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

Twenty-seventh meeting of the Animals Committee
Veracruz (Mexico), 28 April – 3 May 2014

Interpretation and implementation of the Convention

Exemptions and special trade provisions

IMPLEMENTATION OF THE CONVENTION RELATING TO CAPTIVE-BRED AND RANCHED SPECIMENS (DECISION 16.65)

1. This document has been prepared by the Secretariat.

2. At its 16th meeting (CoP16, Bangkok, 2013), the Conference of the Parties adopted a suite of Decisions on *Implementation of the Convention relating to captive-bred and ranched specimens*, as follows:

Directed to the Secretariat

16.63 The Secretariat shall:

a) contingent on the availability of external funds, contract an appropriate expert or experts to:

i) evaluate the concerns identified in the examples in document SC62 Doc. 26, Annex, regarding trade in specimens claimed to be derived from captive breeding or ranching;

ii) review CITES annual report data for specimens recorded using source codes C, D, F and R;

iii) identify problems with CITES implementation associated with these examples;

iv) consider ways to more effectively share available information on captive-breeding and ranching operations;

v) evaluate the utility of a captive-breeding database (including wider application of the existing UNEP-WCMC Captive-Breeding Database being developed for the European Union);

vi) prepare a report on its findings and recommendations, taking into consideration the report and recommendations of the working group on implementation of the Convention relating to captive-bred and ranched specimens presented at the 62nd meeting of the Standing Committee; and

vii) develop draft checklists or guides for the inspection of captive-breeding and ranching facilities and review of permit applications for captive-bred and ranched specimens;

b) provide a draft of this report and additional materials to the Animals Committee at its 27th meeting, for review; and

c) distribute final report and materials to the Parties if endorsed by the Animals and Standing Committees.

16.64 The Secretariat shall report at the 65th and 66th meetings of the Standing Committee on significant cases where it has taken initiatives or entered into a dialogue with Parties on trade in specimens declared as bred in captivity or ranched where there is serious doubt about the identified source of the specimens in trade.

Directed to the Animals Committee

16.65 The Animals Committee, at its 27th meeting, shall review the report and provide recommendations to the Standing Committee.

Directed to the Standing Committee

16.66 The Standing Committee, at its 65th meeting, shall:

a) review the report and the recommendations of the Animals Committee and make its own recommendations to the Parties concerned and the Conference of the Parties; and

b) consider proposing amendments to Resolution Conf. 12.8 (Rev. CoP13) or Resolution Conf. 14.3, or proposing a new resolution to provide a process for reviewing the implementation of CITES for specific examples of trade in specimens that are claimed to be produced via captive breeding or ranching.

3. The European Union generously contributed funds to implement these Decisions. The European Commission approved the full-fledged proposal in August 2013, and UNEP completed the contract placement process in October 2013. The Secretariat then commenced implementation, in particular of the work referred to in Decision 16.63 a).

4. The report on the evaluation of the concerns identified in the examples on trade in specimens claimed to be derived from captive breeding or ranching, as referred to in Decision 16.63 a) i) and iii), was undertaken by TRAFFIC and can be found in Annex 1 to the present document.

5. The report of the review of CITES annual report data for specimens recorded using source codes C, D, F and R, referred to in Decision 16.63 a) i) and iii), was undertaken by the United Nations Environment Programme - World Conservation Monitoring Centre and can be found in Annex 2 to the present document.

6. The Secretariat will report orally on progress with other aspects of Decision 16.63 a) at the present meeting.

7. The Secretariat notes that other decisions adopted at CoP16 are also likely to provide results of significant importance with respect to the implementation of Convention provisions relating to captive-bred and ranched specimens. In particular:

Production systems for specimens of CITES-listed species

Directed to the Secretariat

15.52 The Secretariat shall:

a) contingent on the availability of external funds, contract an appropriate expert to prepare a guide to advise the Parties on the appropriate use of source codes;

b) provide a draft of this guide to the Animals and Plants Committees for review and comment; and

c) prepare and distribute the final product, incorporating the feedback of the Animals and Plants Committees, to inform the Parties on the appropriate use of source codes.

Directed to the Animals and Plants Committees

15.53 The Animals and Plants Committees shall review and provide feedback to the Secretariat on the draft guide to advise the Parties on the appropriate use of source codes.

Snake trade and conservation management (Serpentes spp.)

Directed to the Secretariat

16.102 The CITES Secretariat shall, where appropriate in consultation with the Standing Committee:

a) subject to external funding, hire independent consultants in liaison with local scientists, and local research and academic institutions to:

i) undertake a study of production systems for Asian snakes listed in CITES Appendix II and the use of source codes; and develop guidance to assist Parties in monitoring and controlling captive-breeding operations and other production systems, including information to assess their biological feasibility and, where possible, economic viability (i.e. whether it is financially viable for commercial facilities to produce and export specimens as permitted by national authorities);

iv) undertake a study on methodologies to differentiate between wild and captive-bred CITES-listed snakes in trade, including parts and derivatives, ensuring that the work is carried out in line with recommendations of the Standing Committee concerning source;

f) subject to external funding, conduct one or more interdisciplinary workshops for CITES and other relevant authorities and stakeholders of range States of Asian snake species in international trade on:

i) the use of guidance for monitoring and controlling captive-breeding operations and other production systems, as agreed by the Standing Committee pursuant to Decision 16.105;

ii) the use of guidance for making non-detriment findings and establishing export quotas for Appendix-II snake species in trade; and

g) report on the results of these activities to the Standing Committee before the 17th meeting of the Conference of the Parties (CoP17).

Sturgeons and paddlefish (Acipenseriformes spp.)

Directed to the Secretariat

16.136 The Secretariat shall:

a) subject to external funding and in consultation with the Animals Committee, organize a study to:

i) provide an overview of molecular, DNA-based and other forensic methods that could assist in identifying the species and populations of Acipenseriformes specimens in trade, determining the origin or age of specimens, and differentiating wild from captive-bred or aquacultured specimens;

ii) review relevant developments in this area, including the availability and reliability of uniform identification systems;

iii) evaluate the advantages and disadvantages of the different methods (including practicality, costs, time-efficiency, reliability, technical requirements, etc.); and

iv) formulate relevant guidance for CITES Parties, enforcement agencies, the private sector and other stakeholders;

b) ensure consultation with Parties that authorize trade in specimens of sturgeons and paddlefish, appropriate experts, institutions and organizations, and the private sector in the conduct of the study;

c) make the results of the study available to the Animals Committee at its 27th or 28th meeting for its consideration; and

d) disseminate the recommendations formulated by the Standing Committee pursuant to Decision 16.138 in a Notification to the Parties.

Directed to the Animals Committee

16.137 The Animals Committee shall assist the Secretariat in determining the specifications for the study referred to in Decision 16.136 and monitoring its conduct. It shall review the report of the study at its 27th or 28th meeting, and make recommendations as appropriate for consideration by the Standing Committee.

Directed to the Standing Committee

16.138 The Standing Committee shall review the study undertaken in accordance with Decision 16.136 and the recommendations that the Animals Committee formulated in compliance with Decision 16.137, and make its own recommendations, as appropriate, for communication to Parties concerned or for consideration at the 17th meeting of the Conference of the Parties.

8. The implementation of the relevant decisions relating to snake trade and conservation management and sturgeons and paddlefish is discussed in documents AC27 Doc. 19.1 and AC27 Doc. 15 respectively.

9. With the benefit of hindsight, if these decisions are to be implemented in a thorough and integrated way, the timelines agreed at CoP16 for Decision 16.63 to 16.66 were over-optimistic and the decisions could have been aligned with other closely related issues, as addressed in the Decisions in paragraph 7 of the present document. The Secretariat cannot at present provide the Committee with the materials and reports described in Decisions 15.52 b), 16.63 a) v) and vi), 16.102 a) and 16.136 c).

10. The Secretariat observes that any review of the implementation of Convention provisions relating to captive-bred and ranched specimens could be addressed by dividing the issue into a number of themes:

    i) Trade exemptions under Article VII 4, i.e. those relating to trade in specimens of species included in Appendix I and bred in captivity for commercial purposes, the use of source code 'D', and the implementation of Resolution Conf. 12.10 (Rev. CoP15) on *Registration of operations that breed Appendix-I animal species in captivity for commercial purposes*.

    ii) Trade exemptions under Article VII 5, and the application of source code 'C', relating to specimens included in Appendix II, as well as those included in Appendix I and bred in captivity for non-commercial purposes. Resolution Conf. 10.16 (Rev.) on *Specimens of animal species bred in captivity* sets out criteria for determining whether a specimen can be considered as bred in captivity and thus able to qualify for such an exemption.

    iii) The use of source code 'R' which has been recently reviewed by the Committee, resulting in a recommendation to the Conference of the Parties, but which was not agreed (see document CoP15 Doc. 29). The permitting requirements for specimens from this source are identical to those for specimens taken from the wild.

    iv) The use of source code 'F' which was included at the 8th meeting of the Conference of the Parties in Resolution Conf. 8.5 on *Standardization of CITES Permits and Certificates* [now incorporated into Resolution Conf. 12.3 (Rev. CoP16)], but for which the permitting requirements are identical to those of specimens taken from the wild.

11. These themes would need to be addressed through: a) implementation of relevant CITES provisions at the national and international level; b) monitoring of compliance; c) capacity building, guidance and support; and d) enhancement of enforcement and controls.

12. The Animals Committee is invited to prepare its recommendations for the Standing Committee in accordance with Decision 16.65. As explained in paragraphs 6, 7, 8 and 9 of the present document, additional material on this subject will only become available at a later date, and the Committee may therefore wish to advise the Standing Committee that it will make a further submission when this additional material is available.

Concerns regarding trade in specimens claimed to be derived from captive breeding or ranching – Assessment of select examples

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TRAFFIC
the wildlife trade monitoring network

Report commissioned by the CITES Secretariat

Executive summary

In response to concerns raised by the Standing Committee regarding the implementation of CITES in relation to captive-bred and ranched specimens, the 16th meeting of the Conference of the Parties adopted a number of decisions. Amongst these were Decision 16.63, relating to: i) the evaluation of concerns identified in the examples in document SC62 Doc. 26, Annex, regarding trade in specimens claimed to be derived from captive breeding or ranching; and ii) the identification of problems with CITES implementation associated with these examples. To this purpose, the CITES Secretariat contracted TRAFFIC[1] to analyse recent (2008 to 2012) CITES trade data for these specific cases and to review secondary sources of information, in order to determine whether exports are still being authorized in quantities which might give rise to doubts concerning CITES permits being issued in line with the terms of the Convention and relevant Resolutions. Parties were also contacted in January and February 2014 with a request for clarification/further information in relation to specific examples.

The results presented in this report confirm a large number of the concerns identified by the Standing Committee in SC62 Doc. 26 in relation to potential mis-declarations of specimens as derived from captive-breeding or ranching. Analysis of CITES trade data and relevant literature found large volumes of non-wild sourced trade for several of the examples and unexpected trade patterns, in terms of source codes used and reported trade routes/volumes in trade. In most of the cases examined, in light of trade volumes involved and/or the threatened status of the species concerned, such potential mis-declarations involve wild-harvested specimens and thus may be seriously impacting wild populations. The specific taxa in trade, as well as trade routes and source codes being reported, were also observed to shift over time, highlighting the need for a long-term monitoring mechanism to ensure changes in species and exporting countries are identified. Only a few responses were received from Parties in time for their inclusion in this report, thus further investigation of the examples presented in this document would also be warranted.

The Report concludes that the regular and in-depth monitoring of trade in specimens declared as having a non-wild source has a key role to play in ensuring that trade does not have a detrimental impact on wild populations. The analyses carried out have demonstrated how regular reviews of trade data have the potential to assist in detecting instances of mis-declared sources of specimens in trade, especially when supplemented by relevant information provided by Parties. This includes details of founder stock and breeding facilities, production volumes, unique and permanent marking requirements and enforcement measures relating to breeding/ranching operations. It is, however, recognized that many exporting States may currently lack the resources necessary for regular reporting and/or record-keeping and that capacity-building, training and exchange of information would likely be required in support of effective monitoring. Information provided by importing States can also offer a valuable consumer/transit perspective on these issues, including through the reporting of concerns over possible misuse of source codes and the sharing of techniques to distinguish specimens of captive and wild origin.

Introduction

The CITES Standing Committee (SC) has raised a number of concerns relating to the implementation of the Convention with regard to captive-bred and ranched specimens. A number of decisions were adopted at the 16th meeting of the Conference of the Parties (CoP16). These include Decision 16.63, relating to i) the evaluation of the concerns identified in the examples in document SC62 Doc. 26, Annex, regarding trade in specimens claimed to be derived from captive breeding or ranching; and ii) the identification of problems with CITES implementation associated with these examples. To determine whether concerns over cases highlighted in SC62 Doc. 26 are still justified, TRAFFIC was contracted by the CITES Secretariat to analyse recent CITES trade data, study secondary sources of information and contact the Parties concerned.

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

Methods

Data relevant to the examples listed in SC62 Doc. 26 were extracted from the UNEP-WCMC[2] CITES Trade Database (in December 2013 and January 2014) for years 2008 to 2012 and analysed. For certain examples, and where appropriate, data were also extracted for earlier time periods, due to the fact that interpreting trade trends and patterns can be difficult when looking at only a few years of data, as discussed by Caldwell (2012). These longer datasets are presented in several of the figures and tables to provide context, however discussions focused on the more recent 2008-2012 period. The majority of trade in the focus species is of "live" specimens or "skins", and the analysis focused on these trade terms; all source and purpose codes were included unless specifically indicated. Both importer and exporter records were analysed, and a decision on which reports to focus the discussion on was made on a case by case basis and is stated in each example. Unless stated, re-exports were not included. The CITES Trade Database was the source of data presented in the figures and tables throughout the report, unless otherwise specified.

Some Parties have yet to submit their annual reports, in particular for more recent years, or in some cases their data may not yet have been included into the CITES Trade Database. These potential gaps, where known, were taken into consideration when interpreting any findings. A table of annual report submissions relevant to the examples analysed (derived from the full table published on the CITES website and accurate at the time of writing) is provided in the Annex of this report (Table 4).

Nomenclature used in this document reflects that used in the CITES Trade Database. Definitions of geographic regions and sources codes (C, D, F, I, O, R, U, W) used in the report can be found in the Annex (Table 5 and Table 6).

Following initial trade data analysis, a literature review was conducted with a focus on explaining trade data patterns observed between 2008 and 2012, but also prior to 2008, where relevant. CITES Authorities, as well as species experts and TRAFFIC staff members were consulted, where appropriate, for advice or explanation of unusual trade patterns. Unless otherwise stated, information regarding range, export quotas and trade suspensions was obtained from Species+[3].

Results

The following summarises the results of research on the 14 cases highlighted in the Annex of SC62 Doc 26. Some additional figures, tables and information are also provided in the Annex.

Example 1: *Red-eyed Tree Frogs* **Agalychnis callidryas** *from Central America traded using source code C*

The *Agalychnis* genus was listed in CITES Appendix-II in 2010. Between 2010 and 2012, importers reported importing 60 430 live specimens which had been exported from Nicaragua; 59 492 of which were declared as C (Figure 1). Nicaragua reported exporting 63 632 C specimens during the same time period (Figure 1). According to the Nicaraguan Management Authority, at the time the genus was proposed for listing in CITES Appendix-II, all exports of *Agalychnis callidryas* frogs from Nicaragua were of captive-bred specimens (R. Castellón, Nicaragua CITES MA, *in litt.* to TRAFFIC, 2009). A previous analysis of LEMIS data[4] (CoP15 Proposal 13, 2010[5]) found that the United States of America (USA) imported R specimens (quantity not specified) from Nicaragua between 1998 and 2007 (pre-CITES listing); there were no reports of any R specimens between 2010 and 2012 in the CITES Trade Database.

The species can be bred in captivity but concerns have been expressed by experts as to the economic viability of raising frogs in captivity until adulthood, and exporting them for as little as USD1.00 each[6]. A shipment of 600 live specimens from Nicaragua was seized in the Netherlands in 2013. A variety of

[2] *United Nations Environment Programme World Conservation Monitoring Centre.*

[3] *http://www.speciesplus.net/*

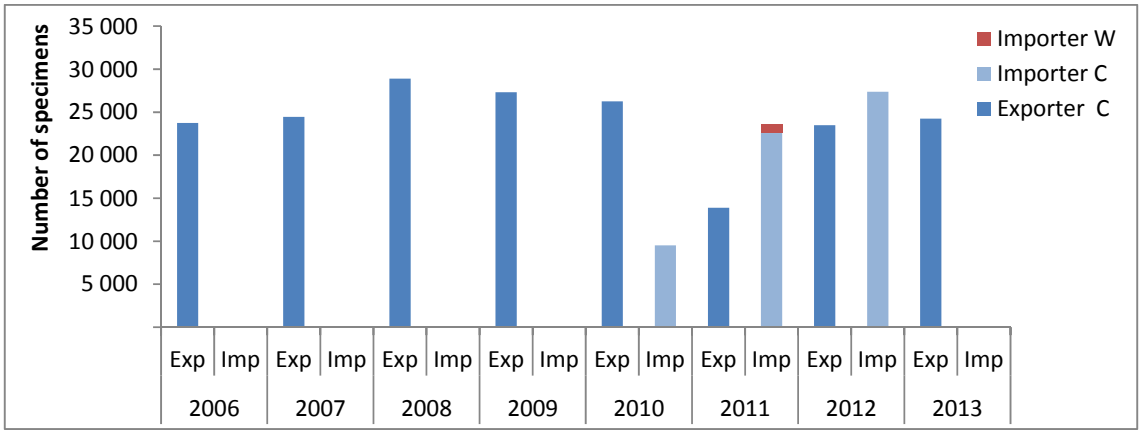
[4] *U.S. Fish and Wildlife Service Law Enforcement Management Information System*

[5] http://www.cites.org/sites/default/files/eng/cop/15/prop/E-15-Prop-13.pdf

[6] *Response of the USA to CITES Notification No. 2011/037 concerning the Implementation of the Convention relating to captive-bred and ranched specimens).*

factors, such as very high parasite loads, were indicative of stress associated with wild specimens being brought into captive conditions as adults, even though the accompanying CITES permits stated they were captive-bred (Netherlands Food and Consumer Product Safety Authority (NVWA), *in litt*. 16.12.2013). An expert consulted following the seizure stated that he did not know of any breeding facility which is capable of producing this many adult frogs of any species (J.R. Mendelson, IUCN Amphibian Specialist Group, *in litt*., 14.02.2014). A response from the Nicaraguan Management Authority (R. Castellón, Nicaragua MA, *in litt.,* 20.02.2014) gave detailed information regarding the captive-breeding of this species in Nicaragua, which is summarized in the following paragraph.

