addressing incidental harvest of marine turtles through relevant Regional Fisheries Management Organizations (RFMOs), by taking measures for: (1) mitigating the incidental capture of marine turtles; and (2) ensuring the safe handling of captured ones to secure their survival.

Madagascar

In Madagascar, a partnership has been formed between WWF, TRAFFIC and the Ministry of Justice, with support from the United States Fish and Wildlife Service (USFWS), to oversee the training of magistrates and other officials to increase capacity and awareness to increase enforcement and prosecution surrounding illegal trade in marine turtles (Williams and Pilcher, 2018).

Malaysia
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Malaysia makes reference to CTI-CFF, TIHPA, IOSEA, ISTS regional meeting, wildlife enforcement networks (WEN), SEAFDEC. Turtle Heritage Protection Area collaboration with Philippines.
There are ex-situ conservation programmes, as well as an in-situ programme on Redang Island. A Marine Turtle Action Plan has been elaborated for Sabah, for the period 2021-2030.
A large number of NGOs works on turtle conservation in Malaysia, including: WWF, MRF, Lang Tengah Turtle Watch (LTTW), Perhentian Turtle Project (PTP), FUZE ECOTEER, Kudat Turtle Conservation Society (KTCS), Tengah Island Conservation, Kapas Turtle Conservation, SIMCA, FOSTER, Juara Turtle Project, TRACC, TRAFFIC, MNS, MSMSx, University Malaysia Sabah, Danau Gorang Field Centre, Green Connections.
A buy-back scheme has been used in Malaysia where the government buys marine turtle eggs back from collectors and manages them in hatcheries, although the amount offered per egg is significantly lower than the market value (TRAFFIC, 2018).

Mauritius
In February 2024, Mauritius informed the Secretariat that it is envisaging cross-border collaboration with Réunion Island, noting that a Memorandum of Understanding is being prepared with Réunion Island in connection with the conservation of turtles.
Local non-governmental organizations have participated in past surveys to determine nesting sites of turtles and carried out awareness as well as sensitisation campaigns on marine turtles in schools.

Mexico
E. imbricata is one of the marine turtle species protected in the Bahía de Akumal refuge, the management of which is guided by a Protection Programme. Mexico reports a number of hawksbill turtle research activities carried out by various institutions in the country, including monitoring at nesting beaches, research into turtle ecology, physiological and genetic assessment of turtle diving ability, molecular and biometric analysis of marine turtles, persistent organic compounds in sea turtles, monitoring of the impact from tourism on turtles and coral reef communities, and research into the use by turtles of foraging habitats, migration routes and nesting beaches.
Mexico has a mark-recapture programme in place for juveniles and females. The General Wildlife Law and its Regulations allow the management of the species for the purpose of conservation, education, dissemination and research in scientific or museum collections, or in Management Units for the Conservation of Wildlife (UMA) and Properties or Facilities that Manage Wildlife in Confined Form, Outside of its Natural Habitat (PIMVS) with said objectives approved in their management plans.
Several NGOs work on turtle conservation, including Grup Tortuguero de las Californias, Pronatura A.C. and WWF.

Monaco
The Oceanographic Museum of Monaco is home to the Monegasque Centre for the Care of Marine Species (CMSEM in French), and is in contact with the French Mediterranean Sea Turtle Network (RTMMF). The Museum is authorized by law to hold and breed protected species of marine turtles, and to reintroduce into Monegasque marine areas, marine turtles collected for rehabilitation.

Namibia
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Namibia notes that the Benguela Current Convention allows for collaboration between member States (Angola, Namibia and South Africa) regarding conservation of transboundary populations. As a Contracting Party to ICCAT, Namibia should comply to – and provide information on – sea turtle bycatch as part of ICCAT's Recommendations (Rec. 22-12).

Netherlands
In response to the Notifications to the Parties No. 2020/035 and No 2021/065, the Netherlands informed the Secretariat that on St. Maarten, St. Eustatius and Saba, Park Management Organizations are in

charge of marine turtle monitoring, whereas on Curacao, Aruba, and Bonaire, this is done by NGOs. These organisations are part of the Wider Caribbean Sea Turtle Conservation Network (WIDECAST), an organization committed to the recovery and sustainable management of marine turtle populations. The Park Management Organizations and relevant NGOs all have their own nest monitoring, water survey, and satellite tracking programmes.
The Dutch Caribbean Nature Alliance (DCNA) has facilitated training workshops for the Park Management Organizations on St. Maarten, St. Eustatius and Saba, while on Aruba, the NGO Tortugaruba provides information on marine turtles to newly recruited police officers as part of their training.
The Dutch government, DCNA, and other relevant organizations undertake various public awareness and education activities, including the publication of schoolbooks and information materials on marine turtles, sharing scientific findings through newsletters and social media, children education and field activities open to the public, radio programmes and various press, advocacy and lobbying efforts.

Nicaragua
In response to the Notifications to the Parties No. 2020/035 and 2021/065, Nicaragua informed the Secretariat that the Ministry of the Environment and Natural Resources (MARENA) has among its work priorities the protection of marine turtles, which is carried out with the support of communities, local governments, the Nicaraguan Army, National Police, non-governmental organizations, and Guardabarranco Environmental Movement. This work is reported to have resulted in a substantial decrease in the loss of marine turtle nests and eggs due to looting, with a total loss of 19,611 nests (9.87%) of 198,620 nests monitored during the period from 1 July 2019 to 31 January 2020 in the Chacocente and La Flor Wildlife Refuges. Marine turtle conservation activities were also carried out on Juan Venado Island Natural Reserve, Salamina Beach and Estero Padre Ramos Natural Reserve, including monitoring, control, environmental education, establishment of nurseries and release of baby turtles.

Panama
Marine turtle observation tourism has been used in Panama for over 10 years, involving the local people to help generate revenue (WWF, 2018).

Peru
In response to Notifications to the Parties No. 2020/035 and No. 2021/065, Peru informed the Secretariat of a number of awareness raising activities carried out by government institutions and NGOs, These activities included training in handling and release of turtles in case of bycatch. The NGO ProDelphinus has been collecting turtle tissues as part of the Research Circle in collaboration with the Peruvian Sea Institute (IMARPE) and the Universidad del Santa, within the framework of the project '*Cataloging the marine biodiversity of Peru: DNA barcoding for the study, conservation and sustainable use of resources'.* Other monitoring activities, including capture, marking and recapture and monitoring of nesting activitiy are carried out by the NGOs ProDelphinus and ecOceanica.
The National Plan for the Conservation of Sea Turtles in Peru, 2019-2029 identified the Pisco area in the south of the country as a priority area for the implementation of demand reduction campaigns, to reduce the demand for turtle meat and other products. The Plan also includes proposals for coordination with the fisheries sector to better manage sea turtles, including developing awareness raising campaigns in priority areas of bycatch.

Republic of Korea
In response to Notification to the Parties No. 2020/035, Republic of Korea informed the Secretariat that in the previous five years, there were no illegal transactions involving sea turtles or their eggs in the country, which is closely monitored by the Ministry of Oceans and Fisheries, the Ministry of Environment and the Coast Guard of the Republic of Korea. Relevant studies are being carried out with the financial and technical support of relevant ministries. The management and sustainable use of sea turtles involves communication and cooperation with relevant stakeholders.

Senegal
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Senegal informed the Secretariat that as part of the RAMPAO network and the PRCM, programmes are developed for monitoring and conservation of all marine turtles. There is a national action plan for the conservation of marine turtles in Senegal, but no specific plan for Hawksbill turtle.

PRCM, RAMPAO, Wetland International and African Chelonia Institut (ACI) have supported since 2009 the conservation effort for sea turtle in Senegal including these species as well. Illegal trade was not included in the activities supported, the focus was education / outreach and trades assessment.

Seychelles
In February 2024, the Seychelles informed the Secretariat that it is an active Signatory State within the framework of the Indian Ocean South-East Asia Marine Turtle Conservation MoU (IOSEA MoU). Transboundary conservation research involving genetic studies, flipper tagging, and satellite tracking of members of the hawksbill population within the region occurs. Significant collaboration has involved collaborative studies involving Seychelles and Chagos Archipelago, and Seychelles and the French researchers at La Réunion and the Îles Éparses (Europa, Tromelin, Glorieuses, etc.). Several important flipper tag exchanges have come from Kenya, Tanzania, Cocos (Keeling) Islands, among others.
Beach surveys of nesting activity and poaching patrols are underway throughout much of the country. Often these patrols are more effective at sites in the context of tourism. If accompanying coastal development does not destroy the habitat, the presence of tourism generally discourages poaching activities. Presence of monitoring personnel on nesting beaches has proven to be a highly effective management tool to minimize poaching. But, these strategies are least effective on the most heavily populated and developed islands of Mahe, Praslin and La Digue.
"Protect Paradise Seychelles" hosts a small rescue centre for injured and sick sea turtles, but its capacity is limited.
Many non-governmental stakeholders have supported government efforts to strengthen government efforts for this species. The following large and highly successful national projects conducted during recent decades provided training, incentive, and initial equipment (i.e. flipper tags, etc.) to initiate beach monitoring programmes among stakeholders throughout the country. The stakeholders involved with these projects have taken the initiative to provide their own funding and personnel to continue the programmes initiated by the large national projects:

- 1981-1984: WWF/IUCN Project 1809. Marine Turtles, Seychelles.
- 1995-1998: World Bank-GEF Project J1: Turtle and Tortoise Conservation Project.
- 2000-2004: Seychelles marine Ecosystem Management Project (SEYMEMP): Turtle Component.
- 2017-2019: UNDP-GEF OIP Outer Island Protected Areas Project.