Wild collection for trade has been banned since 2005, and wild collection of parental stock for captive breeding facilities requires a permit issued by the CITES Management Authority (MA). No surveys of wild populations have taken place. Six companies breeding this species were established prior to 2013; holding a total of 1253 breeding females which according to the CITES MA could produce 50 000 juveniles per egg lay (a female can lay three to five times per night) all year round in captivity. No information regarding the number of males held, or the capacity of the facilities to hold such numbers was provided. Every company must produce a monthly report of hatches and deaths, and these are verified by the CITES MA. The CITES MA manages a central database containing the productivity of facilities and quantities available for export. When the MA receives an application for an export permit, it is checked to confirm that the quantities for export match with the information held in the database. All exports are inspected by CITES officials at the international airport of departure.



Source: Importer's data - CITES Trade Database, Exporters' data – R. Castellón, Nicaragua CITES MA, in litt., *20.02.2014. Does not include minimal exports of I specimens or re-exports. Exp=as reported by exporter, Imp=as reported by importer. Data from some years may not be complete.*

Figure 1 Exports of live Red-eyed Tree Frogs from Nicaragua as reported by importers and Nicaragua (2008 to 2012).

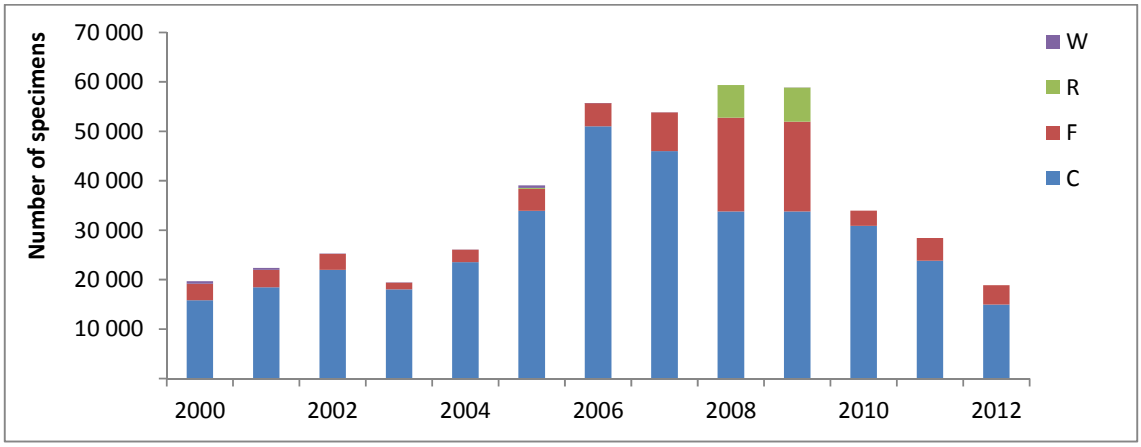
Example 2:* *Macaques* Macaca *spp. from Southeast and East Asia traded using source code C

Between 2008 and 2012, East Asian and Southeast Asian exporters reported exporting 199 752 live macaques; the majority of which were declared as C or F (Figure 2). Importers reported importing 197 509 macaques over the same time period. The trade in macaques from East and Southeast Asia involves large numbers of animals, multiple countries (Table 8 - Annex**)** and complex trade routes (Figure 3). The main trade flow appears to be C, F and R specimens exported from range States to China (with smaller amounts going to the USA and Japan) for breeding purposes/domestic use. China has exported a significant quantity of C specimens to the USA and Japan, few of which have been reported as re-exports.

Nearly 94% of all exports were of Long-tailed Macaques *Macaca fascicularis* (Figure 25 - Annex). This species is capable of breeding in captivity, albeit relatively slowly; wild female Long-tailed Macaques attain sexual maturity at four years of age and give birth to a single offspring. Inter-birth intervals average 18 months with full weaning of the young occurring by 10 months (Thomson, 2008).

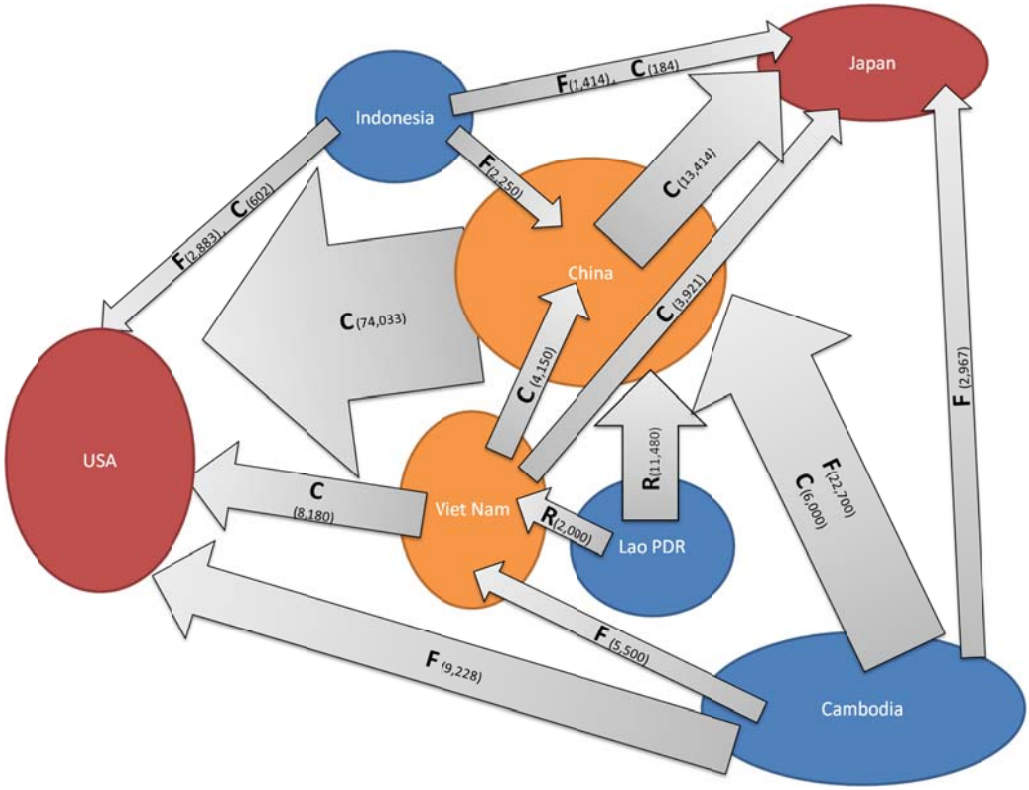
China, a non-range State, reported the largest number of exports of this species (95 165) followed by Cambodia (46 755). Jiang *et al.* (2008) noted that China no longer imported wild Long-tailed Macaques for breeding, and according to CITES trade data China last reported wild imports in 2006. The founder stock for the captive population reportedly came from confiscated animals, and now captive animals from range States are used (Jiang *et al.*, 2008).

Cambodia predominantly reported exporting C Long-tailed Macaques between 2000 and 2007, but this switched to exports of chiefly F specimens between 2008 and 2012 (Figure 4). It is not clear why exports of C specimens would decline to be replaced by exports of F, as macaques can potentially breed for decades (Walker and Herndon, 2008). It has been reported previously that Cambodian farms legally collect parental stock from the wild (Eudey, 2008) and, although no published population data could be found, population surveys funded by macaque breeders have apparently taken place (Thomson, 2008). There are concerns that wild specimens caught in Cambodia are being smuggled into Viet Nam using forged CITES permits from Lao People's Democratic Republic (hereafter Lao PDR) (Hoang Quoc Dung, 2008).



Does not include minimal exports of specimens traded using source codes I, O, U or no source code specified, or re-exports. Data from some years may not be complete.

Figure 2 Exports of live macaque species exported from East Asia and Southeast Asia as reported by exporters (2000 to 2012).



Does not include re-exports. Only contains large scale trade involving select countries of interest. Data from some years may not be complete.

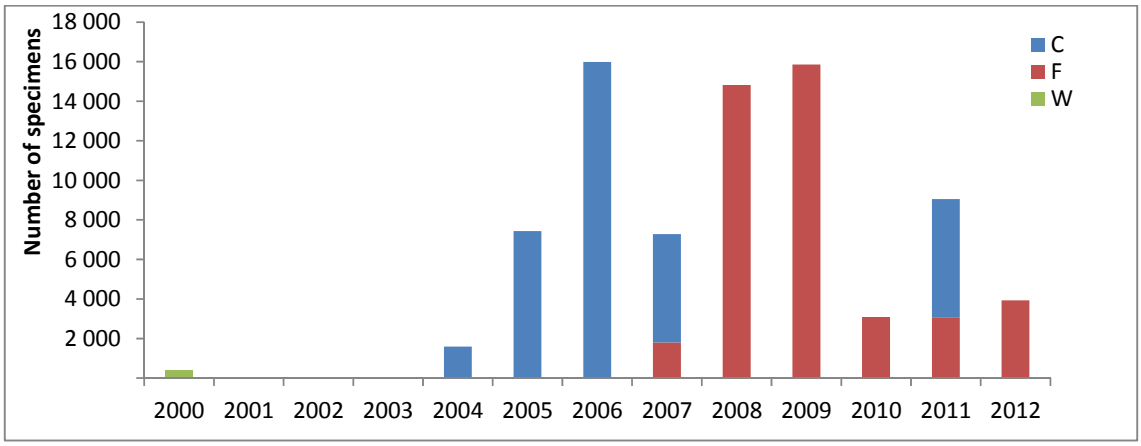
Figure 3 Diagram of main trade routes involving live macaque species exported from East Asia and Southeast Asia as reported by exporters (2008 to 2012).

Lao PDR was the only country in East and Southeast Asia to report exporting R specimens between 2008 and 2012 (13 480 specimens). The term 'ranching' is defined in Conf. 11.16 (Rev. CoP15), and based on the species' reproduction strategy it does not appear that it could meet the definition of ranched[7]. During a mission to a macaque farm in Lao PDR in 2013 TRAFFIC was informed that although the farm housed 10 000 animals, no breeding was taking place due to a recent decline in demand and competition from China; it was likely that the farm would close soon. No macaques were exported from Lao PDR between 2010 to 2012, according to importers. There have been reports that wild macaques have illegally been imported into Lao PDR from Thailand and Cambodia for re-export to China and Hong Kong (Eudey, 2008).

Between 2008 and 2012, Viet Nam reported importing C and F specimens, and exporting C specimens. As no re-exports of F specimens has been reported, it can be assumed that F specimens are being used for breeding.

In addition to trade in live macaques, there is also some trade in scientific specimens. However, analysis of scientific specimens is not addressed here because of the complexity of units used (bottles, boxes, flasks, sets etc.) and the difficulty in extrapolating these specimens to numbers of animals.

[7] *Ranching is defined in Conf. 11.16 (Rev. CoP15) as meaning 'the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood'.*



Does not include re-exports.

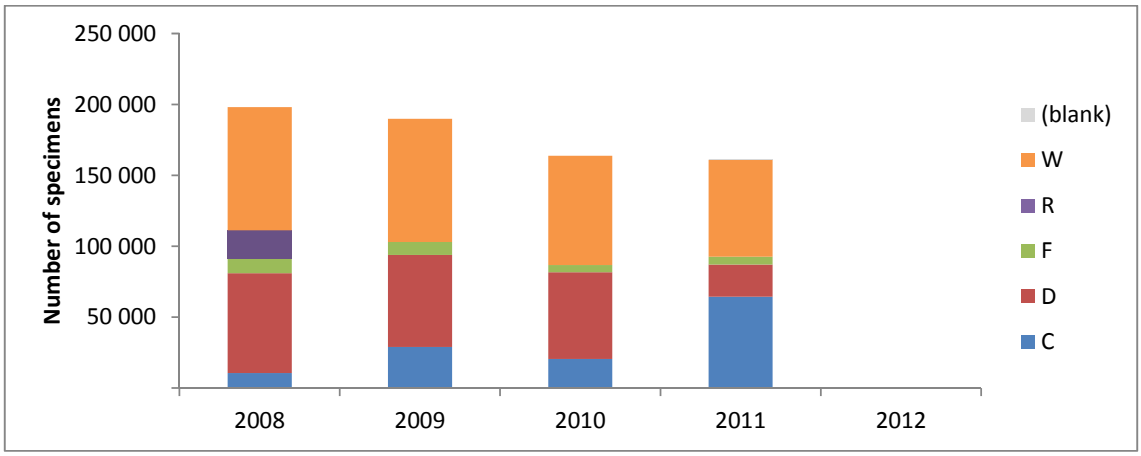
Figure 4 Exports of live Long-tailed Macaques from Cambodia as reported by Cambodia (2000 to 2012).

In order to determine whether captive-bred macaques are routinely being supplemented/substituted by wild caught animals by any of the trading Parties described above, further details on the following would be required: i) confirmation that China no longer relies on wild specimens for breeding stock; ii) population information for wild macaques in Cambodia and reasons for the decline in exports of C specimens after 2006; iii) legal status of wild harvest of macaques in range States; and v) monitoring of/regulations in place for captive breeding facilities in all relevant States. The majority of macaques imported into the USA come from a non-range State (China), and are nearly all declared as C and F. It would be useful to understand the reasons behind why (i) the United States does not directly import macaques from range States; and (ii) why the USA does not import specimens declared as W.

***Example 3:* Numerous live reptile species from Southeast Asia (particularly Indonesia) traded using source codes other than W to avoid stricter domestic measures**

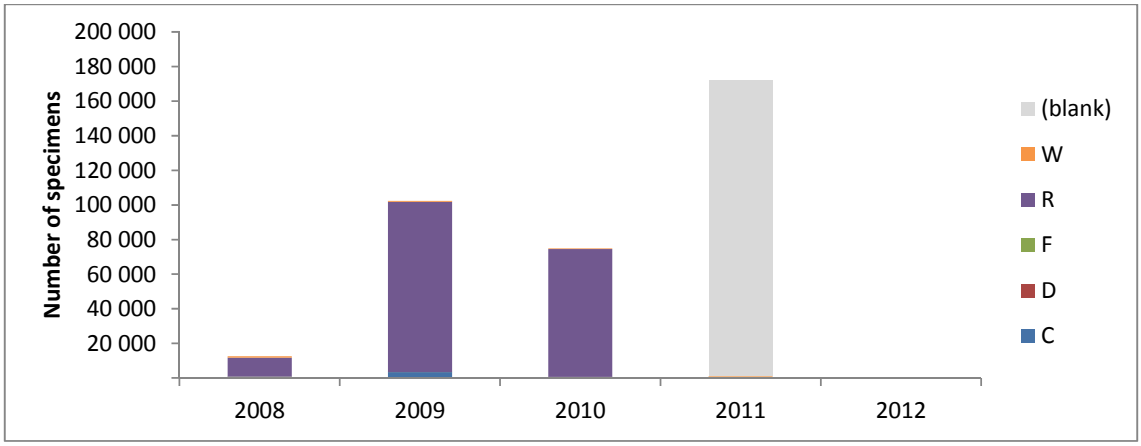
A broad analysis of all reptile species was conducted, but due to restrictions in time only some species could be analysed in detail. These species were chosen based on expert opinion, a literature review and a brief assessment of the trade data from 2008 to 2012. A couple of detailed species case studies are provided here, and several more can be found in the Annex.

According to exporters, a total of 713 251 live reptiles were exported from Southeast Asia between 2008 and 2012; the majority of which were declared as W or D (Figure 5, Table 9 - Annex). Importers reported importing a total of 722 000 reptiles in the same time period. In addition, re-exporters reported re-exporting a further 362 153 live reptiles which had originated in Southeast Asia (Figure 6). The percentage of lizard (Sauria) and snake (Serpentes) exports which were reportedly from captive sources (C, D or F) increased between 2008 and 2011 (Figure 7).



Does not include re-exports. Data from some years may not be complete.

Figure 5 Exports of live reptiles from Southeast Asia as reported by exporters (2008 to 2012).

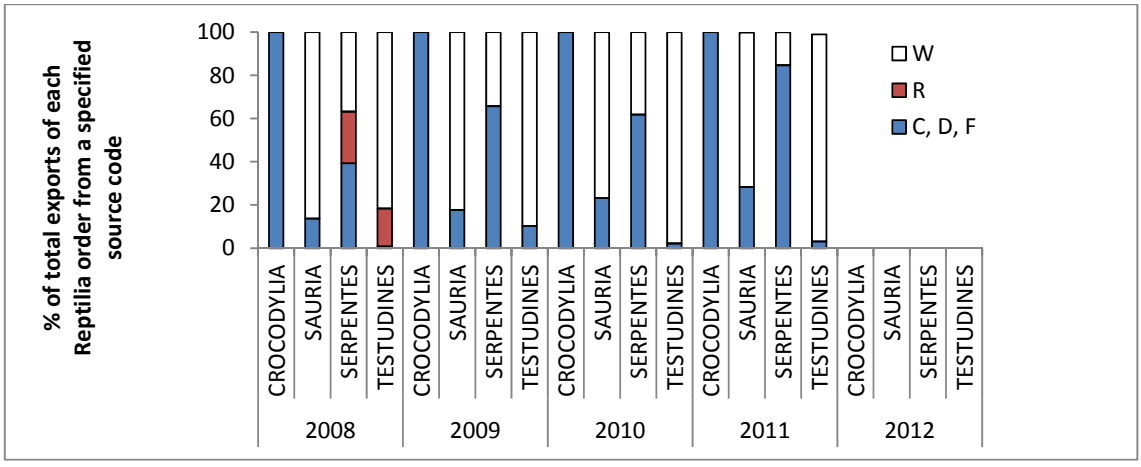


Data from some years may not be complete.

Figure 6 Re-exports of live reptiles originating from Southeast Asia as reported by re-exporters (2008 to 2012).

Reptile specimens from Lao PDR re-exported via Viet Nam to China accounted for 99% of all re-exports of live reptiles originating from Southeast Asia between 2008 and 2012 (375 500 specimens). Viet Nam reported that 183 400 were R specimens, 3000 were C specimens and no source code was specified for the remaining (171 100). However, between 2008 and 2012 Lao PDR reported exporting significantly fewer specimens (35 000) to Viet Nam (declared as R and C), though has yet to submit annual reports for 2010, 2011 and 2012.

In total, Indonesia reported exporting 95 471 C specimens of 33 species; making it the largest source of reptiles declared as C in Southeast Asia. A large proportion of these (53 000) were Oriental Rat Snakes exported to Hong Kong. Whilst Oriental Rat Snake may have the biological capacity to breed in relatively high numbers (Auliya, 2010), it is notable that Indonesia first reported exporting 3000 C specimens in 2010, followed by 50 000 in 2011. According to Auliya (2010), export is only permitted in products for which quotas are set, currently skin and live specimens. Export quotas for W specimens have been set at 450 specimens for live and approximately 90 000 for skins and skin products between 2008 and 2013. Despite this, the CITES Trade Database contains reports from Indonesia that quantities of meat have been exported.



Does not include re-exports. Crocodylia – crocodiles, Sauria – lizards, Serpentes – snakes, Testudines – tortoises and freshwater turtles. Data from some years may not be complete.

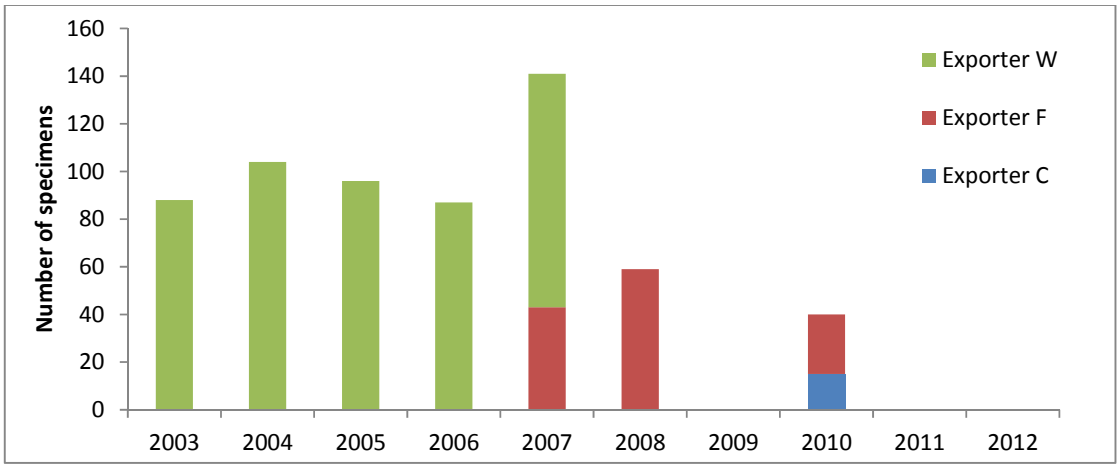
Figure 7 Percentage of exports of live reptiles from Southeast Asia declared as specified source codes as reported by exporters (2008 to 2012).

Indonesia also reported exporting the largest number of F specimens between 2008 and 2012 (29 954). A large number of these were either South Indonesian Spitting Cobra *Naja sputatrix* (6449) or monitor lizards *Varanus* spp. (9500).

Concern has been expressed that wild reptiles, many of which are protected by national law, are being laundered through captive-breeding facilities. In order to determine whether captive-bred reptiles are routinely being supplemented/substituted by wild caught animals in trade, further details on the following would be required (i) information regarding export restrictions of both wild and captive live reptiles from Indonesia; (ii) details of any monitoring of breeding facilities; and (iii) reasons why Indonesia consistently reports higher exports than importers report; (iv) information on the capacity of breeding facilities in Indonesia; and (v) specific species information regarding the examples discussed in further detail below and in the Annex.

Sulawesi Forest Turtle *Leucocephalon yuwonoi*

Indonesia reported exports of a total of 99 live Sulawesi Forest Turtles between 2008 and 2011; all of which were reportedly F or C specimens (Figure 8). During the same time period, importers reported imports of 62 F, C and W specimens from Indonesia.



Does not include re-exports. 2012 data not available.

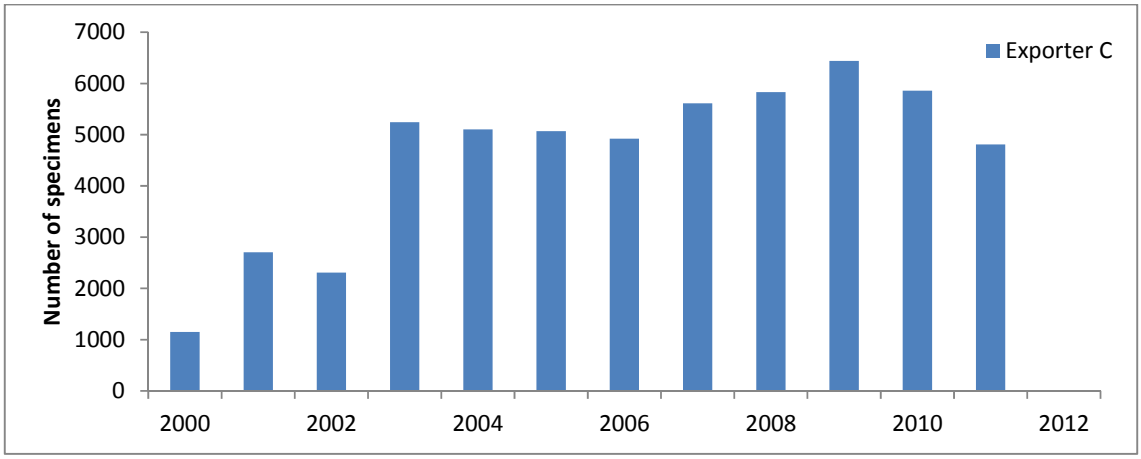
Figure 8 Exports of live Sulawesi Forest Turtle from Indonesia as reported by Indonesia (2003 to 2012).

This species is reportedly difficult to breed in captivity, and the first and most sustained successes have been achieved by the Münster Zoo, Germany, which reported the breeding of five hatchings between 2006 and 2010 (Innis, 2012). According to the International Species Information System (ISIS), which holds **information regarding numbers of animals held in ISIS member institutions,** 32 Sulawesi Forest Turtle specimens are currently held in zoos and other institutes worldwide (K. Maciej, ISIS, *in litt.*, 22.01.2014).

Indonesia reported to the CITES Secretariat that it had set an annual export quota of 100 live specimens between 2003 and 2009, but has not reported a quota since. The wild population is estimated at fewer than 250 mature individuals (Asian Turtle Trade Working Group, 2000). Wild imports of this species into the EU have been suspended since 2006. Indonesia reported exporting only W specimens between 2003 and 2006, and then only reported exports of F and C specimens between 2008 and 2011. The reason(s) for reporting a switch from wild to captive sources is(are) unknown and more information on the current status of the species and existing breeding programmes in Indonesia is needed in order to better understand the situation.

Green Tree Python *Morelia viridis*

Indonesia reported exports of 22 938 live Green Tree Pythons between 2008 and 2011; all of which were declared as C (Figure 9).



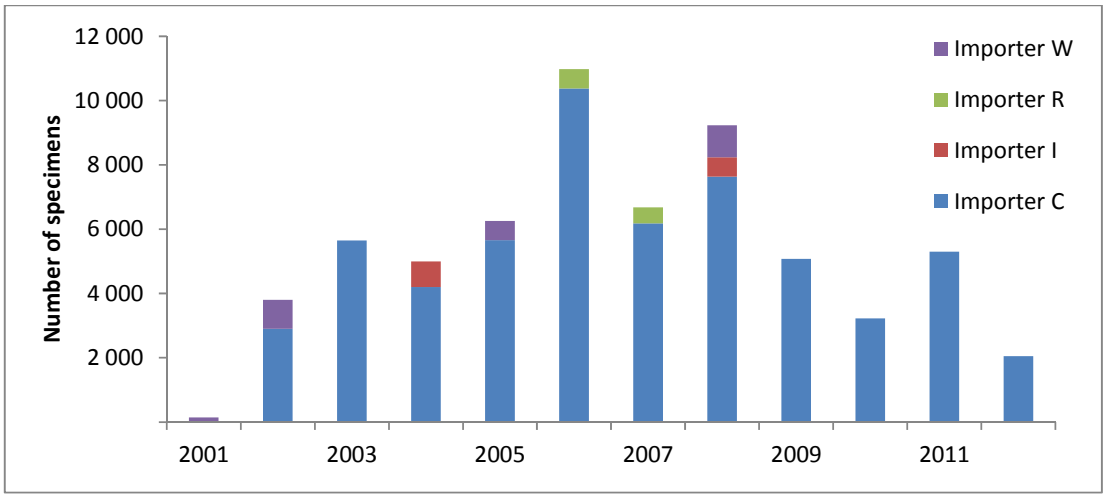
Does not include re-exports. 2012 data not available.

Figure 9 Exports of live Green Tree Pythons from Indonesia as reported by Indonesia (2000 to 2012).

The Green Tree Python is a slow breeder and in the wild may not even breed every year (Wilson *et al.,* 2006). In Indonesia, despite the illegality of all wild collection of this species, there are reports that snake farmers harvest animals from the wild which are then laundered as captive-bred, as this is more economically viable and the only way they are able to meet the year-round demand for pets (Lyons and Natusch, 2011). Recent research concluded that almost all "captive-bred'" Green Tree Pythons exported from Indonesia are actually wild caught (Lyons and Natusch, 2011).

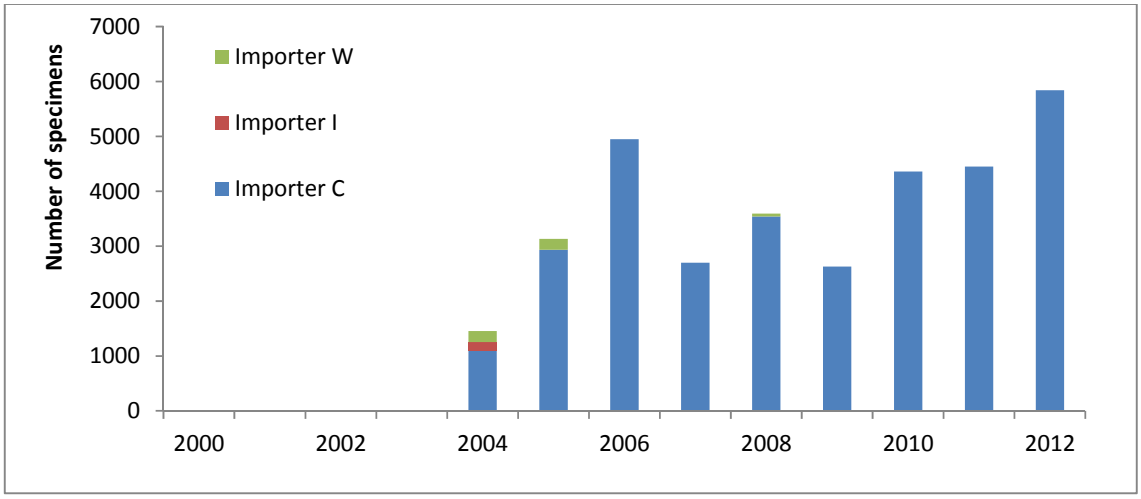
***Example 4:* Poison arrow frogs from Central America traded using source code C (Dendrobatidae, primarily Green and Black Poison Frogs D. auratus and Strawberry Poison Frogs D. pumilio from Panama)**

Between 2008 and 2012, importers reported importing 45 784 live Dendrobatidae specimens from Central America; the overwhelming majority of which were from Panama (45 761). Importers also reported 7728 specimens which had originated in Panama and been re-exported (predominantly by the USA). The species imported from Panama in the greatest quantities were Green and Black Poison Frogs (23 290 specimens) and Strawberry Poison Frogs (20 821 (Figure 10 and Figure 11), which are both native to the country. Panama has yet to submit annual reports for 2009 or 2012.



Does not include re-exports. Data from some years may not be complete.

Figure 10 Exports of live Green and Black Poison Frogs from Panama as reported by importers (2001 to 2012).



Does not include re-exports. Data from some years may not be complete.

Figure 11 Exports of live Strawberry Poison Frogs from Panama as reported by importers (2000 to 2012).

Both species, in particular Strawberry Poison Frogs, are considered to be difficult to breed in captivity due to complex reproductive strategies (Solís *et al*., 2004; Solís *et al.,* 2010). One expert stated that there are no organizations or individuals breeding Strawberry Poison Frogs in captivity in the thousands or even hundreds in Panama for export or any other reason. To be able to produce thousands of individual adults annually would require hundreds of adult breeding pairs housed in a facility staffed by trained professionals, requiring a budget likely exceeding USD200 000 annually (T.R. Kahn, IUCN Amphibian Specialist Group, *in litt*., 12.02.2014). However, another expert reported visiting one Dendrobatidae breeding facility in Panama and found large numbers of amphibians present at all stages of development, suggesting successful captive-breeding was occurring at a commercial scale (C. Jaramillo, IUCN Amphibian Specialist Group, *in litt.*, 14.02.2014).

In order to determine whether captive-bred specimens are routinely being supplemented/substituted by wild caught frogs, further information on the following would be required: (i) reasons why Panama reported fewer exports than importers reported in the years annual reports were submitted, and why no annual report was submitted in 2009; (ii) an explanation for the decline in the number of exports of C Green and Black Poison Frogs; (iii) information on breeding of these species in captivity; (iv) the source of specimens exported in 2006 with no source code; and (v) monitoring of/regulations in place for captive breeding facilities.

***Example 5:* Non-native chameleons from Equatorial Guinea using source code W**

The USA and Canada reported the import from Equatorial Guinea of live specimens of three non-native species of Chamaeleonidae between 2008 and 2011 (Table 9) but did not report any imports in 2012. The USA reported that all specimens were either W (2570) or I (271), and Canada reported only imports of W (151) specimens. Equatorial Guinea reported no trade in any CITES-listed species from 2008 to 2012.

As all imports are reported as W or I this example does not appear to be directly relevant to the use of non-wild source codes. This example is therefore not discussed further here (more information is provided in the Annex). Further information is required to determine if CITES is not being implemented correctly such as (i) clarification of the origin of the non-native chameleons and reasons Equatorial Guinea did not report these re-exports; and (ii) confirmation that Equatorial Guinea did not import or export any CITES-listed species between 2008 and 2012.

***Examples 6 & 7:* Reptiles and amphibians from Lebanon and Kazakhstan using source code C**

Reptiles - Kazakhstan

In the past, doubts have been raised regarding the existence of viable breeding populations of certain reptile species in Kazakhstan and the possible use of trade routes involving Kazakhstan to launder W specimens into trade (Todd, 2011). Between 2003 and 2006 Japan and Thailand reported the import of thousands of live reptiles declared as C, reportedly originating from Kazakhstan and re-exported by Lebanon (which did not become a Party to CITES until 2013). This was in spite of the fact that, since becoming a Party to CITES in 2000, Kazakhstan had not reported any live reptile exports to Lebanon in its annual reports (with any source code).

In recent years, however, trade routes involving Kazakhstan as the reported origin have appeared less and less frequently in the CITES trade data. There were very few reported exports of live C reptiles from Kazakhstan during the period 2008-2012 (and none for commercial purposes); and few examples of re-exports originating in Kazakhstan (Table 1). The majority of live C reptile re-exports declared as originating in Kazakhstan between 2008 and 2012 were *Furcifer* and *Calumma* chameleons re-exported by Thailand (Table 1). Most of these species are native to Madagascar; however, no trade in live reptiles has ever been reported between Madagascar and Kazakhstan.