Among the non-governmental stakeholders involved in sea turtle conservation are the following:

- Alphonse Foundation,
- Aride Island Nature Reserve,
- Bird Island Lodge,
- Constance Lémuria Resort,
- Cousin Island Nature Reserve,
- Cousine Island Company,
- Denis Island Private,
- Desroches Foundation,
- Farquhar Foundation,
- Fregate Island Foundation,
- Global Vision International Seychelles,
- Green Island Foundation,
- Island Conservation Society,
- Marine Conservation Society Seychelles,
- North Island,
- Seychelles Islands Foundation,
- Seychelles National Parks Authority,
- Silhouette Foundation,
- And others…

Solomon Islands
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Solomon Islands notes that the Ministry of Fisheries and Marine Resources, The Nature Conservancy, Tetepare and other have ongoing programs to conserve turtles in the Solomon Islands, but no additional details are provided.

South Africa

In February 2024, South Africa informed the Secretariat that it is a partner to the Benguela Current Convention (BCC) and the Nairobi Convention. South Africa has been a contributing member to the Agulhas and Somali Current Large Marine Ecosystems Project (ASCLME) programme. These platforms are used to foster regional partnerships for marine research, conservation and management.
In terms of support from non-governmental stakeholders, South Africa noted that TRAFFIC works closely with their trade ports and customs officials to assist with monitoring and compliance in trade. TRAFFIC have also made efforts to evaluate the scope and scale of any illegal trade.
South Africa further noted a lack of resources and capacity, stating that existing research capacity is limited across academic and governmental institutions. Turtle research requires monitoring equipment which, due to the current exchange rates, are not accessible under current funding regimes. This also extends to vessels and general manpower.

Sudan
In February 2024, Sudan informed the Secretariat that MoUs signed between Sudan and the CMS and IOSEA Marine Turtles represent a significant step in Sudan's efforts to conserve and protect marine turtles. Sudan is committed to international cooperation and collaboration in the conservation of these endangered species. In Sudan, conservation efforts for the hawksbill turtle include in situ actions focused on protecting their natural habitats through marine protected areas and monitoring programmes. Ex situ measures involve captive breeding facilities and public awareness programmes to promote conservation. While note currently in place, discussions and efforts are underway to establish captive breeding programmes for *E. imbricata* for conservation and commercial purposes. Sudan considers that these programmes could help increase the population of the species in the wild and alleviate threats such as habitat destruction and illegal poaching. Despite challenges, there is potential for Sudan to contribute to the conservation and sustainable use of the hawksbill sea turtle through these initiatives.
Non-governmental stakeholders, including local conservation organizations, research institutions, community groups, and international conservation NGOs, have collaborated with government agencies in Sudan to implement conservation measures for hawksbill turtles. This includes monitoring and protecting nesting sites, conducting research on population dynamics, raising awareness, and advocating for stronger enforcement against illegal trade.

Thailand
In response to Notification to the Parties No. 2020/035, Thailand informed the Secretariat that a study on marine turtle distribution has been carried out. The Department of Marine and Coastal Resources organised the 1st Workshop on Primary Rescue for Endangered Marine Species in 2019 for locals and government agencies with the aim to provide education on endangered marine species in Thailand, threats, laws and regulations and basic methods for rescue of endangered marine species (CITES, 2021).

Togo
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Togo informed the Secretariat that it has an ongoing monitoring programme covering six sites along the coast. As part of this programme, data is collected on the presence of turtles on Togolese beaches, turtles accidentally caught in nets and hatchlings are recovered and returned to the sea, nests are protected in situ or transplanted to incubation pens if necessary. However, where *E. imbricata* is concerned, only one dead individual has been recorded in the past ten years, and the species is not known to nest on Togolese beaches.
Togo is also a party to the Abidjan Memorandum of Understanding on the conservation of marine turtles along Africa's Atlantic coast. The NGO AGBO-ZEGUE also works on awareness raising for turtle conservation.

Trinidad and Tobago
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Trinidad and Tobago noted that data, technical expertise and funding are acquired through international and regional organizations such as WIDECAST, SPAW, CITES. Under WIDECAST, a Sea Turtle Recovery Action Plan for the Republic of Trinidad and Tobago was elaborated in 2010. NGOs working on sea turtle conservation in Trinidad and Tobago include Nature Seekers (who provide support in terms of tagging, patrolling of the beach and assisting with research and data) and Grande Riviere Nature Tour Guide Association (beach patrolling, assisting with research and data).

United States of America
In response to Notification to the Parties No. 2020/035, the USA informed the Secretariat that it has two recovery plans in place for the hawksbill turtle developed by the U.S. Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS): 'Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle (*Eretmochelys imbricata*)' and 'Recovery Plan for hawksbill turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico (*Eretmochelys imbricata*)'. The USA also reported that it carries out research with partners around the world including genetic analysis and assessments of status, distribution and threats to marine turtles and includes both domestic and international projects. This research is used to inform Status Reviews/Five Year Reviews for all marine turtles listed under the Endangered Species Act (ESA). NMFS also runs a National Observer Program which places observers on U.S. fishing boats to learn about interactions between fishing operations and marine turtles, allowing for subsequent implementation of regulations to reduce marine turtle bycatch and mortality. The USA requires the use of Turtle Exclusion Devices (TEDs) in shrimp otter trawls, summer flounder trawls in some areas and skimmer trawls. NMFS carries out training of enforcement agency staff on enforcement of the federal ESA requirements as well as marine turtle safe-handling. Joint enforcement inspections targeting illegal trade of protected marine products are carried out by NOAA OLE alongside FWS, U.S. Coast Guard, Customs and Border Protection, Homeland Security Investigations, the Food and Drug Administration, and state enforcement partners. The USA is a Contracting Party to the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC) as well as a member of the Memorandum of Understanding on the Conservation and Management of Marine Turtles and their Habitats of the Indian Ocean and South-East Asia (IOSEA). Additionally, in 2004 the Marine Turtle Conservation Act was passed which provides funding to foreign countries for projects to address threats to marine turtles.
The Endangered Species Act requires NOAA Fisheries and the USFWS to develop and implement recovery plans which provide a blueprint for conservation of the species and measurable criteria to gauge progress toward recovery. Two recovery plans have been developed to recover and protect hawksbill turtle populations that are found in the U.S. waters.

- Recovery Plan for U.S. Pacific Populations of the Hawksbill Turtle (*Eretmochelys imbricata*) (https://repository.library.noaa.gov/view/noaa/15969)
- Recovery Plan for Hawksbill Turtles in the U.S. Caribbean Sea, Atlantic Ocean, and Gulf of Mexico (*Eretmochelys imbricata*) (https://repository.library.noaa.gov/view/noaa/15996)

National legislation

Antigua and Barbuda
The Fisheries Regulations prohibits the harvest of *E. imbricata* and their eggs, as well as the harassment of nesting females and disturbance of nests. *E. imbricata* is also protected under the Environmental Protection and Management Act 2015. Limitations In the human, financial and technical capacity of the Fisheries Division hampers the agency's ability to effectively enforce the existing legislation.

Australia
Hawksbill turtles are listed under the Australia Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), affording them protection as a matter of national environmental significance meaning that activities with the potential to have a significant impact on hawksbills must be referred for assessment under the EPBC Act (CITES, 2021). The Native Title Act 1993 permits Native Title holders to carry out activities such as hunting and fishing of marine turtles for the purposes of personal, domestic or non-commercial needs. Similarly, the Torres Strait Fisheries Act 1984 permits the traditional take of marine turtles by traditional inhabitants of Torres Strait within the Torres Strait Protected Zone and the surrounding area as described by the Torres Strait Treaty. (CITES, 2021).

Barbados
In response to Notification to the Parties No. 2021/065, Barbados informed the Secretariat that all species of marine turtles have been afforded partial protection since 1879. Complete and indefinite protection came into effect with the implementation of the Fisheries Act Cap. 391, Fisheries (management) Regulations of 1998. This Act prohibits harvesting, possession, sale, purchase, and disturbance of marine turtles and their eggs. Perpetrators risk a fine of up to 50,000 Barbados dollars and/or imprisonment of up to two years. The recently reviewed Draft Fisheries Management Regulations further strengthen protection of marine turtles by making it illegal to a) intentionally kill, harass, harm endanger, or injure, b) land, c) possess, d) sell, e) expose for sale, or purchase any turtle or part thereof or turtle eggs. It further requires that incidentally captured individuals of species listed

as prohibited, including turtles, shall be promptly released in a manner that causes the least harm and maximizes post-release survival. In October of 2019, Barbados participated in a Wildlife Enforcement and Illegal Wildlife Trade training programme by Fauna and Flora International (FFI), in an effort to improve border control improve the effectiveness of law enforcement.

Brazil
In February 2024, Brazil informed the Secretariat that *E. imbricata* is fully protected by national legal instruments, which prohibit any and all type of direct use in addition to providing protection measures for spawning areas. The country also participates in the Inter-American Convention for Conservation and Protection of Sea Turtles (IAC). Since 1986 (SUDEPE Ordinance 5/86) the capture of sea turtles and their eggs is prohibited in Brazil. Domestic trade is likewise prohibited.