Table 1 Re-exports of live reptiles declared with source code C and originating in Kazakhstan, as reported by importers (Imp) and exporters (Exp) (2008 to 2012).

Country of re-export	2008		2009		2010		2011		2012		Total	
	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp
Japan	110											
Thailand*	82	82	91	91	176	218					349	391
Total	**82**	**192**	**91**	**91**	**176**	**218**					**349**	**501**

**At the time of writing, Thailand had submitted an annual report for 2012 but these data had not yet been transferred to the CITES Trade Database*.

By 2011, Kazakhstan was no longer the declared origin in any live C reptile re-exports (Table 1). If captive breeding had been occurring successfully in Kazakhstan, it is difficult to understand why it would come to a halt so abruptly given the investments necessary to establish breeding operations. Todd (2011) noted that for some of the more difficult to breed species it seemed doubtful that facilities in Kazakhstan were ever producing captive-bred specimens on a commercial scale, e.g. *Furcifer* and *Calumma* chameleons for which low hatch rates and poor neonate survival in captivity have been reported; suggesting that Kazakhstan was being mis-declared as the origin.

Reptiles - Lebanon

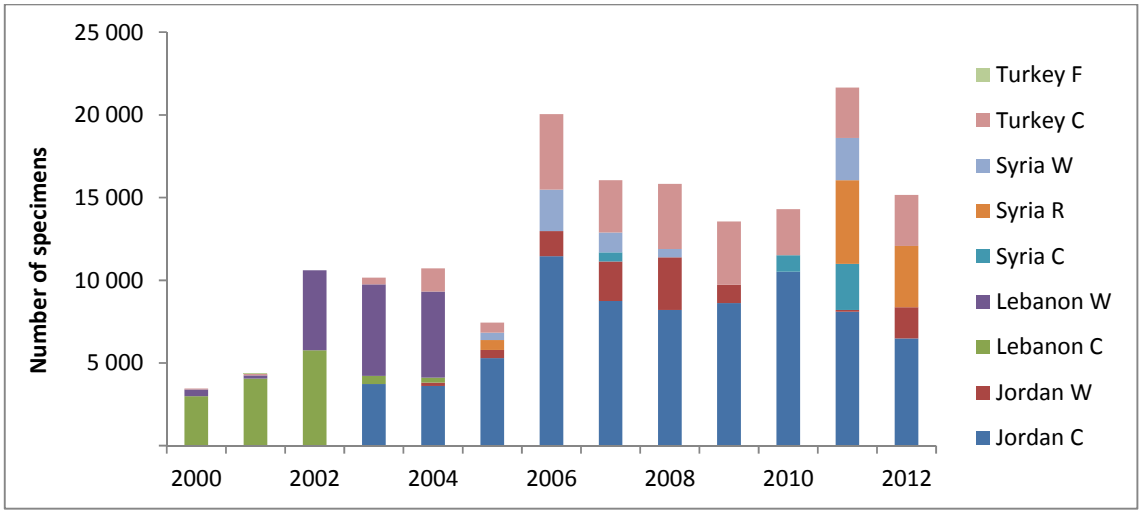
Prior to 2007, Lebanon featured in the CITES trade data as an important exporter of live reptiles declared as C, and a transit point for C specimens declared as originating from Kazakhstan and re-exported to Japan and Thailand (according to importer data). The sudden appearance of this trade route, large numbers of specimens in trade, few if any reported imports into Lebanon of these non-native taxa for founding stock, and difficulties associated with breeding the species in captivity, gave rise to concerns that this trade route was being used to launder wild-taken specimens into trade (Todd, 2011; TRAFFIC, 2011).

From 2007 onwards, however, the reported involvement of Lebanon in this trade has ceased. Between 2008 and 2012, Lebanon did not feature in the CITES trade data as either origin or re-exporter of any C reptiles traded for commercial purposes (with the exception of 10 Canopy Chameleons *Furcifer willsii*). With a trade pattern similar to that described for Kazakhstan above, it seems likely that Lebanon, during the mid-2000s, was being falsely reported by importers (at least to some extent) as a point of origin and transit for reptiles of mis-declared C source.

With (re-)exports from Lebanon ceasing in recent years, there is cause for concern that trade may have shifted to other countries in the region, particularly Jordan (Vinke and Vinke, 2010). In the case of the *Spur-thighed Tortoise Testudo graeca* (a species native to this region), exports of C specimens from

Lebanon began to fall after 2002[8], just as exports of C specimens from Jordan started to increase (Figure 12). The same pattern can be seen for wild (W) specimens: the USA, for example, imported 11 629 W Spur-thighed Tortoises from Lebanon between 2001 and 2004; however following a ban on exports from Lebanon in 2004, the USA began to import large numbers of W specimens from Jordan (10 705 specimens between 2005 and 2012, according to the USA's reports). Exports of C specimens of Spur-thighed Tortoise from Turkey also began to increase after 2002, while exports of C, R and W specimens from Syria began to increase from 2005 (Figure 12).

Discrepancies in the quantities reported for different source codes by exporters and importers for exports of Spur-thighed Tortoises from Jordan may also suggest instances where specimens in trade have been mis-declared. Between 2008 and 2012, the USA reported the import of much higher quantities of W specimens than were reported as exported by Jordan (and vice versa for C specimens) (see Table 2). Concerns have previously been raised regarding the credibility of claims of captive-breeding of Spur-thighed Tortoise both in Lebanon (Dakdouk, 2009) and in Jordan[9], and the trends highlighted in Figure 12 and Table 2 suggest that further investigation into the trade from this region may therefore be warranted.



Does not include re-exports, or minimal "I" specimens or specimens for which no source code reported. Data from some years may not be complete.

Figure 12 Exports of live Spur-thighed Tortoises from Turkey, Syria, Lebanon and Jordan as reported by importers (2000 to 2012).

Table 2 Exports of live C Spur-thighed Tortoises from Jordan as reported by Jordan (exporter) and the USA (importer) (2008 to 2012).

Source code	2008		2009		2010		2011		2012		Total	
	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp	Imp	Exp
C	1000	3800	298	300	268	775		650	250		1816	5525
W	3190		1100	850			100	50	1900		6290	900

[8] In view of uncertainties regarding the true extent of captive-breeding, and some concerns raised about the status of the species in the wild, the Lebanese authorities suspended exports of all *Testudo graeca* in June 2004: see CITES (2008) *Review of Significant Trade in specimens of Appendix-II species – species selected following CoP13*. AC 23 Doc. 8.4.

[9] *Letter dated 28 September 2005 sent from the European Commission to the Jordanian CITES authorities in response to concerns raised by EU Member States.*

Total	**4190**	**3800**	**1398**	**1150**	**268**	**775**	**100**	**700**	**2150**		**8106**	**6425**

Data from some years may not be complete.

Amphibians – Kazakhstan and Lebanon

During 2004 and 2005, Kazakhstan was declared as the origin for a total of 2700 live C Poison Arrow Frogs of the family Dendrobatidae, all of which were re-exported to Thailand by Lebanon. In 2006 and 2007, Kazakhstan was declared as the origin for relatively small numbers of Poison Arrow Frogs re-exported by Thailand; however Lebanon does not feature again in the CITES trade data as a re-exporter after 2005. The trade route involving Kazakhstan and Lebanon no longer appears to be the cause for concern that it once was (Nijman and Shepherd, 2010), at least for reported trade, and was not investigated further with relevant CITES authorities.

Example 8: ***Reptiles (primarily Hermann's Tortoise*** **Testudo hermanni** ***and Marginated Tortoise*** **T. marginata*****) from Slovenia using source code C (or D)***

Between 2008 and 2012, Slovenia reported the export of 13 079 live captive-bred reptiles (source codes C and D) for commercial purposes. Over 98% of these exports concerned three species of tortoise: Hermann's Tortoise, African Spurred Tortoise *Geochelone sulcata* and Marginated Tortoise. Table 3 provides CITES export data for these species, in addition to data on intra-EU trade which are not included in the CITES Trade Database (Slovenia joined the EU in 2004).

During the period 2008 to 2012, Slovenia reported exports of Hermann's Tortoise and Marginated Tortoise using both source codes C and D. Prior to September 2012, EU legislation provided for the use of source code D for specimens of Appendix I species and specimens of certain other species listed in Annex A of the EU Wildlife Trade Regulations, including Hermann's Tortoise and Marginated Tortoise (which are listed in CITES Appendix II) from any commercial captive-breeding facility. At this time, issues arose in relation to the inconsistent use of this source code in EU Member States, which appear now to have been resolved.[10] From September 2012, the use of source code D for such specimens in the EU has been limited to captive-breeding operations registered with the CITES Secretariat, in line with CITES Res. Conf. 12.3 (CoP16).

According to the trade data in Table 3, large numbers of captive-bred Hermann's Tortoise originating from Slovenia entered international trade (including intra-EU trade) during the period 2008 to 2012, although showed a general decline across these years. While the Slovenian CITES Scientific Authority regularly monitors registered breeding operations in Slovenia and keeps detailed information on breeding stocks (Slovenian CITES Management Authority, *in litt*., 24.2.2014), information for recent years could not be provided for inclusion in this report due to the limited time available. However, information previously provided to the EU's Scientific Review Group (SRG) showed that, in 2006, over 5000 Hermann's Tortoises were produced by Slovenia's registered breeding operations (Slovenian CITES Scientific Authority, *in litt*., 5.3.2007[11]). As Slovenia is a range State for Hermann's Tortoise, and given that previous concerns over the use of source codes may be explained (see above), the trade patterns observed for this species would not appear to give rise to specific concerns warranting further attention.

Marginated Tortoise is native to Albania and Greece and has been introduced into Italy. There has been no reported trade of Marginated Tortoises into Slovenia according to the CITES trade data; however founder stock may have originated from elsewhere in the EU or have entered Slovenia when it was still part of the former Yugoslavia[12]. While the present analysis does not show any trade patterns for 2008 to 2012 that are cause for undue concern, further information was sought from the Slovenian authorities regarding authorized breeding facilities, including the origin of founder stock and annual production.[13]

[10] *Guidelines were approved by the EU's Committee on Trade in Wild Fauna and Flora in February 2012 on the use of source codes C and D in the EU (COM 58/7/2/2).*

[11] *SRG 40/10/3.*

[12] *Slovenian CITES Scientific Authority, in litt., 4.11.2011.*

[13] *Information had not yet been provided at the time of writing, due to limited time available.*

The African Spurred Tortoise is native to North Africa. Since 2000, the CITES Appendix II listing has included a zero export quota for wild *specimens* traded for primarily commercial purposes[14] and certain range States have reported export quotas for C specimens. Trade in C specimens originating from Slovenia was intermittent during the period 2008 to 2012 (reported for 2010 and 2012 only – see Table 3). Between 2001 and 2009, Slovenia imported approximately 200 live *African Spurred Tortoises* (the majority C specimens from Mali and Niger in 2005 and 2006) which, based on the breeding potential for this species[15], may be sufficient to produce the 1800 specimens exported in 2012. However, in view of the export quotas described above, further information would be required from Slovenia regarding authorized breeding facilities, including the origin of founder stock and annual production[16].

Table 3 Trade in live Hermann's Tortoise, Marginated Tortoise and African Spurred Tortoise declared with source codes C, D and F originating in Slovenia (2008 to 2012).

	2008	**2009**	**2010**	**2011**	**2012**
Hermann's Tortoise					
Exports	1200 (C)	1793 (D)	1820 (D)	1322 (C)	3100 (C,D)
Intra-EU	12205 (D)	7436 (C,D)	5655 (C,D)	6855 (C,D)	4540 (C,D)
Total	*13405 (C,D)*	*9229 (C,D)*	*7475 (C,D)*	*8177 (C,D)*	*7640 (C,D)*
Marginated Tortoise					
Exports	0	0	640 (D)	460 (C)	480 (C,D)
Intra-EU	0	0	131 (C,D,F)	158 (C,D)	161 (C,D)
Total	0	0	771 (C,D,F)	618 (C,D)	641 (C,D)
African Spurred Tortoise					
Exports	0	0	300 (C)	0	1800 (C)
Intra-EU	0	0	0	0	0
Total	*0*	*0*	*300 (C)*	*0*	*1800 (C)*

Intra-EU trade data provided by the Slovenian CITES Management Authority, in litt*., 25.2.2014. Export data are based on Slovenia's CITES annual reports.*

Example 9:* Tortoises (primarily Pancake Tortoise Malacochersus tornieri *and Leopard Tortoise* Stigmochelys pardalis*) from Zambia using source code C, F or R

Between 2008 and 2011, Zambia reported the commercial export of 112 204 live tortoises with source codes C, F and R; over 99% of which were of Leopard Tortoise (98 184 specimens) and Pancake Tortoise (12 980 specimens). During this time period, Zambia reported the export of just 850 W specimens of these species (all in 2011). Data from Zambia for 2012 are not yet in the CITES Trade Database.

Pancake Tortoise

[14] http://www.cites.org/eng/app/appendices.php

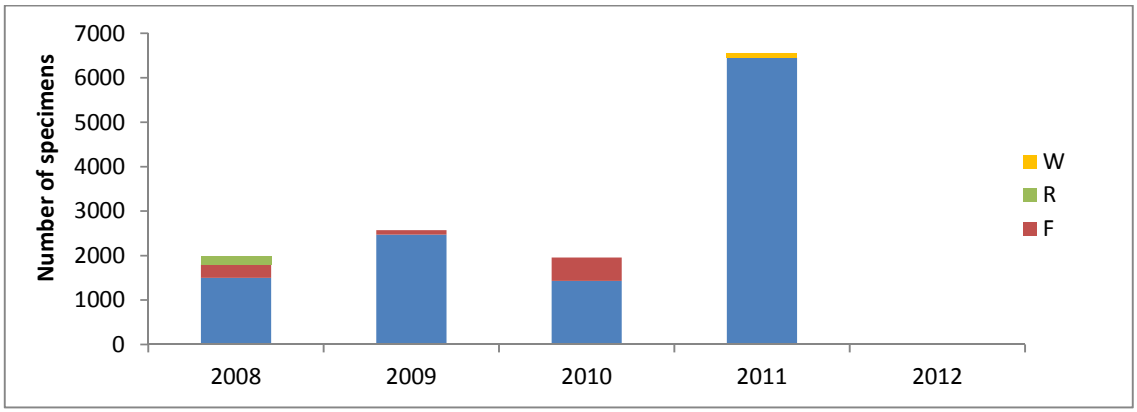
[15] Average number of offspring per parent pair per year in captivity: 25-50 eggs. First breeding age in captivity: 8-10 years (females); 7 years (males): *Captive-breeding potential table for tortoises most common in illegal trade* (EU-TWIX Mailing List, February 2010).

[16] *Information had not yet been provided at the time of writing, due to limited time available.*

The first reported exports of C, F or R specimens of Pancake Tortoise from Zambia took place in 2006 (a total of 1500 specimens exported with source code C). Between 2008 and 2011, Zambia reported the export of 11 850 C specimens for commercial purposes, with an almost three-fold increase in 2011 from the annual average for 2008 to 2010 (Figure 13). Approximately 1000 F specimens were exported between 2008 and 2010, suggesting the acquisition of parental stock from the wild in preceding years.

Previously considered as native only to Kenya and Tanzania, a survey conducted in 2003 confirmed a population in an unprotected area of north eastern Zambia estimated as at least 518 individuals and probably more (CoP13 Inf. Doc. 4[17]; Chansa and Wagner, 2006). The CITES Standing Committee has recommended trade suspensions for Tanzania's population(s) in recent years[18], but not for populations of other range States. No imports of live Pancake Tortoises to Zambia have ever been reported to the CITES Trade Database.

The species is considered difficult to breed in captivity, particularly on a large scale due to its low reproductive rate[19] (P. van Dijk, IUCN Tortoise and Freshwater Turtle Specialist Group, *in litt*., 14.02.2014). It is aggressive, territorial, stress-sensitive and demanding in captivity, and doubts have been expressed as to the validity of captive-breeding claims (P. van Dijk, IUCN Tortoise and Freshwater Turtle Specialist Group, *in litt*., 14.02.2014). This suggests it would be difficult to breed the large numbers of C specimens exported from Zambia in recent years (particularly to supply the sudden export of >1000 C specimens in 2006 and the large increase in 2011), and that these exports may include some W specimens taken from Zambia's recently discovered population and/or smuggled from neighbouring Tanzania (and possibly also Kenya). Clarification is required regarding authorized breeding operations for Pancake Tortoises, including details of the origin of the founder stock and productivity.



Does not include re-exports. 2012 data not available.

Figure 13 Exports of live Pancake Tortoises from Zambia as reported by Zambia (2008 to 2011).

Leopard Tortoise

Exports of C specimens of Leopard Tortoise from Zambia increased in 2011 to 40 800 specimens, a more than two-fold increase from the annual average for 2008 to 2010 (Figure 14). Over 10 000 live specimens were exported with source code F between 2008 and 2010, again suggesting the acquisition of parental stock from the wild in preceding years.