Cambodia
In response to Notification to the Parties No. 2021/065, Cambodia informed the Secretariat that all five species of marine turtles found in Cambodian waters are classed as Endangered Species according to national legislation, thereby strictly banning the wild harvest, storing and sale of these species.

China
All marine turtle species in China are included in the List of Wildlife under the State Key Protection which prohibits any hunting and killing of marine turtles. China informed the Secretariat in response to Notification to the Parties No. 2020/035 that marine turtles will be transferred from state second-class to state first class protection (CITES, 2021). Marine turtles are also regulated under the Wildlife Conservation Law and Fisheries Law with supporting regulations and plans including the Implementation Regulations for the Protection of Aquatic Wild Animals, the Outline of Action for Conservation of Aquatic Living Resources in China, and the China Biodiversity Strategy and Action Plan (2011-2030).

Colombia
There are multiple pieces of legislation in Colombia which relate to hawksbills which include:

- Resolution 167 of 1966 of Inderena. Regulation of fishing with trawl nets on the Caribbean and Pacific Coast and prohibition of their execution at distances less than one nautical mile (1852 meters);
- Resolution No. 1032 of 9 August 1977 of Inderena. National ban on the capture of hawksbill turtle;
- Decree 1608 that regulates the Resources Code (Decree 2811 of 1974). Essential minimum rules and requirements were established for the use of wild fauna and its derivatives and general prohibitions were established, such as plundering the nests and hatchlings of animals, harassing wandering females, destroying or deteriorating reproduction areas;
- Agreement 021 of 1991 of Inderena. Establishes protection standards for all species of sea turtles, as well as nesting beaches and foraging areas;
- INPA Resolution 108 of 1992 prohibits the use of sea turtles accidentally captured during shrimp fishing operations;
- INPA Resolution 157 of 1993 requires the use of TEDs for the shrimp trawl fleet of the Colombian Caribbean;
- INPA Resolution 107 of 1996 establishes the mandatory use of TEDs in the Pacific shrimp fleets;
- Resolutions 726 of 1974 and 709 of 1981 and Agreements 24 of 1983 and 54 of 1988 of Inderena. Trawling is prohibited in areas of concentration of sea turtles in the Gulf of Morrosquillo, Archipelago of San Bernardo, Gulf of Urabá, and Litoral Guajiro, in shallow waters located between San Juan de la Guía and Punta Espada;
- Resolution 2879 of 1995 of Corpoguajira establishes a regional ban on the use of sea turtles;
- Resolution 1644 of 1998 of Corpameg establishes a temporary ban on the capture and trade of sea turtles in the department of Magdalena;
- Resolution 1912 of 2017 by which the list of threatened wild species of Colombian continental and coastal marine biological diversity found in the national territory is established and other provisions are issued.

The main problem highlighted by Colombia is related to the lack of control and monitoring mechanisms for nesting areas due to a lack of personnel, which facilitates the looting of nests outside the areas of National Natural Parks of Colombia. On the other hand, in many cases there is local cooperation on the

part of the surrounding communities, however, the lack of resources prevents these efforts from being maintained continuously and effectively in the control and monitoring of the species. In conclusion, greater control and monitoring is required, as well as beach monitoring for arrival and nesting areas.

Cook Islands
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Cook Islands informed the Secretariat that only for some islands, there are island-specific by-laws and regulations for regulating turtle harvests. Knowledge of, and compliance and enforcement of these by-laws is reportedly low. Additional challenges include disinterest of officers to enforce laws on community members, and allowance for traditional/subsistence harvest.

France
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, the government of French Polynesia informed the Secretariat that the species is protected by the Polynesian Environmental Code. However, *E. imbricata* is not exploited in French Polynesia, and most reports of infractions of the Environmental Code concern *Chelonia mydas*.

Guinea
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Guinea informed the Secretariat that international trade in *E. imbricata* is regulated by Law L/97/038/AN of 9/12/1997 adopting and promulgating the wildlife protection code and hunting regulations.

Guinea-Bissau
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Guinea-Bissau notes that domestic and international trade in *E. imbricata* are regulated through fisheries laws. Furthermore, its habitat is protected through both fisheries and forest laws.

Indonesia
Indonesia categorises all marine turtles as protected species under Government regulation No. 7/1999 on Preserving Flora and Fauna Species whilst the Conservation of Living Resources and their Ecosystems Act No. 5 (1990) prohibits any catch, trade, import, export, possession and transfer of protected species with fines of up to IDR100,000 and prison sentences up to five years. Hawksbills are also covered in Indonesia under the Law on the Management of Coastal Areas and Isles (2007), the Fishery Law (2004, amended 2009), Government regulation No. 60/2007 on the Conservation of Fishery Resources and Government regulation No. 8/1999 on Wild Flora and Fauna Exploitation (TRAFFIC, 2018).
In February 2024, Indonesia informed the Secretariat that the following legislation is relevant to the regulation of international trade in the species:

- All marine turtle species in Indonesia, including hawksbill turtles, are fully protected through the Regulation of the Minister of Environment and Forestry P.106/MENLHK/SETJEN/KUM.1/12/2018 on the Second Amendment of the Regulation of the Minister of Environment and Forestry P.20/MENLHK/SETJEN/KUM.1/6/2018 on Protected Flora and Fauna;
- The Minister of Marine Affairs and Fisheries issued a letter 526/MEN-KP/VIII/2015 on the Implementation of the Protection of Marine Turtles, Eggs, Parts, and/or Derivatives;
- Indonesia issued the Decree of the Minister of Marine Affairs and Fisheries 65/2022 on the National Plan of Action for the Conservation of Marine Turtles in 2022-2024.

Given that hawksbill turtles are fully protected in Indonesia according to Law No. 5 of 1990 on the Conservation of Natural Resources and Ecosystems, domestic trade in the species is prohibited. The above-mentioned laws apply. There are also sub-national regulations on the prohibition of capturing, trading, and consuming marine turtles, including hawksbill turtles, one of which is the Letter issued by the Regent of Anambas 09/Kdh.KKA/042/04.16. Additionally, local customary communities also regulate the protection of marine turtles, including hawksbill turtles, in their respective traditional territories.
Despite the law, illegal use of hawksbill turtles occurs and below are the challenges in enforcement:

- Most of the offenders are local people.
- Remote, vast, and inaccessible locations.

- Limited human resources for surveillance. To overcome this, Indonesia collaborates with other institutions, NGOs, and local communities.
- Difficulty in species or product identification.

Jamaica
Hawksbills are protected in Jamaica under the Wild Life Protection Act, 1945 which makes it an offence to be in possession of any sea turtle, or any part of a sea turtle. The act also prohibits the take or attempted take, sale or possession for the purpose of sale, of turtle eggs. Marine turtles are also listed under the First Schedule of the Endangered Species Act which supports Jamaica's compliance with CITES.

Japan
In response to Notification to the Parties No. 2020/035, Japan informed the Secretariat that direct harvest of marine turtles is prohibited except for special circumstances, such as for scientific research permitted by the central or local government. In addition, Japan noted that it has been addressing the incidental harvest of marine turtles through the relevant Regional Fisheries Management Organisations (RFMOs) with the aims to mitigate incidental capture, and to ensure the safe handling of captured marine turtles to ensure their survival (CITES, 2021).

Madagascar
Hawksbill turtles in Madagascar are protected by several pieces of legislation, primarily; Ordinance no. 93-022 of 4th May 1993 which prohibits killing, injuring and catching of any endangered species, Law no. 2005-018 of 17th October 2005 which prohibits trade activities involving CITES Appendix I species, Decree no. 2006-400 of 13th June 2006 which prohibits the hunting, capture and detention of marine turtles, and Order no. 12.666/2014 of 28th March 2014 which describes obligations for fishers interacting with marine turtles during fishing events. Hawksbills are also indirectly protected via the National Constitution of Madagascar 2010; Decree no. 2010-137 of 23rd March 2010; and Decree no. 2016-128 of 23rd February 2016, which adopts the National Biodiversity Strategy and Action Plans for Madagascar 2015 to 2025 (Williams and Pilcher, 2018). Additionally, shrimp trawlers are required to use turtle excluding devices (TEDs) (Williams and Pilcher, 2018).

Madagascar also uses 'dina', which is a is a community-level agreement and is part of the legal framework of the country. This imposes a size-limit on marine turtles caught, gives closed seasons for hunting and prohibits egg harvest. It has been noted that in some cases, 'dina' directly contradicts the domestic laws by allowing for selective harvest of marine turtles when they are protected in the national legislation (Williams and Pilcher, 2018).