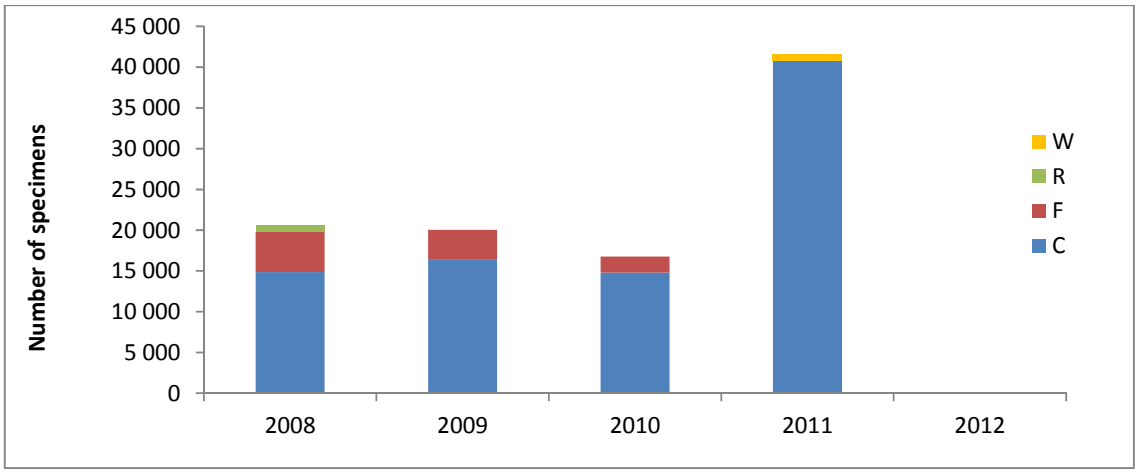
The species is distributed across East and Southern Africa, including in Zambia. Since 2006 there has been an EU import suspension in place for R and F specimens coming from Zambia due to a lack of clear information on Zambia's ranching operations (SRG, 2013a). In addition, applications for import into

[17] *Submitted by Zambia for consideration at CoP13 (2004)*
[18] CITES Notification No. 2013/013 concerning the Implementation of *Resolution Conf. 12.8* (*Rev. CoP13*) (Review of Significant Trade in specimens of Appendix-II species).

[19] *Captive-breeding potential table for tortoises most common in illegal trade. EU-TWIX Mailing List, February 2010.*

the EU from Zambia of W specimens and C specimens from "new" breeding facilities[20] must be referred to the EU's SRG.

The Leopard Tortoise breeds easily in captivity[21] (P. van Dijk, IUCN Tortoise and Freshwater Turtle Specialist Group, *in litt*., 14.02.2014); however, mis-declaration of wild-taken specimens exported from Zambia as captive-bred has been reported as reason for seizures in the past[22]. Possible discrepancies have also been noted between reported exports from Zambia and reported imports (e.g. by EU Member States; UNEP-WCMC, 2012). These issues and the large numbers seen in exports in recent years (including the sudden increase in 2011), may be indicative of the misuse of source codes. Further information is needed regarding authorized breeding operations for Leopard Tortoises, including details of the founder stock and productivity.



Does not include re-exports. 2012 data not available.

Figure 14 Exports of live Leopard Tortoises from Zambia as reported by Zambia (2008 to 2011).

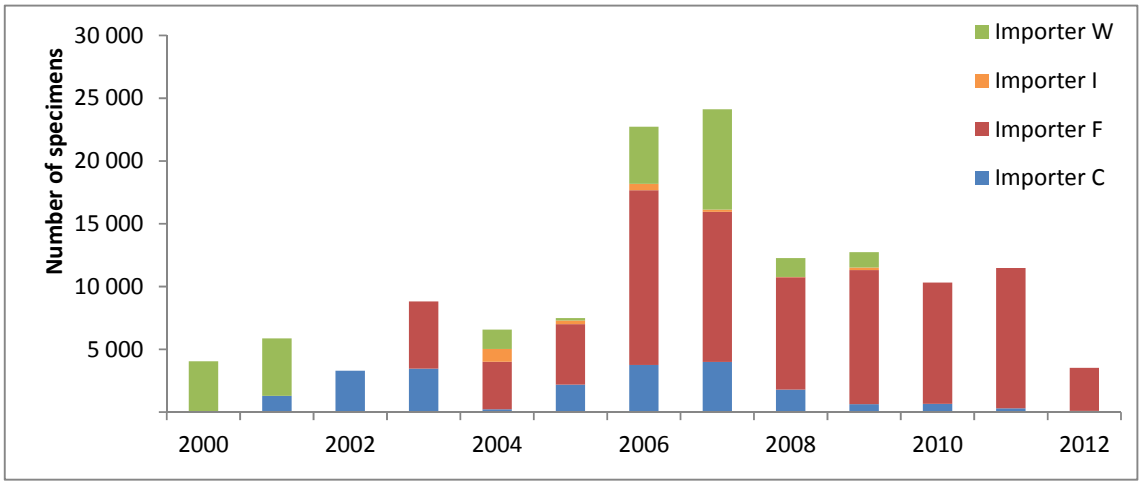
Example 10:* *Horsfield's Tortoise* Testudo horsfieldii *from Ukraine using source code C or F

Importers reported importing 50 347 live Horsfield's Tortoises from Ukraine, which is not a range State, between 2008 and 2012; the majority of which were declared as F (Figure 15). Importers also reported importing 21 365 specimens from Ukraine which had originated elsewhere; the majority of which were declared as W (Figure 16). Ukraine has yet to submit its annual reports for 2011 and 2012, but reported exporting 46 247 (mainly F) specimens and re-exporting 35 205 W specimens between 2008 and 2010. The only W specimens that Ukraine reported importing between 2000 and 2011 were 14 000 specimens from Tajikistan in 2008. In addition, Uzbekistan reported exporting 5000 W specimens to Ukraine in 2001.

[20] i.e. from breeding facilities other than those subject to a positive opinion. SRG 41 (2007) confirmed the positive opinion for imports of captive-bred specimens of Leopard Tortoise from three breeding facilities in Zambia.

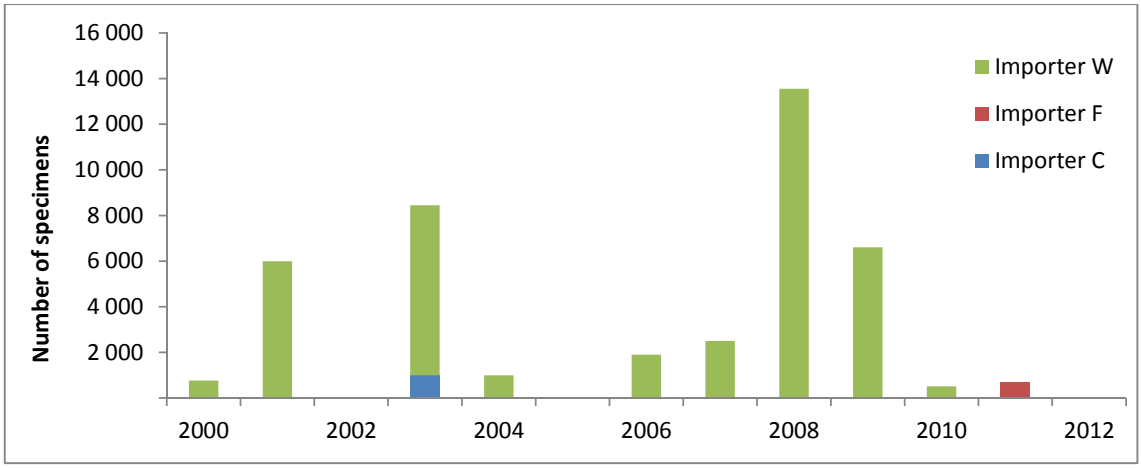
[21] *Captive-breeding potential table for tortoises most common in illegal trade. EU-TWIX Mailing List, February 2010.*

[22] *In April 2009, the UK Border Agency seized 100 Leopard Tortoise falsely declared as captive-bred [see TRAFFIC (2011) for further details]*



Does not include re-exports. Data from some years may not be complete.

Figure 15 Exports of live Horsfield's Tortoises from Ukraine as reported by importers (2000 to 2012).



Available data for 2012 may not be complete.

Figure 16 Re-exports of live Horsfield's Tortoises from Ukraine as reported by importers (2000 to 2012).

Importers reported the origin of the re-exported W specimens as Tajikistan (19 150) and Uzbekistan (1515). Tajikistan is not a Party to CITES, whereas Uzbekistan joined in 1997 and Ukraine in 2000. Horsfield's Tortoise was selected for inclusion in the Review of Significant Trade (RST) process following CoP14 as it is heavily traded and mainly adult specimens are found in trade (CITES, 2008). Following the RST, Tajikistan has been classified as being of possible concern. Tajikistan, which is not Party to CITES, declared a moratorium on the export of native wild animals that are not managed through a harvest quota. However, information on when this moratorium was put in place or if this is still in place, is not available (Vaisman *et al.,* 2013). Suspicions that W specimens are smuggled out of Uzbekistan into neighbouring countries with less strict regulations, including Tajikistan, have been raised (Lee and Smith, 2010).

This species reaches sexual maturity at around 5-10 years old and lays up to four clutches per year[23]. In 2007, it was reported that gravid wild females were imported into the Ukraine where they laid their eggs, and the adults were then re-exported (SRG, 2007). It is not certain if this practice still occurs, but if it

[23] *Captive-breeding potential table for tortoises most common in illegal trade. EU-TWIX Mailing List, February 2010.*

does, the trade data suggest that the offspring are reported as F specimens. It would be useful to understand more about the nature of the trade in W re-exports, and F and C exports from Ukraine, but unfortunately due to time constraints it was not possible to contact Ukraine for additional information.

Example 11: ***Indian Star Tortoise*** **Geochelone elegans** ***from Jordan, Lebanon, Ukraine, and the United Arab Emirates using source code C***

Jordan

Between 2008 and 2011, Jordan reported exporting more Indian Star Tortoises than any other country; 18 601 specimens, all of which were declared as C (Jordan has yet to submit an annual report for 2012) (Figure 17). Importers reported imports from Jordan of far fewer specimens (10 496) during the same time period

All C specimens reportedly exported from Jordan appear from the data to have originated in Jordan, with the exception of a single C specimen, though Jordan reported re-exporting 1915 wild specimens of an unknown origin between 2008 and 2011 (Figure 17). The only Indian Star Tortoises reportedly exported to Jordan between 1980 and 2012 were 30 individuals from Sri Lanka and Slovenia.

The species is not considered easy to breed in captivity on a consistent basis or in large numbers[24] (TRAFFIC, 2011). Concerns have been raised that Indian Star Tortoises are not being captive-bred in significant numbers in non-range States, but are instead being removed from the wild in range States[25] and subsequently imported using export documents apparently issued by non-range States where captive breeding is alleged to have taken place. Adequate verification of breeding and holding facilities in non-range States has not taken place (P. P. van Dijk, IUCN Tortoise and Freshwater Turtle Specialist Group, *in litt*., 10.02.2014).

In light of these concerns and the numbers of C specimens exported from Jordan in recent years, clarification from the Jordanian CITES authorities was sought on authorized breeding operations for Indian Star Tortoises, including details of the origin of the founder stock and productivity. Information was also requested regarding the monitoring of/regulations in place for captive breeding facilities in Jordan.

According to the response received, breeding facilities in Jordan must be registered and are routinely inspected (and their records checked) one to three times per year by the competent authorities. There is currently just one authorized breeding facility in Jordan producing C Indian Star Tortoises: the facility acquired its original stock of 22 females and nine males (all adults) from the local market in Jordan in 1985, all of which were sold in 1995. The current breeding stock[26] consists of 185 females and 62 males, though an additional 72 females and 28 males were added in 2009 and the first clutch from these new animals is expected in 2014.

Table 3 provides details of the offspring produced by this facility during the period 2001 to 2012. These data show that annual production for the period 2008 to 2012 (around 2000 offspring per year) was far lower than exports from Jordan of around 4650 C specimens per year (2008 to 2011) reported in the CITES Trade Database. Further investigation is therefore warranted in order to understand whether Jordan's captive breeding operations are producing the numbers of C specimens seen in reported exports.

Table 4 Numbers of offspring of Indian Star Tortoises produced by the sole authorized breeding facility in Jordan for this species, with annual exports of C specimens as reported by exporters (2001-2012).

	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Offspring	840	730	1190	1378	1224	1370	1686	1842	2091	1865	2108	2241
Exports	0	0	0	600	1980	4251	5490	4952	2050	3070	8529	-

[24] *Captive-breeding potential table for tortoises most common in illegal trade. EU-TWIX Mailing List, February 2010.*

[25] *Bangladesh, India, Myanmar (distribution uncertain), Pakistan, Sri Lanka*

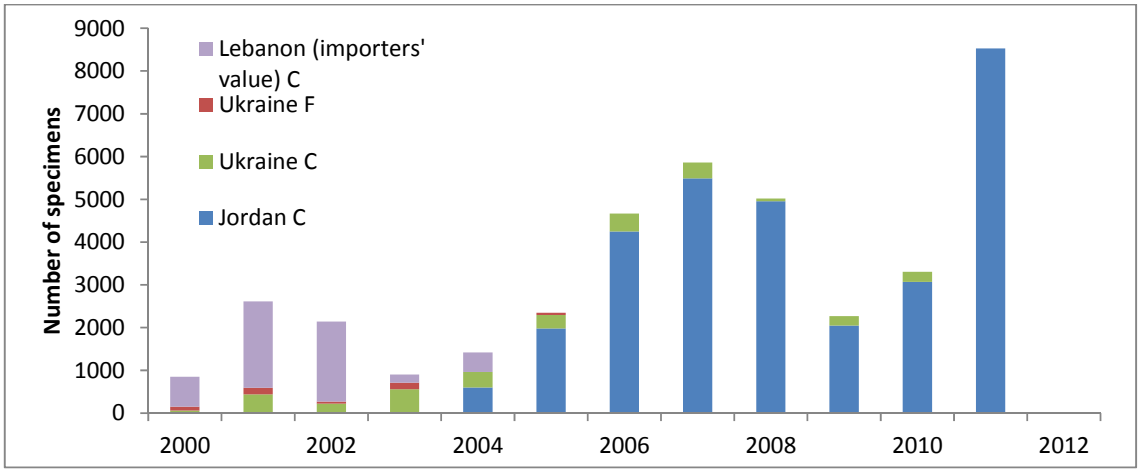
[26] *Offspring of original breeding stock, hatched in 1992 and 1993.*

Source: (i) details of offspring – Jordanian CITES MA, in litt., *10.2.2014; (ii) export data –CITES Trade Database. Export data for 2012 not complete*

Lebanon, Ukraine and the United Arab Emirates (UAE)

Limited trade was reported from the other three countries of interest. Between 2008 and 2012, no importers reported importing Indian Star Tortoises from Lebanon, in contrast to the period 2000 to 2005, during which Lebanon was reportedly exporting and re-exporting (predominantly from Kazakhstan) over a thousand specimens annually (Figure 17 and Figure 18). Both Ukraine and UAE have also previously been identified as exporters or sources of C Indian Star Tortoises (CITES, 2011); however, between 2008 and 2010, Ukraine reported exports of 521 C specimens (compared with an annual average export of approximately 400 between 2000 and 2007), while the UAE reported exporting just one specimen in 2008 (compared with an annual average of 450 C specimens between 1992 and 1999 (Inf. 22. CoP15, 2010[27]).

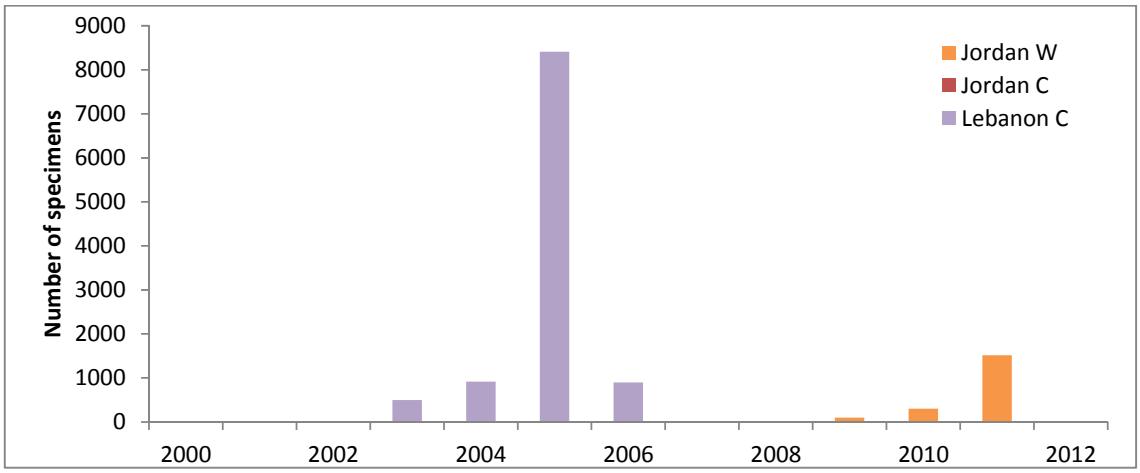
If captive breeding had been occurring successfully in Lebanon, Ukraine and UAE, it is difficult to understand why it would have declined to such an extent given the investments necessary to establish breeding operations. As noted above under **Example 6,** it seems likely that Lebanon, during the mid-2000s, was being falsely reported by importers (at least to some extent) as a point of origin and transit for reptiles of mis-declared C source. The trade data suggest that this may also have been the case for Ukraine and UAE. However, as according to the recent trade data these trade routes no longer appear to be the cause for concern they once were, at least for reported trade, they were not investigated further with relevant CITES authorities.