Malaysia
Malaysia International Trade in Endangered Species Act, 2008 [Act 686]. Wildlife Conservation Enactment 1997. All marine turtles are listed as totally protected species in Sabah under the Wildlife Conservation Enactment (1997) and in Sarawak under the Wildlife Protection Ordinance (1998), both of which ban all trade and consumption of marine turtles and their parts or products. In most of Peninsular Malaysia (excluding Perak and Melaka), trade in marine turtle eggs is legal (TRAFFIC, 2018). The main CITES-implementing legislation in Indonesia is the International trade in endangered species act (2008). Other relevant instruments listed by Malaysia in its January response to a questionnaire sent to the range State by the Secretariat include:

- Fisheries Act 1985 (In development)
- Terengganu Turtle Enactment 1951 (Amendment 2021)
- Fisheries (Turtle and Turtles Egg) Regulations,1976 for Negeri Sembilan; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations, 1996 for Pahang; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations,1984 for Johor; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations,1989 for Malacca; (In development)
- Kedah Turtle Enactment, 1972; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations,1999 for Penang; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations,2021 for Perak; (In development)
- Fisheries (Turtle and Turtles Egg) Regulations, 1978 for Kelantan; (In development)
- Sarawak: Wildlife Protection Ordinance 1998
- Sarawak: Turtle Trust Ordinance 1957
- Sabah: Wildlife Conservation Enactment 1997
- Sabah: Parks Enactment 1984, (Amendment 2002)

- Sabah: Wildlife Regulations 1998

Malta
In February 2024, Malta informed the Secretariat that *E. imbricata* is strictly protected under Schedule V of the Flora, Fauna and Natural Habitats Protection Regulations (S.L. 549.44) whereby trade of species listed under this Schedule is highly restricted unless prior authorization is obtained from the competent authority. This regulation covers both national and international trade.

Mauritius
In February 2024, Mauritius informed the Secretariat that *E. imbricata* is covered by Section 33 of the Fisheries Act 2023, which states that: (a) no person shall intentionally kill any marine turtle on shore or at sea; and (b) no person shall fish, store, land, sell or have in his possession, or cause any person to fish, store, land, sell or have in his possession any marine turtle, marine turtle egg, carapace or stuffed marine turtle.

Mexico
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Mexico notes the following:
- AGREEMENT establishing a ban for species and subspecies of sea turtle in waters under Federal jurisdiction of the Gulf of Mexico and the Caribbean Sea, as well as in the Pacific Ocean, including the Gulf of California. DOF 05/31/1990;
- General Wildlife Law and its Regulations;
- General Law of Ecological Balance and Environmental Protection;
- Foreign Trade Law;
- Law of General Import and Export Taxes;
- Customs Law;
- Federal Penal Code;
- Official Mexican Standard NOM-059-SEMARNAT-2010, Environmental protection – Mexican native species of wild flora and fauna – Risk categories and specifications for their inclusion, exclusion or change – List of species at risk and its modifications to the Annex Regulations III;
- Agreement that establishes the merchandise whose import and export is subject to regulation by the Ministry of Environment and Natural Resources.

In addition, Mexico refers to 32 other laws and regulations that regulate the conservation of and trade in *E. imbricata*.

Mozambique
In Mozambique, the hunting of hawksbill turtles is prohibited under the Forests and Wildlife Regulation, Decree 12/2002, while recreational fishing of marine turtles is prohibited under the Recreational and Sports Fishing Regulation, Decree 51/1999. The General Regulation of Maritime Fishing, Decree 43/2003 requires all trawlers vessels to use TEDs and the Conservation and Biodiversity Law, Law 5/2017 requires CITES permits for all imports and exports of marine turtle specimens.

Namibia
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Namibia notes its Marine Resources Act No. 27 of 2000, and its Controlled Wildlife Products and Trade Act, 2008 (Act No. 9 of 2008) as amended. National regulations do not allow for take and trade of this species.

Netherlands
All six marine turtles found in the Dutch Caribbean territories are fully protected under local/national laws. Some illegal taking and nest damage occurs, which remains an important issue for law enforcement.

Nicaragua
Law 217 of the General Law on the Environment and Natural Resources, issued by the Ministry of the Environment and Natural Resources (MARENA), 1996 is the main law in Nicaragua protecting hawksbills. This includes Executive Decree No. 07-99 1999 which lists hawksbills as having a permanent closed catch season, and Ministerial Resolution No. 043-2005 which prohibits capture and trade of all species of marine turtles. As an exception, marine turtles may be caught on the Caribbean coast by indigenous people for subsistence purposes (WWF, 2018).

Peru
In response to Notification to the Parties No. 2020/035, Peru informed the Secretariat that in Peru, the trade in marine turtles and their parts is prohibited. Actions are being coordinated with the National Focal Point of the Inter-American Convention for the Protection and Conservation of Sea Turtles and with the National Focal Point for CMS.
On 12 April 2019, the National Plan for the Conservation of Sea Turtles in Peru 2019-2029 was approved by Executive Directorate Resolution No. 253-2019-MINAGRI-SERFOR-DE, which was approved by SERFOR (CITES Management Authority) and prepared in coordination with the CITES Scientific Authortiy (Ministry of the Environment – MINAM), National Service of Protected Natural Areas (SERNANP), Peruvian Sea Institute (IMARPE), Ministry of Production (PRODUCE – CITES Management Authority for aquatic species), NGOs and civil society.

Republic of Korea
In response to Notification to the Parites No. 2020/035, the Republic of Korea informed the Secratariat that all species of sea turtle are protected under relevant domestic laws:

- The Wildlife Protection and Management Act, Article 16 (Restriction on International Trade, etc. of Globally Endangered Species) prohibits the export, import, removal or bringing in of globally endangered species, in particular all species of sea turtles;
- The Conservation and Management of Marine Ecosystems Act, Article 18-2 (Prevention of Incidental Catch of Marine Organisms under Protection) and Article 20 (Prohibitions against Capturing or Collecting Marine Organisms under Protection) particularly prohibits the act of incidental catch, capture, harvest, transplantation, processing, distribution, storage, and damage on five species of sea turtles under protection, which occur in the Republic of Korea.

Senegal
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Senegal notes that terrapins, tortoises, and sea turtles of Senegal are part of the list of fully protected wild animals (article D36 decree 86-844 of july 14, 1986 relating to the hunting and wildlife protection code (regular part). According to the terms of this decree, all species of turtles in Senegal are absolutely protected throughout the entire national territory. Their hunting and capture, including that of the young and eggs collection, are strictly prohibited. This ban doesn't apply to holders of scientific hunting and capture permits.
Article L27: anyone who voluntarily kills or captures fully protected animals without a permit of the scientist permit is punished a fine of 240.000 to 2.400.000 CFA and imprisonment of 1 to 5 years. Article 32: anyone without authorization imports lives animals fully or partially protected into Senegal, their remains or trophies without a certificate of origin or duly established justification is punished with a fine of 120.000 to 1.200.000 CFA and imprisonment of one month to one year.
Anyone without authorization exports live animals fully or partially protected in Senegal their remains or trophies or objects made with these remains is punishable by the same penalty.
The maritime fisheries code of 2/07/1976 protects all species of marine turtles the capture, possession and sale of all species is prohibited.

Seychelles
In February 2024, the Seychelles informed the Secretariat that international and domestic trade in *E. imbricata*, including its parts and derivatives, are regulated by the following laws:

- 1994. Wild Animals and Bird Protection Act;
- Wild Animals (Turtles) Protection Regulations, 1994 (currently being revised);
- Trade of Wild Flora and Fauna Act, 2021;
- Nature Reserves and Conservancy Act, 2022.

Solomon Islands
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Solomon Islands notes that Fisheries Management (Prohibited Activities and Amendments) Regulation 2018 prohibits the fishing, possession of, selling, buying or exporting of any turtle including nesting turtles. However, traditional practices are recognized, including for traditional use for consumption, which generates challenges for the enforcement of the legislation.
The Ministry of Fisheries and Marine Resources Inshore Regulation 2018 prohibits the selling, buying and export of any turtle species in Solomon Islands.

Somalia
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Somalia notes that it has completed CITES legislation, which is pending approval by the Council of Ministers and Parliament.

South Africa
In February 2024, South Africa informed the Secretariat that both domestic and international trade in *E. imbricata* are regulated by the following laws:

- The National Environmental Management: Biodiversity Act 10 of 2004 (NEMBA) provides the legal framework for management and conservation of South Africa's biodiversity.
- The Threatened or Protected Species (TOPS) regulations, 2007, provide a national approach to sustainable use of species that are threatened with extinction, or in need of national protection, while ensuring the survival of the species in the wild, thus ensuring the conservation of the species. Hawksbill turtles are listed under TOPS, wherein provision is made for regulation of possession of, trade, harassment, and/or sale of this species. These activities are specifically prohibited on a national scale.

Spain
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Spain notes the following:

- Convention on the Conservation of Migratory Species of Wild Animals;
- Barcelona Convention for the protection of the Mediterranean;
- COUNCIL DIRECTIVE 92/43/EEC, of 21 May 1992, on the conservation of natural habitats and of wild fauna and flora;
- Law 42/2007, of December 13, 2007, on Natural Heritage and Biodiversity;
- Royal Decree 139/2011, of February 4, develops the List of Wildlife Species under Special Protection Regime and the Spanish Catalogue of Threatened Species;
- Strategy for the conservation of the common turtle (Caretta caretta) and other sea turtle species in Spain.

This legislation forbids any action taken with the purpose of killing, capturing, pursuing or disturbing the animals or their eggs, as well as the destruction or deterioration of their nests, vivariums and breeding, wintering or resting places. Also, it is forbidden to possess, naturalize, transport, sell, trade or exchange, offer for sale or exchange, import or export live or dead specimens, as well as their propagules or remains, except in those cases in which these activities, in a manner controlled by the Administration, may be clearly beneficial for their conservation, in the cases to be determined by regulation.

Sudan
In February 2024, Sudan informed the Secretariat that in Sudan, the domestic trade of hawksbill turtles is strictly regulated by national and sub-national authorities to protect the species from overexploitation and ensure conservation. The Sudanese Wildlife Conservation General Administration enforces national laws, working with other governmental bodies to monitor and control the trade. Permits are required for any activities involving hawksbill turtles, and authorities closely monitor their issuance and use. Sub-national regulations at the state and local levels further protect the species, with measures such as protected areas and public awareness campaigns. Enforcement involves regular inspections and surveillance to detect any illegal trade.
One of the main challenges faced by hawksbill turtles in Sudan is the lack of effective enforcement of legislation aimed at protecting them. Despite existing laws and regulations, enforcement mechanisms are weak, allowing illegal activities like poaching and bycatch to continue unchecked. This puts hawksbill turtles at risk of further decline. Limited resources, corruption and lack of political will also hinder enforcement. Another challenge is the lack of awareness and education among local communities and stakeholders, leading to unintentional harm to turtles. The transboundary nature of hawksbill turtle populations poses a challenge, requiring cooperation with neighbouring countries. To address these challenges, increased investment in enforcement capacity, training for officials, and public awareness campaigns are needed, as well as international cooperation.

Thailand
In response to Notification to the Parties No. 2020/035, Thailand informed the Secretariat that marine turtles are protected under the Wildlife Preservation and Protection Act B.E. 2562 (2019) which prohibits activities involving hunting, trading, occupying, breeding or the possession of any carcasses, parts or derivatives. Thailand has also issued Marine National Parks, Protected Wildlife Areas, and other

Conservation Areas to Promote Administration and Management of Marine and Coastal Resources B.E, 2558 (2015) with the aim to protect endangered aquatic species and conserve their habitats and to improve monitoring, detection and law enforcement activities relating to marine turtles. Additionally, the Royal Ordinance Act B.E, 2560 (2017) aims to prevent IUU fishing while the Ministry of Agriculture and Cooperatives issued a notification on Prohibition of Capture and Retaining Catches of Endangered Aquatic Species Onboard Fishing Vessels which covers all marine turtle species and their eggs (CITES, 2021).

Togo
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Togo informed the Secretariat that CITES legislation is in the process of being adopted in the country, following which a list of species covered by CITES will be drawn up. *E. imbricata* is already on that list.

Trinidad and Tobago
In its January 2024 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Trinidad and Tobago noted the following instruments:

- The Environmental Management Act, 2000;
- Environmentally Sensitive Species Rules, 2001;
- The Environmentally Sensitive Species (Hawksbill Turtle) Notice, 2014;
- Fisheries Act, 1975 – Protection of Turtle and Turtle Eggs Regulations;
- Conservation of Wildlife Act 67:01

United States of America
The six species of marine turtles in the USA are protected by the Endangered Species Act and the Lacey Act. The former prohibits both direct and incidental take, domestic and international trade and requires the development and implementation of recovery plans for these species, while the latter combats trafficking of illegally taken wildlife, fish, or plants. Fishery restrictions enforced by NMFS, the U.S. Coast Guard and the NOAA Office of Law enforcement (NOAA OLE) require U.S. fishing vessels to use certain types of fishing gear, to have gear modifications to reduce incidental take, and to have procedures in place for the safe handling of marine turtles caught as bycatch. The USA requires the use of Turtle Exclusion Devices (TEDs) in shrimp otter trawls, summer flounder trawls in some areas and skimmer trawls. The Marine Turtle Conservation Act (2004) provides financial support to projects addressing threats to the survival of marine turtles in foreign countries. The United States is a signatory country to the Inter-American Convention for the Protection and Conservation of Sea Turtles (IAC), in which parties make a binding commitment to comply with CITES. Additionally, the United States has ratified the Protocol for Specially Protected Areas and Wildlife (SPAW Protocol), which is part of the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (the Cartagena Convention). Hawksbill sea turtles are listed in Annex II of SPAW, where parties to the protocol must “ensure total protection and recovery to the species.”

Preliminary conclusions:
There are a range of reports on the trade in hawksbills turtles (Lam *et al*., 2011; Pilcher and Williams, 2018; TRAFFIC, 2018; Williams and Pilcher, 2018; WWF, 2018; Kitade *et al*., 2021) as well as multiple action plans. Range States could consider whether additional demand reduction, awareness raising, and/or law enforcement actions may be required to strengthen the outcomes of these action plans. Reference is made to Resolution Conf. 17.4 (Rev. CoP19) on *Demand reduction strategies to combat illegal trade in CITES-listed species* and the associated CITES guidance, as well as to Resolution Conf. 11.3 (Rev. CoP19) on *Compliance and enforcement*.

Range States are invited to make additional recommendations on possible actions.

In their 2024 responses to a questionnaire sent to the range States by the Secretariat, along with a draft of this case study, the following range States made additional recommendations.

Brazil considered it is necessary to:

- Monitor spawning areas;
- Maintain and increase long-term research activities to assess population trends;
- Identify feeding areas and implement long-term conservation, management and research actions;

- Carry out a survey on interaction with coastal fisheries;
- Maintain and increase adult and juvenile marking, to determine areas of use and movement and reproductive biology;
- Continue genetic studies to determine populations (feeding and spawning areas).

Colombia noted the importance of working towards local strengthening for monitoring and research programmes, based on citizen science. In addition, Colombia highlighted the need for promotion of the sustainable use and exploitation of biodiversity, continuing education campaigns, and intersectoral coordination.

France considered it important to study *E. imbricata* at the scale of French Polynesia in terms of its life cycle, distribution, habitat, threats, etc, and to gain a better understanding of the significance of the French Polynesian population of the species as a portion of its global population.

Ghana recommended that best practices for hawksbill conservation should be shared freely through international information sharing.

Guinea made the following recommendations:
- Update regulations on the protection and conservation of marine turtles;
- Ensure regular monitoring of egg laying throughout the Guinean coast;
- Develop a micro project on the protection and conservation of turtles;
- Involve young national researchers in all research activities, and involve local students and teachers in the conservation and protection of marine turtles;
- Guinea requires financial support to finance monitoring activities.

Indonesia made the following recommendations:
- Strengthening assessment and research on hawksbill turtles and using the results of assessment and research for policy interventions;
- Documenting hawksbill turtle migration routes;
- Reinforcing regulations on marine spatial management;
- Strengthening coordination in addressing marine turtle issues (bycatch, stranding, and/or violation of law);
- Capacity building in developing community-based hawksbill turtle ecotourism;
- Enhancing public participation in hawksbill turtle conservation;
- Improving the survival rate of ill/stranded/strangled hawksbill turtles;
- Improving surveillance and enforcement on marine turtle trade and/or destructive fishing.

Malaysia noted the need for funding opportunities, shellbanks, bilateral collaborations, and scientific studies, and recommended that to prevent smuggling to other range States, it is crucial for respective range States to implement effective monitoring action for legal harvesting within their own state.

Mauritius made the following recommendations:
- Carry out surveys to determine population size around the coast of Mauritius and outer islands;
- Reinforce capacity for conservation and enforcement through the recruitment of additional staff;
- Capacity building on conservation as well as rehabilitation of injured turtles;
- Allocation of funding for the conservation and management efforts.

Mexico made the following recommendations:
- Have long-term personnel, who are specialized and operational;
- Have short, medium and long-term financing plans that cover the needs of human resources and material resources (facilities, vehicles, tools, fuel, etc.);
- Have permanent training schemes;
- Have constant and effective information dissemination schemes;
- Strengthen work in all critical habitats (water/land);
- Adequate implementation of the legal framework where there are shared powers between several administrative units of the federal government or in which the coordinated participation of different levels of government is required;
- Capacity development and institutional strengthening;
- Improvement in coordination and linkage with national and international authorities in charge of monitoring and verifying compliance with the law;

- Ensure the availability of official resources to carry out research and evaluations of the species.

Senegal recommended undertaking vital population assessment in the country as the first step for future well-coordinated conservation action for this species. This proposed work should be implemented with various stakeholders: government, non-government agencies, local communities.

Solomon Islands noted the need for financial assistance to implement a national satellite-tagging program to find out whether turtles from different conservation sites use the same feeding grounds, to support more international actions towards turtle conservation in the Solomon Islands.

Sudan made the following recommendations:

- Strictly implement laws banning the trade in turtle shells and eggs as a means to safeguard turtles;
- Conduct public education on hawksbill turtle conservation to foster community participation;
- Establish marine protected areas specifically for hawksbill turtles, with limitations on human activities;
- Ongoing monitoring of hawksbill turtle populations, nesting sites, and migration patterns in Sudan;
- Develop a collaborative conservation plan with international organizations and neighbouring countries;
- Actively involve local communities in conservation initiatives and offer alternative livelihood opportunities.

The United States of America made the following recommendations:

- Address hawksbill turtle trafficking by partnering with governmental and regional bodies to enhance legal protections, facilitating intelligence sharing, bolstering law enforcement capacity and outreach to reduce demand.
- Address hawksbill turtle bycatch in commercial, artisanal, and IUU fishing through international sea turtle agreements, active engagement with Regional Fisheries Management Organizations, and by working with partners and industry to develop modifications to fishing gear and practices to reduce bycatch and/or reduce bycatch injuries.

Yemen recommended providing the necessary support to the least developed countries, as they do not have government budgets and some of them suffer from conflicts.

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Union Island Gecko (*Gonatodes daudini*)

Taxonomy
Scientific name: *Gonatodes daudini* (Powell and Henderson, 2005)
Common names:
English Union Island gecko / Grenadines clawed gecko

Date of listing in Appendix I
26 November 2019

Distribution
Union Island, Saint Vincent and the Grenadines

G. daudini has only been observed in an area of approximately 37 hectares of forest located above Chatham Bay on Union Island, Saint Vincent and the Grenadines (Bentz *et al.*, 2011).