Does not include re-exports. Data from some years may not be complete.

Figure 17 Exports of live Indian Star Tortoises from Jordan, Lebanon and Ukraine as exporters (Jordan and Ukraine) and importers (Lebanon) (2000 to 2012).

[27] http://www.cites.org/sites/default/files/common/cop/15/inf/E15i-22.pdf

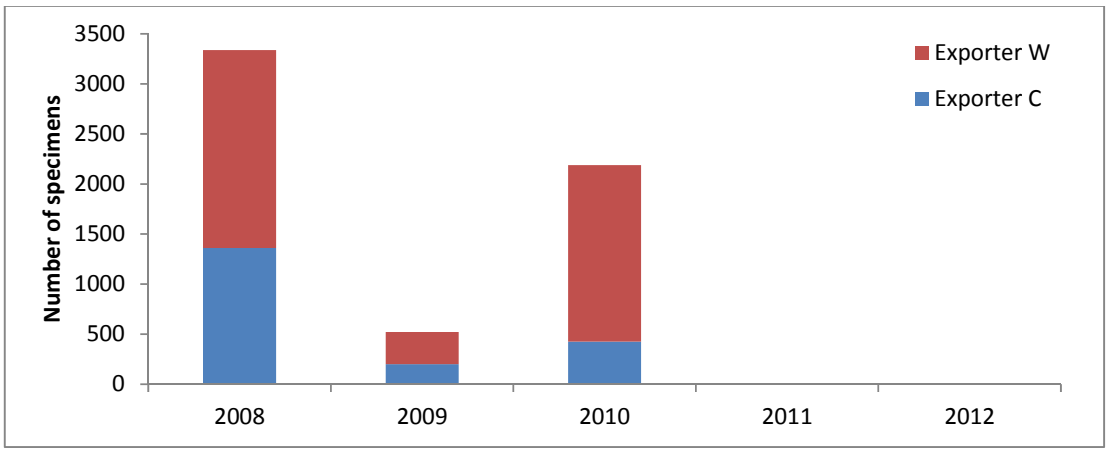


Data from some years may not be complete.

Figure 18 Re-exports of live Indian Star Tortoises from Jordan and Lebanon as reported by re-exporter (Jordan) and importers (Lebanon)

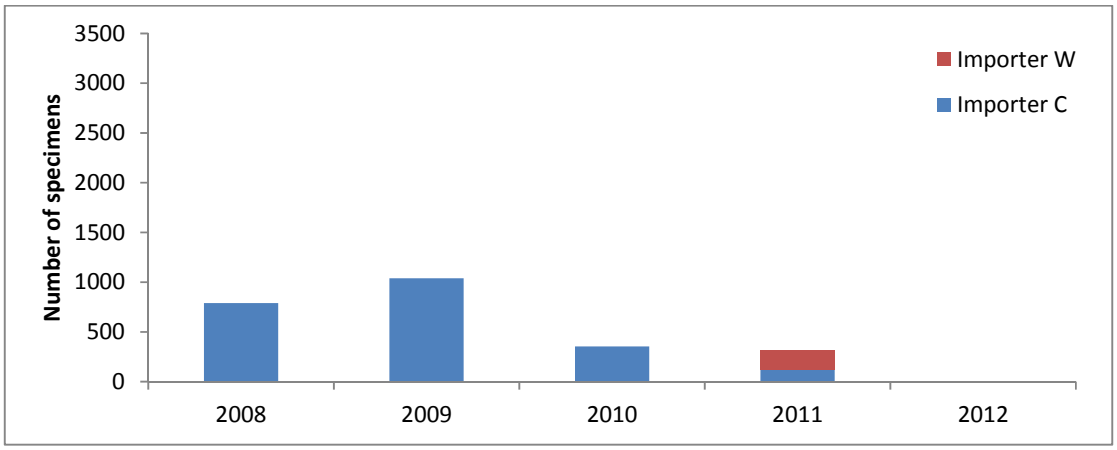
Example 12*: *Papuan Hornbill* Rhyticeros plicatus, *Birds-of-Paradise Paradisaeidae and other birds from the Solomon Islands using source code C

The Solomon Islands reported exporting 6046 live birds between 2008 and 2010; the majority of which were declared as W (Figure 19), and has yet to submit annual reports for 2011 and 2012. Importers reported importing 2495 birds during this time (Figure 20), in addition to 896 birds which had originated in the Solomon Islands and been re-exported by Singapore and South Africa. According to importers, the trade comprised of six species (Table 10). A previous analysis of CITES trade data (TRAFFIC, 2011) found that between 2000 and 2009, importers reported imports of 68 134 birds representing 34 species from the Solomon Islands. When this is compared with importer reports for 2008 to 2012, it suggests there has been a real decline in the average annual number of birds imported and the number of species which this represents. Importers reported that the Solomon Islands exported 50 Papuan Hornbills (all declared as C) and zero Birds-of-Paradise between 2008 and 2012.



Does not include re-exports. Data for 2011 and 2012 not complete.

Figure 19 Exports of live birds from the Solomon Islands as reported by the Solomon Islands (2008 to 2012).



Does not include re-exports. Data from some years may not be complete.

Figure 20 Exports of live birds from the Solomon Islands as reported by importers (2008 to 2012).

Between 2008 and 2010, the Solomon Islands reported exports of more birds than were reported by importers, for all taxa (Table 10). Whilst discrepancies in the CITES Trade Database do occur, the Solomon Islands reported exporting over 4000 birds declared as W to 14 countries (13 of which did not report any imports of birds from any source from the Solomon Islands) which were unaccounted for in importers reports. One possible explanation is that the Solomon Islands issued permits which were included in the annual report, but never actually used, but why this would predominantly involve wild birds is unknown.

Concern has previously been expressed that large quantities of native and non-native birds from the wild were being exported from the Solomon Islands and falsely declared as captive-bred (Shepherd *et al.,* 2012). In 2006, the Solomon Islands' Government suspended trade in native wildlife to allow for the development of environmental regulations, though expired export permits were re-validated to allow for existing stock to be exported. It is unclear whether this ban is still in place, but the EU has suspended imports of a number of non-bird species from 2010 onwards suggesting at least some trade is anticipated.

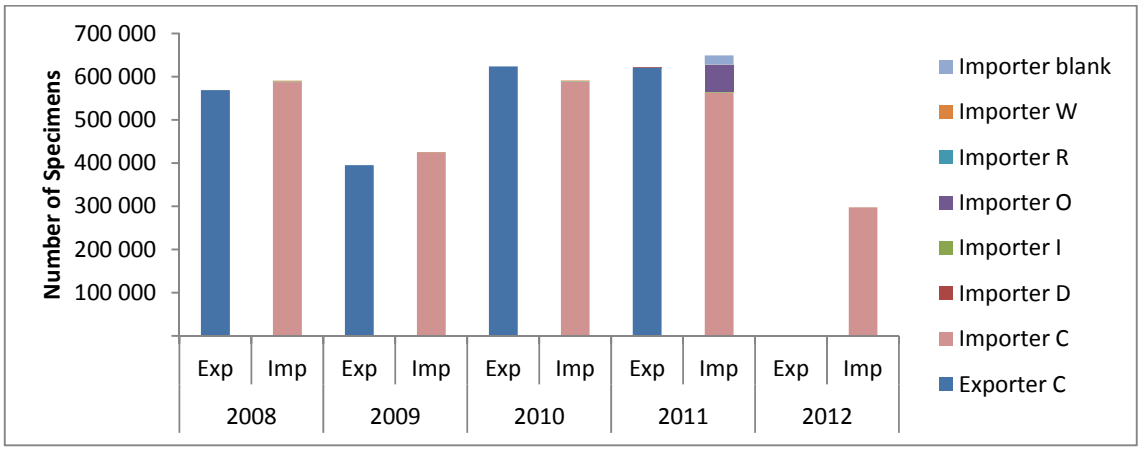
In order to determine whether captive-bred specimens are routinely being supplemented/substituted by wild caught birds in the Solomon Islands, further information on the following would be required: (i) restrictions on the export of native birds from the Solomon Islands; (ii) monitoring of/regulations in place for captive breeding facilities; (iii) the origin and source of the founder stock of captive-bred exports; and (iv) whether data in the CITES Trade Database is based on permits used or issued.

Example 13:* *Brown Caiman* Caiman crocodilus fuscus *skins from Colombia traded using source code C

Between 2008 and 2011 Colombia reported the export of a total of 2 209 919 Brown Caiman skins; the majority of which were declared as C (Figure 21). Colombia has submitted annual reports for 2008 to 2012, but export data for 2012 have not yet been included in the CITES Trade Database. Importers reported a wider variety of source codes than Colombia, although in very small quantities (Figure 21).

Regarding re-exports, the vast majority of the skins reported by re-exporters were declared as C during 2008 to 2011. The biggest re-exporter was by far Singapore, reporting re-exporting 818 601[28] skins (629 286 according to importers' reports) during 2008-2011. Re-exporters also reported re-exporting over 50 000 skins back to Colombia between 2008 and 2012.

[28] *Trade data reported in kg, ft^2 and m^2 were left out of the totals: for re-exporters' data these were 9.4 kg and 284.4 m^2 skins; for importers' data these were 21 607 ft^2 and 9184 kg.*



Does not include re-exports. Exp=as reported by exporter, Imp=as reported by importer. Data from some years may not be complete.

Figure 21 Exports of Brown Caiman skins from Colombia as reported by exporters and importers (2008 to 2012).

The species is highly productive, with early maturity and fast growth rates (A. Larreira, IUCN Crocodile Specialist Group, *in litt.*, Feb. 2014). Founder specimens for Colombia's captive-breeding stock are reported to have been originally taken from the wild, with some specimens returned to the wild at a later stage (Jenkins *et al*., 1994). After this, trade was designed to be independent from the wild (Webb *et al*., 2012). There are unconfirmed reports of wild-taken specimens supplementing skins produced by captive breeding operations however, the situation has reportedly been improving significantly (A. Larreira, IUCN Crocodile Specialist Group, *in litt.*, Feb. 2014). Although there are national measures in place (including for marking C skins by "scar button system"[29]), there may be issues with controls and inspections carried out by some of the local governments (Corporaciones Regionales) with no inventory of stocks of skins or live specimens complied so far (A. Larreira, IUCN Crocodile Specialist Group, *in litt.*, Feb. 2014).

Skin size limits have been imposed by Colombia as a regulatory measure to exclude illegal wild-caught adults entering legal trade (Webb *et al*., 2012). Prior to 2005, export quotas communicated to the CITES Secretariat determined the maximum size and number of caiman skins for farm-produced skins (Jenkins *et al*., 1994; Larriera *et al*., 2004). As caimans larger than the size limit were also being legally bred and raised on some farms, Colombia changed their export quota setting approach in 2006 to only regulate the maximum number of skins of C source larger than 1.25m (Table 11). However, there are concerns that these measures have not been completely successful as larger skins can be trimmed to meet prescribed size limits, with size changes that occur during the tanning process adding additional complexity (Webb *et al*., 2012).

Export quotas for C skins presented to the CITES Secretariat by Colombia between 2005 and 2012 did not cover all years and fluctuated considerably over this period (Table 11). According to the IUCN-Species Survival Commission, Crocodile Specialist Group (IUCN CSG), skin export quotas for each farm (there being 150 farms in the 1990s, however now only 40) was calculated by the government using a complex statistical system, taking into account different variables declared by the farms, such as the number of females, number of pools, total surface (A. Larreira, IUCN Crocodile Specialist Group, *in litt.*, Feb. 2014). According to the CITES trade data, reported exports are consistently higher than the quotas set, but as the sizes of the skins in trade are not reported to CITES, compliance with the quotas set (in terms of both number and sizes of skins) cannot be determined from data alone.

In order to determine whether captive-bred specimens are routinely being supplemented/substituted by skins of wild source, further information on the following would be required: (i) reasons why Colombia consistently reports lower exports than those reported by importers; (ii) provision of information on marking system in place for skins (including monitoring of implementation and compliance); (iii) quota

[29] All captive bred hatchlings now have one of the tail scutes amputated. The scar button system does not verify the absence of the scale, which can be easily carried out post mortem on an illegal wild skin, but verifies the presence of the scar button. In order to develop this scar, the animals should be in captivity for a long period after the cut, so in this way it is not possible to utilize wild skins.

setting system, including reasons for fluctuations and the success of the size limit in excluding illegal specimens from trade; and (iv) measures in place for regular inspection of captive breeding facilities and record keeping requirements/verification. Due to time restraints, Colombian CITES authorities were not contacted as part of this project.

Example 14:* Python (Python molurus bivittatus[30] *and* Python reticulatus) *skins from Lao PDR and Viet Nam traded using source code C

The Burmese Python *Python molurus bivittatus* and the Reticulated Python *Python reticulatus*, are widely distributed in Southeast Asia, with Lao PDR and Viet Nam being two of the range States and major players in trade in their skins (Kasterine *et al*., 2012). CITES trade data suggest there is also trade in skins of Blood Python *Python brongersmai* declared as C, a species native to Viet Nam, but not to Lao PDR.

Viet Nam

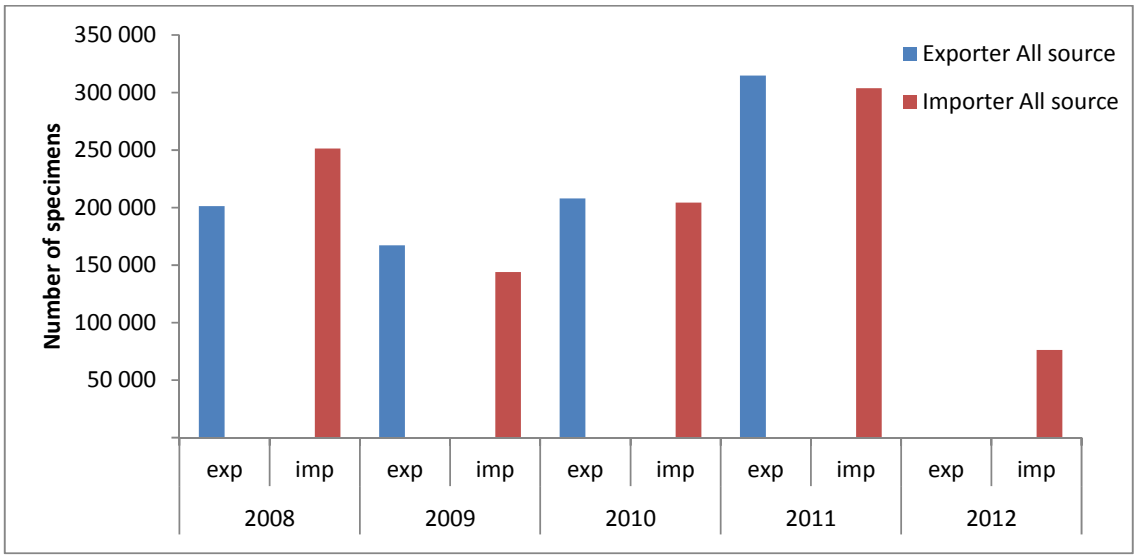
At the time of writing, Viet Nam had submitted its annual reports for 2008 to 2012, however, it appears that some of the data have yet to be entered into the CITES Trade Database. Therefore, data for 2012 are still incomplete and are not discussed.

Between 2008 and 2011, Viet Nam reported exporting a total of 891 247 python skins, with reported exports lowest in 2009 (167 305 skins) and highest in 2011 (314 727 skins) (Figure 22). All of these skins were declared as C according to data reported by Viet Nam. Importer data show a similar trend, with reported imports exceeding reported exports in 2008 only. This difference is mainly due to Singapore reporting imports of over 45 000 more python skins than Viet Nam reported as exported to Singapore in 2008.

Exports of Reticulated Python skins reported by Viet Nam were steadily increasing between 2008 and 2012, whereas Burmese Python skin exports decreased from 2008 to 2009 but have sharply increased since (Figure 26 - Annex). Importer data show the same trend.

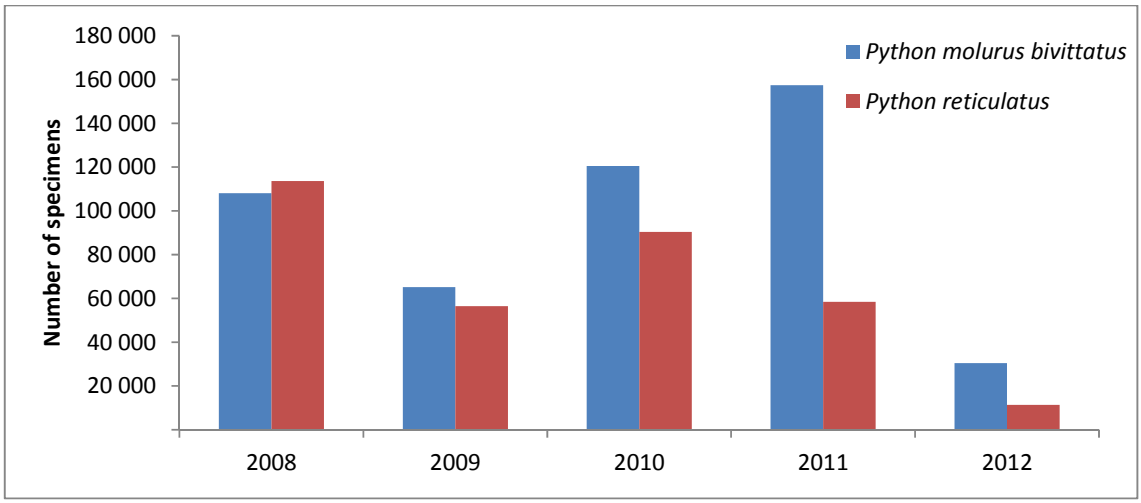
The biggest re-exporter of python skins from Viet Nam between 2008 and 2012 was Singapore (with around 600 000 skins), based on both exporter and importer reported data. Again almost all re-exports reported involved C skins (Figure 23). The second most important re-exporter of python skins from Viet Nam was Malaysia (with a total of over 88 000 skins from 2008 to 2012, of which 34 300 were Reticulated Python skins). Malaysia is a range State for these two species, and is one of the main global exporters of wild-caught Reticulated Python skins (Kasterine *et al*., 2012). Trade data reported by re-exporters indicate a somewhat different trend in terms of species, with the amount of Burmese Python skins being re-exported in higher numbers than those of the Reticulated Python from 2009 (Figure 26 - Annex). Of note is that Viet Nam is the top 6th final destination for re-exports of skins originally exported from that country. Based on re-exporter data, over 21 000 skins reportedly returned to Viet Nam between 2008 and 2012.