Habitat
G. daudini lives in mature dry upland forest and has been found associated with rotting logs and loose soil (Powell and Henderson, 2005). The species is also often found hanging in the upper side of rock crevices (Bentz *et al.*, 2011).

Biological characteristics
Adult male *G. daudini* have a snout to vent length of approximately 29.9 mm and a tail length of approximately 25.5 mm. The species has bright red-orange irises and 39-44 large scales around midbody, which sets it apart from its congenerics which have more than 70 small scales around midbody. The males have three conspicuous pairs of dorsolateral white spots (ocelli) surrounded concentrically by black and red (Powell and Henderson, 2005).

Conservation status
The species was only first described in 2005 (Powell and Henderson, 2005) and was listed in Appendix I on 26 November 2019 based on a proposal by Saint Vincent and the Grenadines due to its limited distribution, declining numbers and it being heavily targeted for the live pet trade (CITES, 2019).
G. daudini is listed as Critically Endangered (CR) and stable on the IUCN Red List of Threatened Species and was last assessed 16 February 2019 (Daltry *et al.*, 2019), although Saint Vincent and the Grenadines also assessed the conservation status of this species as recently as 11 October 2022. Based on this recent assessment, the current population is estimated at 18,000, which is considerably higher than the 2018 estimate of 9,957 individuals referred to by Daltry *et al.* (2019). This may be the result of increased monitoring and hiring of wardens to patrol the area, and/or of the fact that the population survey was expanded over a larger area that the previous survey.

Threats
The main threats to *G. daudini* are the live pet trade, predation by feral cats and invasive species such as rats, opossums and snakes, and habitat loss and fragmentation (Bentz *et al.*, 2011; Nogales *et al.*, 2013; Maron, 2019; Shepherd *et al.*, 2019). In its December 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Saint Vincent and the Grenadines further note a lack of education or awareness about the species as a threat.

One of the most significant threats to this species is illegal collection for the wildlife trade, which started shortly after the species' discovery (Daltry *et al.*, 2019). In some locations, density of the species decreased by 80% from 2010 to 2018 (Shepherd *et al.*, 2019). Online trade in this species is known to occur, with a study finding 36 live individuals for sale in the period of 2014-2018 (Shepherd *et al.*, 2019). There have also been suggestions that the demand for pet geckos seems to be on the rise owing to their small size making them easy to smuggle (Maron, 2019). However, in its December 2023 response to the questionnaire sent by the Secretariat, Saint Vincent and the Grenadines notes that increased monitoring and patrolling in the area appears to have led to a 80% decrease in the illegal trade in *G. daudini* between 2018 and 2022.

Habitat destruction and fragmentation are of serious concern for this species (Bentz *et al.*, 2011; Maron, 2019), particularly as it has a very limited range of approximately 37 hectares. A new road was built in

2005, further fragmenting the area whilst also providing greater accessibility to illegal pet collectors and tourists. There is concern over the damage that may occur to the habitat by tourists visiting the area more frequently due to the greater accessibility, and by illegal pet collectors in the process of searching for both this species and others in the area (Bentz *et al.*, 2011; Maron, 2019). There were also plans for the expansion of a resort located in Chatham Bay on the slopes below the area where *G. daudini* is found, with concerns that this would invite additional tourists, putting greater stress on the habitat by further increasing visitor numbers to the area (Bentz *et al.*, 2011). According to the resort website as of 28 March 2022, the resort offers six beach-front cottages and has plans for expansion with the construction of two villas in the coming years. Currently, none of the known *G. daudini* habitat is under legal protection. However, in its December 2023 response to the questionnaire sent by the Secretariat, Saint Vincent and the Grenadines indicated that a boundary survey of the area is ongoing, with a view to establishing a forest reserve or other protected area.

Legal trade
There are no quotas or trade suspensions currently in place for this species.

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 2019 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Gonatodes daudini*

There are no records of trade of *G. daudini* in the CITES trade database in the period 2019-2023.

Illegal trade
Online trade in *G. daudini* is known to occur. A recent study found 36 individuals for sale from 2014-2018 with the most frequent reported origins of advertisements being Germany, the Netherlands and Austria. Wild origin was reported for five of the Union Island geckos advertised. As *G. daudini* was not listed on CITES until 2019, this trade was not illegal once the individuals were outside of the borders of Saint Vincent and the Grenadines. However, any export of specimens of *G. daudini* from Saint Vincent and the Grenadines (even prior to the Appendix I listing) was likely illegal as all wildlife of Union Island is protected under the Saint Vincent and the Grenadines Wildlife Protection Act of 1987, meaning that no export is permitted without the written permission of the Minister (Shepherd *et al.*, 2019). It is unclear whether written permission for any cases of export of *G. daudini* have been granted since its discovery in 2005.

High levels of poaching for the illegal pet trade are reported by Fauna and Flora International (Fauna and Flora International, n.d.) however the 2019 study by Shepherd *et al.*, as described above, is the only scientific study documenting the potential scale of trade in this species.

Current conservation actions in place
It is reported that wardens patrol the area in which the species is found and that community groups lead tours for tourists, highlighting the importance of protecting the habitat and educating them about the threats of poaching (Maron, 2019).

In its December 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Saint Vincent and the Grenadines reported that there have been two 5-year Management Action Plans for *G. daudini*, the most recent of which was adopted in 2022 and is now in its second year of implementation. Governmental efforts to strengthen national conservation efforts for this species are supported by non-governmental organizations, including Fauna and Flora International, the St. Vincent and the Grenadines Environment Fund, the Union Island Environmental Alliance, and the Science Initiative for Conservation and Education. Conservation of this species largely relies on

funding provided by international partners, with government sources providing less than 5% of the necessary funding, and is considered inadequate to address the conservation needs of the species. Non-financial resources are considered insufficient, although this is being addressed with the assistance of international partners.

National legislation

G. daudini is protected under the Saint Vincent and the Grenadines Wildlife Protection Act of 1987 meaning that no import or export is permitted in this species without the written permission of the Minister (referring to the Minister responsible for matters relating to wildlife).

In its December 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Saint Vincent and the Grenadines reported that national legislation to regulate international trade in *G. daudini* is in development.

Preliminary conclusions

Demand reduction, awareness raising, and/or law enforcement actions could be considered in line with Resolution Conf. 17.4 (Rev. CoP19) on *Demand reduction strategies to combat illegal trade in CITES-listed species* and the associated CITES guidance, as well as to Resolution Conf. 11.3 (Rev. CoP19) on *Compliance and enforcement*. Habitat destruction and fragmentation of its limited range is also a concern that should be considered in conjunction with possible illegal trade.

In its December 2023 response to a questionnaire sent to the range State by the Secretariat, along with a draft of this case study, Saint Vincent and the Grenadines considered the following recommended actions:

1. Completion of the survey of the boundaries around the habitat;
2. Declaration of the habitat as a Fores/Wildlife Reserve;
3. Gazetting of the species as a totally protected species;
4. Improvement of Wildlife Laws and Regulations.

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Orchid (*Aerangis ellisii*)

Taxonomy
Scientific name: *Aerangis ellisii* (B.S.Williams) Schltr., 1914
Common names: None

Date of listing in Appendix I
13 February 2003
NB. This species was listed in Appendix II on 1 July 1975 as part of the Orchidaceae spp. family listing.

Distribution
Madagascar

Habitat
A. ellisii is found in two habitats in Madagascar; growing as an epiphyte in the eastern forests and as a lithophyte on granite inselbergs on the plateau (Cribb *et al.*, 2005).

Biological characteristics
A. ellisii is pollinated by hawk-moths, primarily *Agrius conuolvuli* and *Panogena lingens* (Nilson and Rabakonandrianina, 1988). *A. ellisii* specimens from the inselberg habitat were found to associate with fungi from the Ceratobasidiaceae family (Kendon *et al.*, 2020). It is unknown which fungal species, if any, *A. ellisii* associates with in its eastern forest habitat.

Conservation status
A. ellisii was listed in Appendix I on 13 February 2003 after a proposal from Madagascar (CoP12, Prop. 59) to up-list several species of Malagasy orchids (including *A. ellisii*) from Appendix II to Appendix I (CITES, 2002). *A. ellisii* is reported to have a widespread distribution in Madagascar and to be relatively common in cultivation (Cribb *et al.*, 2005; Cribb and Hermans, 2007). There is no IUCN Red List assessment published for this species.

Threats
There is limited information on the threats to *A. ellisii* apart from a suggestion that it appears to be suffering from inbreeding depression in the wild (Kendon *et al.*, 2020). Malagasy orchids in general are threatened due to their ecosystems being subject to high anthropogenic pressure including slash and burn agriculture, over-exploitation of natural resources, bush fires, loss of pollinator species and trade (CITES, 2002; Hinsley *et al.*, 2018). Of particular concern for orchids is domestic and international trade driving illegal harvest from the wild, thus threatening wild orchid populations (Hinsley *et al.*, 2018).

Legal trade
There are no quotas or trade suspensions currently in place for this species.

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2023
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Aerangis ellisii (Aerangis ellisii var. grandiflora)*

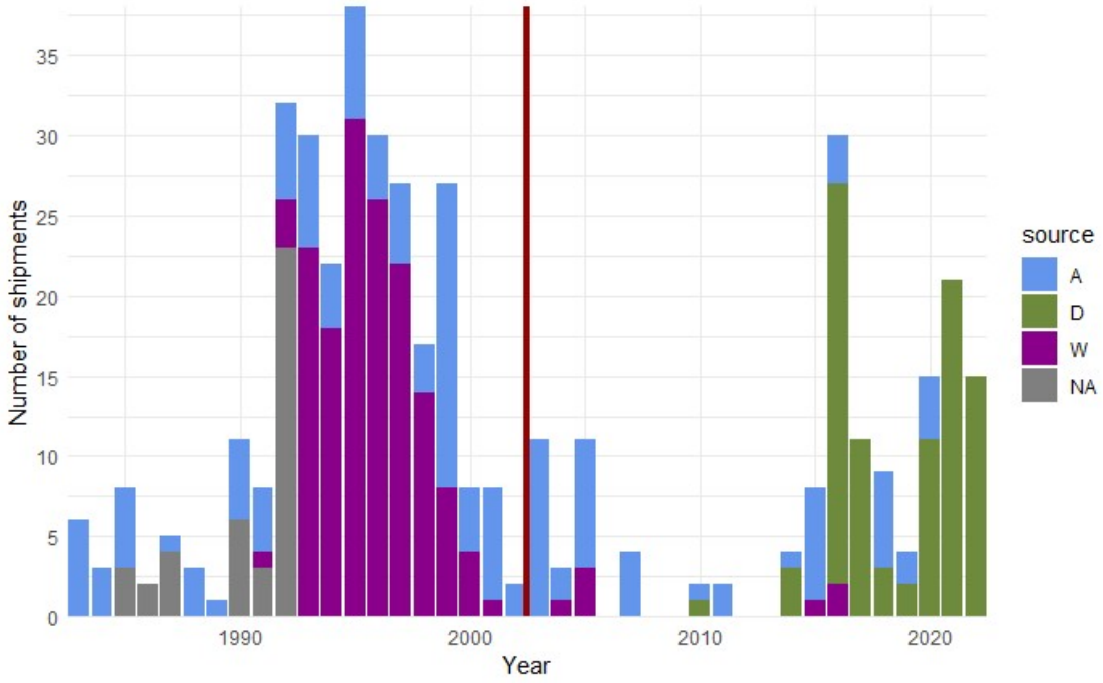

Figure 1. Number of shipments of *A. ellisii* recorded in the CITES Trade DAtabase between 1975 and 2022 colored by source code. Red vertical line shows the year the species was listed in Appendix I.

In the CITES Trade Database, there are a total of 242 exporter-reported shipments of *A.ellisii* during the period it was listed in Appendix II (1975 to 2002) and 51 exporter-reported shipments since it was included in Appendix I (2003-2022). The trade in *A. ellisi*i shifted from being predominantly of source code W to source code D after it was listed in Appendix I (Figure. 1). The most common purpose code was T (commercial). Since listing in Appendix I, Ecuador (39 recorded shipments) is the top exporter followed by Madagascar (19 shipments) and France (7 shipments). The main product type traded is live specimens (840 live specimens reported by exporters) although there are individual records of trade in cultures, seeds and specimens.

Illegal trade

A global survey of orchid growers (not restricted to *A. ellisii*) found that 9.9% admitted to smuggling orchids, 4.8% admitted to laundering orchids and 10.8% had received orchids online without the required CITES paperwork (Hinsley *et al.*, 2016). To note, in the same study 61.2% of respondents who gave an opinion on CITES reported negative views while 14% gave support for CITES, but had negative views towards its current application. The most common negative view about CITES which accounted for 26.7% of negative statements was that “CITES hampers orchid conservation” whilst other negative themes included “too strict”, “too complicated” and “not enforced uniformly”. Respondents generally had low levels of concern regarding the risk of being punished for non-compliance with CITES.

Current conservation actions in place

The range State is invited to provide information about current conservation actions in place targeting *A. ellisii*.

National legislation

The range State is invited to provide information about national legislation in force governing *A. ellisii*.

Preliminary conclusions

Given that the levels of orchid smuggling, laundering, and trade without the required CITES paperwork, as reported by orchid traders, may only represent a fraction of the actual figures, investigation of the scale of illegal trade in *A. ellisii*, including particularly online trade, and identifying management and law enforcement action might be helpful. Further research on the species would be helpful for its long-term conservation.

The range State is invited to make additional recommendations on possible actions.

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Bastard Quiver Tree (*Aloe pillansii*)

Taxonomy
Scientific name: *Aloe pillansii* (With the synonym *Aloidendron pillansii*)
Common names:
English Bastard quiver tree aloe / Bastard quiver tree

Date of listing in Appendix I
1 July 1975

Distribution
Namibia, South Africa

Habitat
A. pillansii is able to tolerate high temperatures of up to 50°C in the day in summer, being found primarily in hot and arid areas (Cousins and Witkowski, 2012). The species has been found both at low and high elevations and in areas with low or high average winter rainfall (Bolus *et al.*, 2004).

Biological characteristics
A. pillansii is a keystone species, providing important vantage points for raptors as they can be the only tall plants in their habitat. They provide nesting sites for birds either in their leaves or trunk, and water stored in their trunk and leaves is an important source of moisture for a variety of animals (Midgley *et al.*, 1997). They are pollinated by birds (Midgley *et al.*, 1997) and have a low growth rate (Duncan *et al.*, 2006), making them vulnerable to disturbances. It has been suggested that *A. pillansii* undergoes episodic recruitment (Duncan, 2004), meaning that recruitment occurs in bursts with potentially long periods of no recruitment happening in between. 62% of individuals in South Africa were reportedly located less than 250 m above sea level (Bolus *et al.*, 2004). The species flowers in October and is pollinated by short-billed generalist nectarivores, sunbird species and honeybees (*Apis mellifera*).

Conservation status
A. pillansii is categorised as Critically Endangered (CR) and decreasing on the IUCN Red List of Threatened Species, with an estimated population of only 5935-9000 individuals in the wild and was last assessed 1 April 2022 (Swart *et al.*, 2022). The species was listed in Appendix I on 1 July 1975.

The Five Sisters population in South Africa was reported to be growing (Bolus *et al.*, 2004), however, several studies have reported population declines in other areas, including South African populations located in the Richtersveld (Powell *et al.*, 2003); Duncan *et al.*, 2006), Cornell's Kop (Duncan, 2004) and the Western Cape (Midgley *et al.*, 1997), particularly in the adult size category of the species (Midgley *et al.*, 1997). A study from 2006 reported that at the time, only 28% of the *A. pillansii* individuals in South Africa occurred on conserved land (Duncan *et al.*, 2006), making management and protection difficult outside of these areas.

The recent IUCN Red List assessment reports that the population is estimated to number around 5,935 and is divided into three distinct sub-populations, each with differing climatic and habitat characteristics. The northern subpopulation in southern Namibia has the highest density and comprises 46% of the global population. Seventy-seven percent of known individuals are dead, and no seedlings and very few juveniles have been recorded. The central subpopulation, which occurs mostly in and around the Richtersveld Transfrontier Park, comprises an estimated 16% of the global population. One third of known individuals are dead, and there is a higher concentration of juvenile individuals than in the northern subpopulation. The southern subpopulation, comprising an estimated 38% of the global population, is located east of the Stinkfontein mountains. Approximately one fifth of known individuals are dead, and prior to 2015, almost 50% of the subpopulation consisted of seedlings and juveniles. However, both the central and the southern subpopulations have suffered higher mortality in recent years as a result of poaching (prior to 2016), habitat loss/change, drought, overgrazing by livestock and predation by baboons, the latter being a consequence of extreme habitat degradation (including a prolonged drought since 2015) that leaves animals little choice but to predate this species, according to South Africa's response in March 2024 to a questionnaire sent to range States by the Secretariat. Overall, the assessment infers that the population declined by at least 61% over the past 300 years (two generations) (Swart *et al.*, 2022). In its March 2024 response, South Africa further indicates that

the population is predicted (based on climate change models), to decline by a further 92% by the year 2080.

Threats
Threats to *A. pillansii* include illegal collection of wild specimens for trade, trampling by vehicles, people and animals, low genetic diversity, overgrazing, and habitat loss due to climate change (Midgley *et al.*, 1997; Powell *et al.*, 2003; Bolus *et al.*, 2004; Duncan, 2004; Duncan *et al.*, 2006; Josephs, 2014; Swart *et al.*, 2022).

Two studies have reported anecdotal evidence of large quantities of seedlings of *A. pillansii* having been removed in the 1960s and 1970s (Duncan, 2004; Duncan *et al.*, 2006). Additionally, there is some evidence of damage from animals, including baboons and porcupines, at the base of *A. pillansii* in the Western Cape which could have contributed to the death of individuals. While this damage seemed to be localised to the area (Midgley *et al.*, 1997) and may not be a significant threat to the species as a whole, the recent IUCN Red List assessment notes predation by baboons as a cause of high mortality in the southern subpopulation between 2015 and 2020 (Swart *et al.*, 2022).

Of particular concern are reports of a lack of seedlings and juvenile plants in multiple populations, making them particularly vulnerable to local extinction (Midgley *et al.*, 1997; Powell *et al.*, 2003; Bolus *et al.*, 2004; Duncan, 2004; Duncan *et al.*, 2006). It has been suggested that this could be a result of collectors removing seedlings (Duncan *et al.*, 2006) although it could also be a symptom of the episodic recruitment of *A. pillansii* (Duncan *et al.*, 2006). Additionally, there is evidence that populations of *A. pillansii* across Namibia and South Africa have undergone a recent bottleneck, resulting in low genetic diversity across the species' range, which increases the species' vulnerability to change (Josephs, 2014).