[30] *More recently, the taxon has been referred to as P. bivittatus reflecting changes in taxonomy approved at CoP16. However, in this report the former scientific name P. molurus bivittatus is used as this is the scientific name used in the CITES Trade Database for 2008-2012.*



Does not include re-exports. Two records in the trade database reported in kg (300 kg) in 2010 and in m (1000 m) were not included. Exp=as reported by exporter, Imp=as reported by importer. Data from some years may not be complete.

Figure 22 Exports of Burmese and Reticulated Python skins from Viet Nam as reported exporters and importers (2008 to 2012) (almost all C).



Note: Includes only data reported in number of specimens. The following data could not be included as these were reported in units other than skins: i) 127.5 kg, ii) 258 m, and iii) 83 m2. A small number of re-exports involved P. molurus and P. bivittatus, which were treated as if they were reported as P. molurus bivittatus. Data from some years may not be complete.

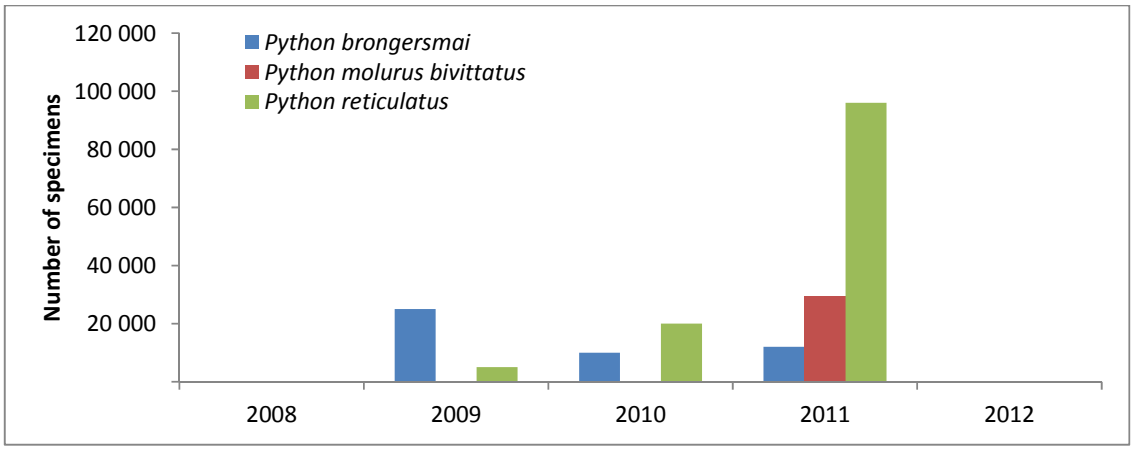
Figure 23 Re-exports of python skins from Viet Nam as reported by re-exporters (2008 to 2012).

According to the Vietnamese CITES authorities, the captive breeding of the Reticulated Python began in the early 1990s, with breeding stock obtained from the wild in Viet Nam (Kasterine *et al*., 2012) and from neighbouring countries such as Cambodia (Thomson, 2008). There are reports of recent site visits conducted at python breeding facilities in Viet Nam, acknowledging that Reticulated and Burmese Pythons are being bred in Viet Nam and possibly in considerable numbers for the skin trade (Kasterine *et al*., 2012). However, it remains unclear whether these species are being bred in the quantities reported in CITES exports (Kasterine *et al*., 2012).

Lao PDR

At the time of writing, Lao PDR had not submitted annual reports for 2010 to 2012, and reported no exports of python skins in the annual reports it did submit for earlier years. The following analysis is based on data submitted by re-exporters and importers.

There were no records of direct exports of python skins from Lao PDR in 2008, but by 2011 records showed that 137 500 skins were being exported, according to importers (at the time of writing no data were available for 2012). Almost all trade was reported to be of specimens declared as C, with Reticulated Python being the main species involved (121 000 skins in total). Trade reported by the re-exporters show similar trends and numbers. Burmese Python skins appeared in trade for the first time in 2011 (29 500 skins) while trade in Blood Python skins decreased over this period (Figure 24).



Does not include re-exports. Data from some years may not be complete.

Figure 24 Exports of python skins from Lao PDR as reported by importers (2009-2011) (all source code C).

Between 2008 and 2012, the main re-exporters of python skins from Lao PDR were Singapore (78 802 skins according to re-exporter data and 93 469 according to importer data); and Malaysia (77 000 skins according to re-exporter data and 174 330 skins according to importer data). It is noted that the CITES Trade Database does not appear to contain data for 2012 from Singapore and Malaysia, which may account for these discrepancies. Re-exporter data do show some trade in specimens not declared as C; for instance Malaysia's 2010 re-export of 1000 Reticulated Python skins declared as W. These skins were declared to have originated in Lao PDR and were then re-exported to Singapore.

There is reportedly only one farm in Lao PDR breeding three species of Pythons for skins for export (Kasterine *et al*., 2012). According to CITES officials in Lao PDR, parental stock was sourced from Thailand, Cambodia and Viet Nam around 12 years ago and today this facility has an annual production of more than 70 000 C pythons of the three species (Kasterine *et al*., 2012). Concerns have been raised over the capacity of a single farm to produce such large numbers of animals and in September 2013, the SRG recommended that EU Member States should not accept imports of *Python reticulatus* from the breeding facility in Lao PDR, a decision confirmed in December 2013 following consultation with Lao PDR (SRG, 2013b). In May 2012 visits were made to Lao PDR by the CITES Secretariat and others (Kasterine *et al*., 2012). However, access to the facility was denied by the owner. The CITES Secretariat and TRAFFIC staff had a similar experience in November 2013, when attempts to visit the farm again ended in failure. At a meeting in November 2013, the farm owner explained to TRAFFIC that the facility's production is assisted by a large number of satellite farms. No information on the number of specimens held at the farm was provided during this meeting. Until the capacity of this facility and its satellite farms can be verified, it is impossible to determine whether captive breeding of pythons in Lao PDR is taking place on a scale approaching the quantities suggested by official export figures.

In their report on trade in Southeast Asian python skins, Kasterine *et al*. (2012) raised a number of concerns regarding captive breeding claims of pythons in Lao PDR and Viet Nam. These included

whether it is possible to produce these animals in the quantities indicated by the trade figures reported and whether some of the skins claimed to have been produced from captive-bred animals may represent illegally caught wild specimens from Indonesia and Malaysia. These questions remain to be answered. The difficulties faced in arranging a visit to the farm in Lao PDR and the lack of exports reported by the CITES authorities in that country raise serious doubts about the veracity of claims being made of the captive breeding of pythons .

The CITES authorities in Lao PDR and Viet Nam were not contacted for this project as there is a significant amount of existing information available on the trade in these species in relation to these countries. Information was taken from recent literature and reports made of visits to facilities claiming to produce captive pythons in Viet Nam and Lao PDR (achieved in the former and unsuccessful in the latter). Ongoing research on this issue is also being conducted by the IUCN SSC Boa and Python Specialist Group.

Conclusions

The results presented above focus mainly on information obtained from analysis of 2008-2012 CITES trade data and a review of available relevant literature. Parties were contacted with specific questions, however, due to the short time frame available for this project, there was limited possibility for the provision of information by Parties and subsequent follow up in many cases; and few responses were received in time for inclusion in this report. Therefore, in most cases further consultation is warranted to clarify issues. The analysis and research identified a number of phenomena confirming some of the concerns described in SC62 Doc. 26 (point 5, i-xix), for example:

ii. high volume trade in specimens reported as captive-bred but known to be difficult to maintain or breed in captivity, or that have low reproductive output;

v. specimens reported as ranched that, based on the natural history or natural range of the species, it is impossible or not practically feasible to produce by "ranching" as defined in Resolution Conf. 11.16 (Rev. CoP15) *(e.g. mammals); and*

vi. trade in specimens that, based on their condition (adult, scarred, having parasites, etc.), make claims of captive breeding or ranching unlikely.

Further details are presented under each example in the previous section. Thorough and detailed exchanges with the Parties concerned are required to establish the reasons behind these phenomena, likely ranging from misinterpretation of the source code to possible fraud. For each example, the relevant further information required in order to determine the underlying issues was determined, and the most common questions arising were related to regular inspections of breeding/ranching facilities and the capacity to carry out such controls, requirements on record keeping and marking. The role of major re-exporters also appears to warrant further investigation in some cases.

The following general conclusions can be drawn from the research carried out for this report:

- **Reported export quantities for most of the cases highlighted in SC62 Doc. 26 Annex still merit further research.** Large volumes of trade in specimens of non-wild source were reported for several species between 2008 and 2012 and unexpected trade patterns – in terms of source codes used, trade routes and volumes were identified. This suggests that source codes are still being misused by some Parties in certain cases, although some of these issues may be clarified following the provision of additional information by Parties. Due to the size of the trade and/or threatened status of the taxa concerned, however, any fraudulent trade involving falsely declared wild specimens as captive-bred is likely to impact wild populations.
- **Taxa in trade and the routes and source codes used shift over time, thus the scope of any further monitoring of this issue would need to be extended beyond the examples listed in SC62 Doc. 26.** The working group set up by the Standing Committee at SC61 was not tasked to create an exhaustive list of examples worthy of further investigation and therefore it is most likely that additional species and regions are affected by the issue and warrant further attention. Examples 6 and 7 highlight the importance of regular monitoring and early detection, as by the time an issue has been detected and acted upon, the trade may have moved elsewhere. Moreover, due to time constraints, analysis of some of the larger examples included in Annex of SC62 Doc. 26 had to be focused on select taxa and could not encompass a thorough and detailed analysis of all species potentially affected (especially relevant for example 3).

- **Detailed information on breeding stock, productivity and regulations in relation to captive breeding is required to better understand the situation in most cases**. If this is not provided by Parties, it is not possible to determine whether captive breeding facilities are able to supply the quantities of exports reported. Regular inspections and verification of breeding facilities would appear to be the only way to determine this with any certainty.

In light of the above, it is concluded that regular and in-depth monitoring of trade in specimens declared with non-wild source has a key role to play in ensuring that trade does not have a detrimental effect on wild populations. As outlined by Decision 16.66(b), there are a number of ways possible processes or mechanisms for reviewing such issues could be established, including by amendment to Resolution Conf. 12.8 (Rev. CoP13) on the Review of Significant Trade in specimens of Appendix-II listed species (which is in the process of being evaluated as set out in Decision 13.67 (rev CoP17)) or Resolution Conf. 14.3 on CITES compliance procedures; or by proposing a new Resolution.

Other considerations arising from this report

The analyses carried out have demonstrated how regular reviews of CITES trade data have the potential to assist in detecting instances of mis-declared sources of specimens in trade, especially when supplemented by relevant information provided by Parties. Such information may include details of the origin of founder stock, volumes of captive production, requirements for record keeping by breeding/ranching facilities, means of verification of records provided by facilities, enforcement measures relating to breeding/ranching operations, and permanent and unique marking requirements - all of which were questions addressed to Parties as part of this study. Information submitted for the purposes of regular monitoring of captive-breeding/ranching issues would be of greatest value in terms of improving CITES implementation, if made accessible to all Parties.

It is, however, recognized that many exporting States may currently lack the resources necessary for regular reporting and record-keeping and that capacity-building, training and exchange of information would likely be required in support of effective monitoring. The inspection manual for use in commercial reptile breeding facilities in Southeast Asia recently produced by TRAFFIC under contract with the CITES Secretariat (TRAFFIC, 2013) could help in this regard, as could involving external/independent experts in the assessment of production data and/or inspection of facilities, potentially enhancing both capacity and transparency in this field. Information provided by importing States can also offer a valuable consumer/transit perspective on these issues, including with regard to seizures that have taken place as a result of concerns over mis-declarations of the source codes or developments of research and techniques to distinguish specimens of captive and wild origin, including stable isotope analysis.

Finally, it is noted that a number of more general CITES implementation issues were apparent from data analysis carried out for this study, such as inconsistent use of source codes across Parties, reporting large amounts of trade with no source code, reporting likely based on permits issued rather than used, and large gaps or delays in the submission of annual reports. Any steps taken to improve consistent implementation of CITES with regards to these aspects would considerably facilitate monitoring of trade in non-wild sourced specimens in the future.

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ANNEX - additional information, figures and tables

Table 5 Submission of annual reports by selected Parties as of 13 February 2014. Note that there is a delay between report submission and inclusion of data within the CITES Trade Database

	2008	2009	2010	2011	2012
Cambodia	Yes	Yes	Yes	Yes	Yes
China	Yes	Yes	Yes	Yes	Yes
Colombia	Yes	Yes	Yes	Yes	Yes
Equatorial Guinea	Yes (no trade)	Yes (no trade)	Yes (no trade)	Yes (no trade)	Yes (no trade)
Indonesia	Yes	Yes	Yes	Yes	
Japan	Yes	Yes	Yes	Yes	Yes
Kazakhstan	Yes	Yes	Yes		
Jordan	Yes	Yes	Yes	Yes	
Laos PDR	Yes	Yes			
Lebanon	Joined in 2013				
Nicaragua	Yes	Yes			
Panama	Yes		Yes	Yes	
Slovenia	Yes	Yes	Yes	Yes	Yes
Solomon Islands	Yes	Yes	Yes		
Ukraine	Yes	Yes	Yes		
United Arab Emirates	Yes	Yes	Yes	Yes	Yes
USA	Yes	Yes	Yes	Yes	Yes
Viet Nam	Yes	Yes	Yes	Yes	Yes
Zambia	Yes	Yes	Yes	Yes	Yes

Source: http://www.cites.org/sites/default/files/common/resources/annual_reports.pdf, viewed 13 February 2014

Table 6 Definition of geographic areas used in this study

Geographic area	Countries/territories
Central America	Belize, El Salvador, Guatemala, Honduras, Nicaragua, Costa Rica, Panama
Southeast Asia	Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar (Burma), Philippines, Singapore, Thailand, Timor-Leste, Viet Nam
East Asia	China, Hong Kong (SAR of China), Japan, Korea (Democratic People's Republic of), Korea (Republic of), Macau (SAR of China), Mongolia, Taiwan (Province of China).

Table 7 Source codes

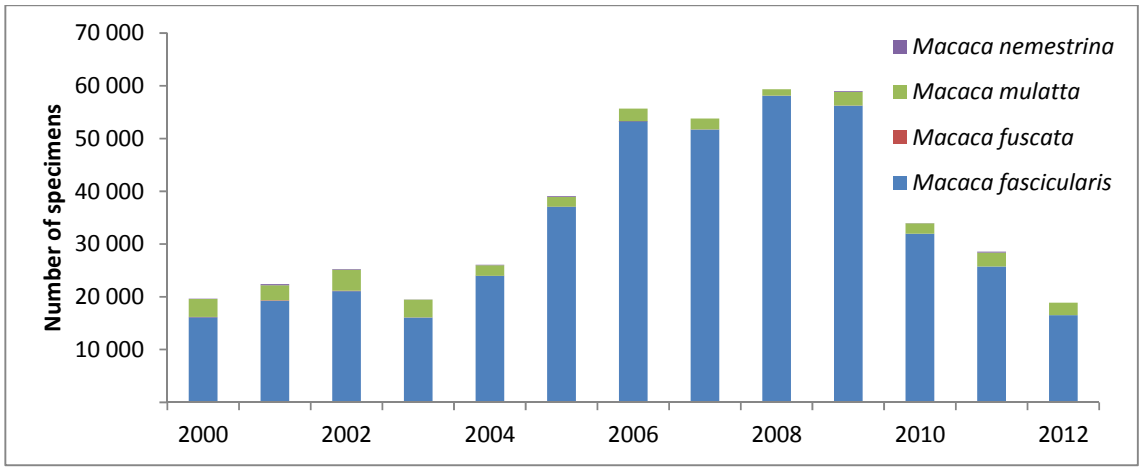
C	Animals bred in captivity in accordance with Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 5, of the Convention.
D	Appendix I animals bred in captivity for commercial purposes in operations included in the Secretariat's Register, in accordance with Resolution Conf. 12.10 (Rev. CoP15), and Appendix I plants artificially propagated for commercial purposes, as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 4, of the Convention.
F	Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof.
I	Confiscated or seized specimens
O	Pre-Convention specimens
R	Ranched specimens: specimens of animals reared in a controlled environment, taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood.
U	Source unknown
W	Specimens taken from the wild

Source: http://www.unep-wcmc-apps.org/citestrade/docs/EN-CITES_Trade_Database_Guide.pdf Viewed 19 February 2014

Table 8 Reported source of live macaque species exported from countries in East Asia and Southeast Asia (2008-2012).