In its March 2024 response, South Africa notes that the primary and most severe threats at present are overgrazing, followed by prolonged droughts. The prolonged drought that started in 2015 has caused mortality of mature individuals in the central and southern subpopulation, furthermore drought conditions and the general lack of forage available in the broader landscape has led to a significant increase in predation by baboons with these impacts particularly severe for plants occurring in the southern subpopulation. Drought events and their negative influence on grazing/browsing availability in combination with high concentrations of livestock have increased pressure on the juvenile population across this species range. Furthermore, modelled climate envelopes for the time period 2061-2080, show little to no overlap with the current species range. These models predict that the pressure from climate change is likely to continue to cause significant population decline.

As only 28% of *A. pillansii* in South Africa were reported to occur on conserved land in a 2006 study (Duncan *et al.*, 2006), outside these areas seedlings may be at greater risk of trampling from people, livestock and off-road vehicles. In its March 2024 response, South Africa notes that around 10% of suitable habitat for this species is protected within the /Ai /Ais-Richtersveld Transfrontier Park, where grazing, which is often not sustainable, is allowed.

Crucially, the IUCN Red List assessment concludes that future declines to the population are extremely likely since modelled climate envelopes for the time period 2061–2080, have very low overlap with the species' current occupied habitat. Depending on the realized emission scenario, there will be a loss of suitable bioclimatic envelope of between 92% and 100% between 2061 and 2080 (Swart *et al.*, 2022).

Legal trade
There are currently no quotas or trade suspensions in place for this species.

There are anecdotal reports of large quantities of *A. pillansii* being removed from its habitat in the 1960s and 1970s; however the destinations for these are unknown (Duncan, 2004; Duncan *et al*, 2006).

In March 2024, South Africa informed the Secretariat that there is ongoing legal domestic trade in the species. There are a number of nurseries involved in trading the species within the country, including two in the Northern Cape province where the species occurs. To date, no laundering of wild plants has been recorded in these two nurseries, but additional assessments will need to be undertaken for nurseries outside of the species range, like in Gauteng for example. Seeds are in the process of being

distributed to additional traders for further cultivation. The domestic trade has not been fully quantified at this time.

CITES Trade Database
The CITES Trade Database was queried in October 2023, using the search parameters included in table 1 below. Re-exports were excluded from the analysis.

Table 1: Search criteria used to query the CITES trade database.

Year Range:	From: 1975 To: 2022
Exporting countries:	All Countries
Importing countries:	All Countries
Source:	All Sources
Purpose:	All Purposes
Trade Terms:	All Terms
Species:	*Aloe pillansii*

There are 91 exporter-reported shipments of *A. pillansii* in the CITES Trade Database between 1975 and 2022, with the first record dated 1981. Most records have source code A or D (artificially propagated) and the majority of trade is in live specimens followed by seeds. In total, 852 live specimens in 85 shipments and 896 seeds in 6 shipments were exported. Most records had purpose code T (commercial). The purpose codes for the remaining records included P (personal), G (botanical garden), B (breeding in captivity or artificial propagation) and E (education). Most exports are reported from South Africa (90 shipments), followed by Germany (15 shipments), United States of America (3 shipments), Switzerland (2 shipments) and Thailand (1 shipment). Most imports are to Japan, the United States of America, and the United Kingdom of Great Britain and Northern Ireland.

Illegal trade
Prior to 2016, the illegal harvesting of quiver trees, including *A. pillansii* from the Northern Cape (South Africa) was a threat, however, since 2016 poaching has focused on smaller species of succulents and the recent IUCN Red List assessment notes that no recent incidences of poaching of quiver trees has been recorded (Swart *et al.*, 2022).

Current conservation actions in place
The Red List Assessment reports that the species occurs in protected areas (/Ai /Ais-Richtersveld Transfrontier Park) where active management, protection and monitoring is possible. Indeed, in 2013 there was an ongoing monitoring effort of 1,891 of known individuals. The species is also subject to *ex-situ* conservation, being recorded in 25 collections (Swart *et al.*, 2022).

In March 2024, South Africa informed the Secretariat that work was previously done in partnership with the Namibian Botanical Research Institute to map and assess the Namibian population but owing to capacity constraints in both countries, collaboration has become more challenging and is not ongoing at present. However, at the level of South Africa, there are on-going *ex situ* conservation efforts. Seeds were donated by the Northern Cape Provincial conservation authority to a trusted nursery in the Northern Cape a few years ago to boost the availability and supply of propagated plants. The donation was a success, and the nursery was able to germinate and grow the seedlings until all were sold. The South African National Parks agency (SANParks) have also started a process to distribute seeds to more nurseries and seed traders.

There were plans to initiate a re-introduction programme for the species into a historic locality but further research on the species and its habitat requirements rendered the project unfeasible. No other in-situ programmes are planned for at this time.

A few years ago, there was a club called the ‘Kokerboom Klub’ whose members assisted during the early population surveys. The programme came to an end when the members became too old.

Over the last several years, the South African government, in partnership with NGO partners, have developed and are currently implementing a National Response Strategy and Action Plan to address the illegal trade in indigenous Succulent Flora. Whilst the strategy and plan are not focused on any one

species, it is aimed largely at conserving the rich succulent flora of the Succulent Karoo Biome through several key objectives that relies on partnerships between state and non-state actors.

Additional funds are required specifically for more research on the species, as well as for the monitoring and auditing of nurseries to improve assessments of trade. There are currently plans to continue monitoring one of the populations in situ whilst further investigation into the phylogenetics of the subpopulations is also needed, which could be quite costly. Estimates of funding required will need to be determined with species experts and those working in the compliance and enforcement space.

Capacity constraints in terms of sufficiently trained staff within the provinces is an ongoing challenge to biodiversity conservation in the country. The conservation of plants in trade is an especially critical challenge given the vast areas across which the species occur, making effective field protection and monitoring difficult, as well as the lack of skills needed to audit trading facilities and identify specimens in trade. There is also a bias towards the conservation of animal species, particularly charismatic fauna, and officials with plant ecology/conservation skills are in the minority.

Social skills to work with communities who live around these populations, in extremely challenging conditions, and who could potentially play a role in the re-establishment, monitoring and protection of the species are also scarce.

National legislation

South Africa

In March 2024, South Africa informed the Secretariat that nationally, the species is protected in terms of the Threatened or Protected Species (TOPS) Regulations of 2007 (under the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)). In terms of these regulations, a person may not carry out a restricted activity involving a specimen of a listed threatened or protected species (TOPS) without a permit. Restricted activities involve those activities that have direct impact on listed species, such as: hunt, catch, collect, pick, chop off, damage or destroy; import to or export from Republic; possess, keep or exercise physical control over; breed or propagate; convey or translocate; import, export, sell or buy, receive or donate; or any other prescribed activity involving a specimen of a listed threatened or protected species. Thus, the export of the species from the country will require a national permit issued in terms of TOPS as well as a CITES permit.

Additionally, the species is protected in several provinces under their respective provincial ordinances, including in the Northern Cape Province where it occurs. It is listed as a Specially Protected Species in the Northern Cape Nature Conservation Act (No. 9 of 2009) and a person would require a permit from the provincial authority in order to pick; import; export; transport; possess (except in the case of a land owner on whose property the plant grows); cultivate; or trade in, a specimen of the species. Specimen in this case refers to the whole plant and/or all parts and derivatives of the plant as well as any goods which contain a derivative of such plant.

Provinces in the country are under-capacitated and do not always have the resources (including adequate skills and budget) to effectively enforce the necessary legislation or to implement national requirements for managing and monitoring the use and trade of the species. For example, in Gauteng, nurseries known to be trading (locally) in the species have not been registered in terms of TOPS. The nurseries in the Northern Cape have however been audited and monitored as per the provincial and national requirements. Implementation of the CITES requirements is generally more successful. In terms of enforcement, challenges include monitoring and preventing illegal harvest activities on the ground, and effectively identifying the species (including distinguishing between wild and artificially propagated specimens) in trade during nursery inspections.

Preliminary conclusions

While illegal harvesting of quiver trees has not been recorded since 2016, the species has low recruitment rates and high mortality across its area of distribution, and remains highly vulnerable to change / pressure. An assessment to determine if illegal collection from the wild and illegal trade is taking place and if so, appropriate management and law enforcement actions could be considered.

South Africa also made the following recommendations:

- Actions to address the conservation of the species would benefit from additional research. Questions include the need to understand rates of decay of carcasses to inform interpretation of the ratio of live to dead individuals. This is a key factor in understanding relative population trend with this long-lived species. With the ability to respond to climate change limited by the

populations' poor dispersal ability, past and current levels of seed dispersal need to be better understood by conducting a genetic analysis of the meta-population. A population viability model needs to be constructed using in field repeat monitoring data collected over the past 10 years, this will allow for improved predictions of the rate of future declines.

- Reintroduction programmes need to be re-investigated and initiated. The challenges to such processes (such as grazing pressure, germination optimization, and hardening off of seedlings after reintroduction into the wild) will need to be understood and this would require a larger inclusive approach than just re-establishment of individuals into the wild.

Range States are invited to make additional recommendations on possible actions.

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