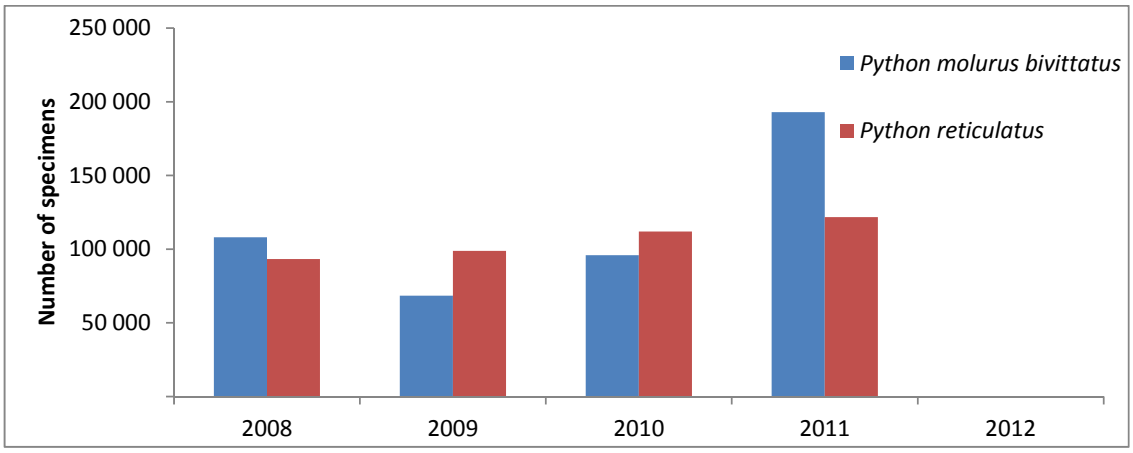
Exporter	Source code	2008		2009		2010		2011		2012		Total 2008-2012		Total 2000-2012 all source codes	
		Reported by exporter	Reported by importer	Reported by exporter	Reported by importer	Reported by exporter	Reported by importer	Reported by exporter	Reported by importer	Reported by exporter	Reported by importer	Reported by exporter	Reported by importer	Reported by exporter	Reported by importer
Cambodia	C		2480		2720		4000	6000	4400		2220	6000	15820	46 755	49 675
	F	14820	8060	15860	11105	3095	7310	3050	2752	3930	4628	40755	33855		
China	C	25695	23882	25876	18553	23389	19383	15907	16281	14953	12285	105820	90384	105 933	93 243
	F		920		901		270		68				2159		
	W						120						120		
	blank							103				103	0		
Indonesia	C	2	234	2	1	1634	100		42		151	1638	528	9670	8542
	F	4157	3234	2300	2584		1372	1575	676		148	8032	8014		
Laos	C		2050		2000		4600						8650	13 600	16 770
	F				900								900		
	R	6580	720	6900	6500							13480	7220		
	blank			120								120	0		
Philippines	C		1362	1244	1108		1349		954		803	1244	5576	1244	5576
Viet Nam	C	8082	5662	6620	5647	5843	4246	1922	2185		2853	22467	20593	23 067	26 133
	F		2420		1200								3620		

Data from some years may not be complete. Specimens traded using source codes I, O, U or no source code specified were minimal so are not included. Countries which reported exporting fewer than 5000 live specimens between 2008 and 2012 are not included.



Does not include re-exports. Does not include species where <100 specimens were exported during the period 2000-2012. Data from some years may not be complete.

Figure 25 Exports of live macaque species of all source codes from East Asia and Southeast Asia as reported by exporters (2000 to 2012).



Does not include re-exports. 2012 data not available.

Figure 26 Exports of python skins from Viet Nam as reported by exporters ((2008 to 2012) (all C source)).

Additional reptile case-studies

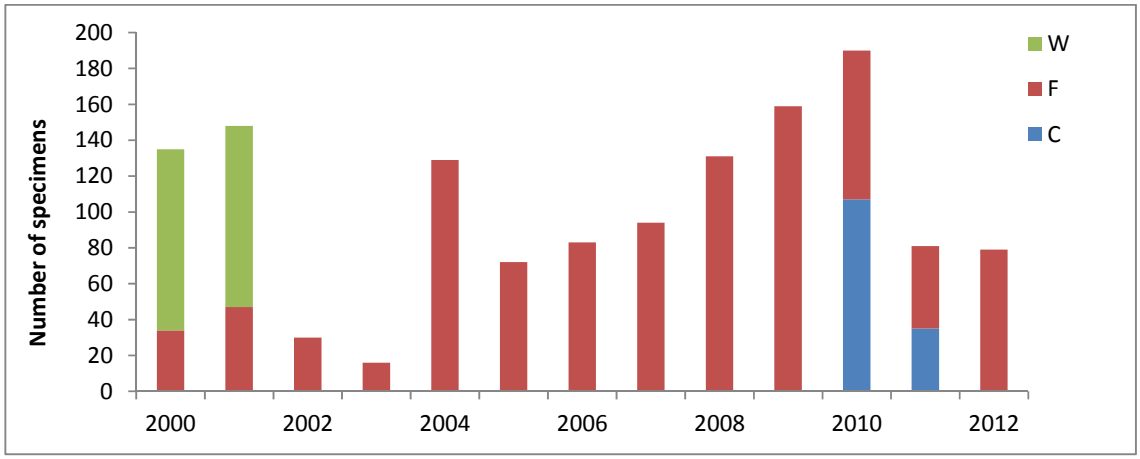
Boelen's Python *Morelia boeleni*

Between 2008 and 2011, Indonesia reported the commercial export of 561 live Boelen's Pythons, the majority of which were imported by the USA and the EU. Specimens declared as F dominated reported exports until 2009 (Figure 27).

The Boelen's Python is endemic to New Guinea, it is protected in Papua New Guinea but not in the Indonesian half of the Island (West Papua and Papau provinces) (Natusch and Lyons, 2012). An EU import suspension was first imposed in 1991 (Valaoras, 1998), then lifted before being reinstated once again for W specimens in 2000. The species is difficult to breed in captivity and there are very few examples of successful captive reproduction[31] (Austin *et al.*, 2010). Captive breeding programmes in the USA and Europe have been established in the past but have achieved only limited success (Austin *et al.*, 2010). The Boelen's Python can command high prices on international markets, with reports that the species is targeted specifically in the wild to be sold into the pet trade (Natusch and Lyons, 2012).

[31] *The Boelen's Python Group, 2007: http://www.boelenspythons.com/reproduction/index.html.*

There is concern that wild-caught individuals may be subsequently exported and declared as originating from farms in Indonesia[32]. In 2013, the EU's SRG discussed concerns surrounding specimens claimed to have been captive-bred by an Indonesian facility, as data supplied appeared to be inconsistent with published information on the biology of the species and expert opinion (European Commission, *in litt*., 06.03.2014).



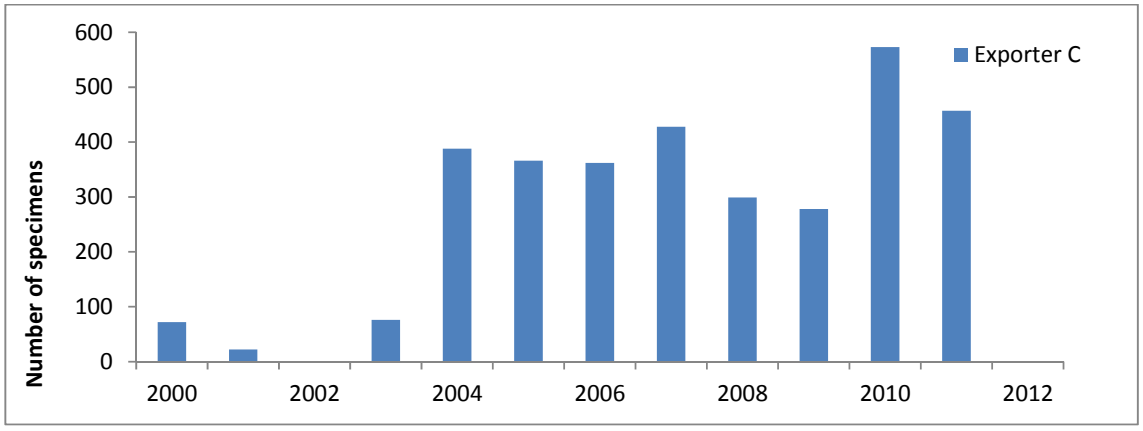
Does not include re-exports. Exports for 2012 are based on importer data as, at the time this report was submitted to the CITES Secretariat, Indonesia had not submitted an annual report for 2012.

Figure 27 Exports of live Boelen's Python from Indonesia as reported by Indonesia (2000 to 2012).

Emerald Monitor Varanus prasinus and Spotted Tree Monitor Varanus timorensis

Between 2008 and 2012, Indonesia was the only country in Southeast Asia to report exports of live *Emerald Monitor lizards (1607 specimens) and* Spotted Tree Monitors (3321 specimens); all declared as C (Figure 28 and Figure 29).

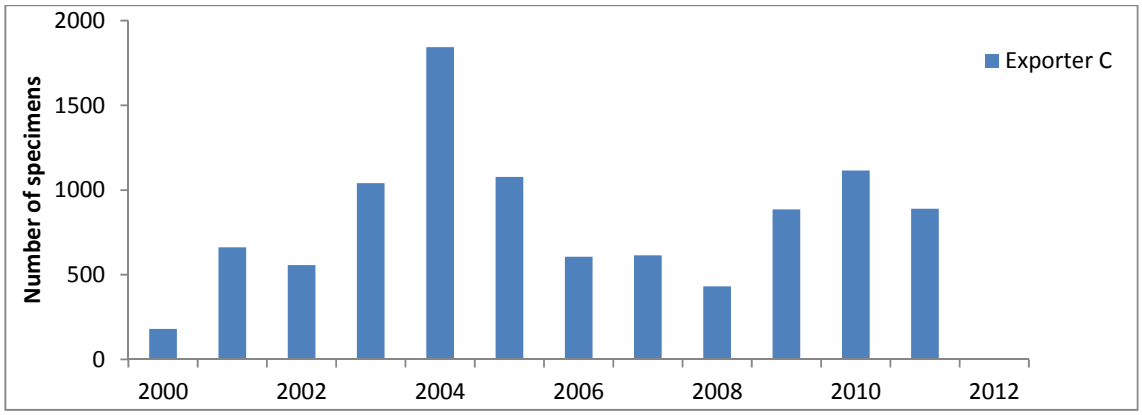
Both of these species are protected in Indonesia, meaning that the only exports of captive-bred animals would be permitted (Koch *et al.,* 2013). However, a survey of reptile breeding farms in 2006 revealed that these facilities did not have the capacity to produce specimens in the volumes which have been reportedly exported. According to experts it was believed that at the time none of the specimens in trade were actually captive-bred (Nijman and Shepherd, 2009). It is unknown if more recent surveys have been undertaken, or if capacity has been increased since this research was conducted.



Does not include re-exports. 2012 data not available.

Figure 28 Exports of live Emerald Monitor from Indonesia as reported by Indonesia (2000 to 2012).

[32] *Post by Indonesian-based reptile enthusiast on Reptile Forums UK: http://www.reptileforums.co.uk/forums/snakes/993728-morelia-boeleni-morelia-carinata.html (dated 24.09.2013).*



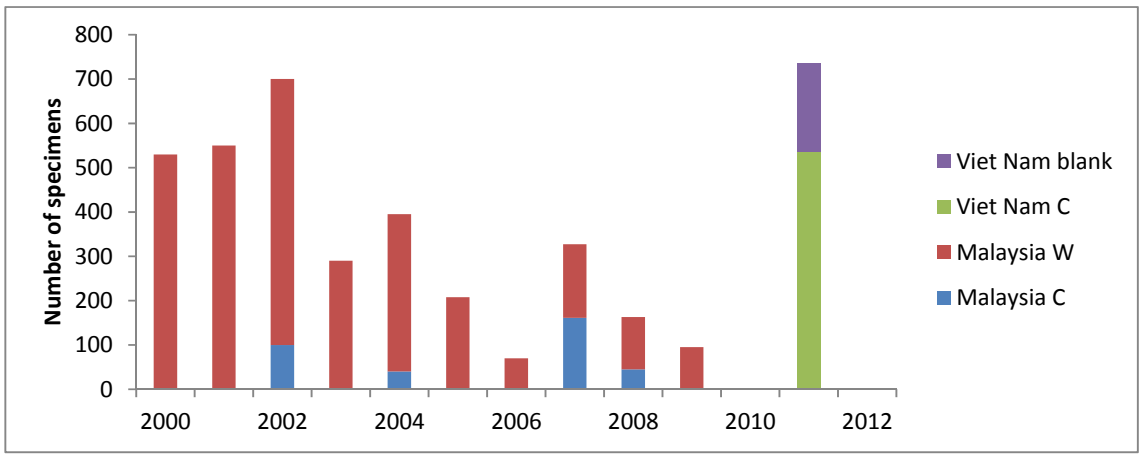
Does not include re-exports. 2012 data not available.

Figure 29 Exports of live Spotted Tree Monitor from Indonesia as reported by Indonesia (2000 to 2012).

Yellow-headed Tortoise *Indotestudo elongata*

Between 2008 and 2012, live Yellow-headed Tortoises were reportedly exported from two range States in Southeast Asia: Viet Nam (735 specimens) and Malaysia (258 specimens) (Figure 30). From 2000 to 2009, Malaysia reported export quotas to the CITES Secretariat ranging between 200 and 500 live W specimens per year; this was reduced to zero specimens from all sources from 2010.

Captive females of this species produce a clutch of between two to four eggs, with three clutches laid per season[33]. In the wild, males and females have been reported to reach sexual maturity at five to six years, and eight years, respectively Sriprateep *et al.* (2013). Whilst this species can be bred in captivity, Viet Nam first reported exporting C specimens in volumes similar to those of W specimens exported from Malaysia in the early 2000s, not having previously reported the exports of wild, F or captive specimens.



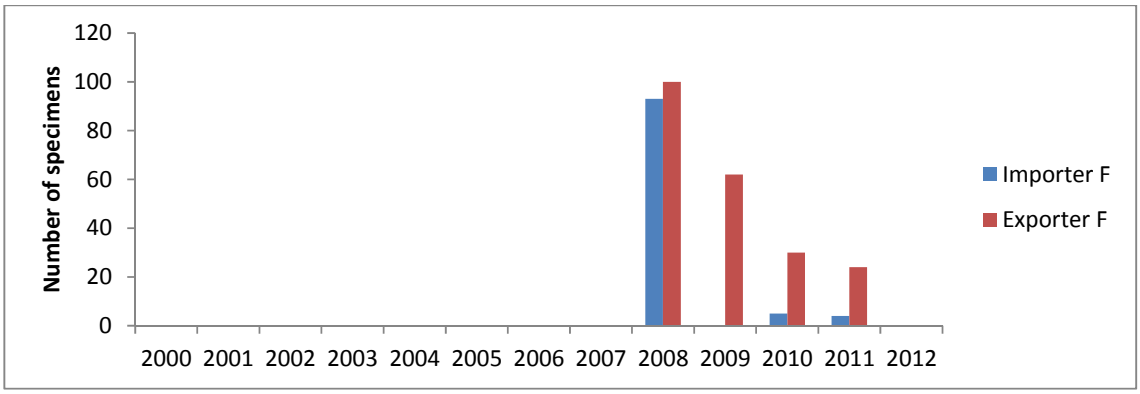
Does not include re-exports or 6000kg of live ranched specimens reported by China as being imported from Laos in 2001.

Figure 30 Exports of live Yellow-headed Tortoise from Viet Nam and Malaysia as reported by exporting countries (2000 to 2012).

Roti Island Snake-necked Turtle Chelodina mccordi

Indonesia began to report exporting live F specimens of the *Roti Island Snake-necked Turtle* in 2008, and between 2008 and 2011 these totalled 216 specimens (Figure 31). Indonesia did not report exporting any W specimens from 2000 to 2011. *In 2013 the species' CITES Appendix-II listing was amended to include a zero quota for specimens from the wild. The species is native to Indonesia, and to Timor-Leste which is not Party to CITES.*

[33] World Chelonian Trust, 2005. The Elongated Tortoise. http://www.chelonia.org/articles/elongatacare.htm



Does not include re-exports. Data from some years may not be complete.

Figure 31 Exports of live Roti Island Snake-necked Turtle from Indonesia as reported by Indonesia and importers (2000 to 2012).

Virtually nothing is known of the breeding ecology of the Roti Island Snake-necked Turtle in the wild (Shepherd and Ibarrondo, 2005). Claims of captive breeding of this species in Indonesia have previously been questioned, and in 2005 no facilities were registered with Indonesia's authorities to breed the species (IUCN and TRAFFIC, 2012). It is believed that in the past the Roti Island Snake-necked Turtle has been smuggled out of Indonesia under the name of, or mixed together with, non-protected specimens, as enforcement agencies are not able to differentiate between species, owing to a lack of training (Shepherd and Ibarrondo, 2005). Furthermore, the capture of wild Roti Island Snake-necked Turtles between 1997 and 2001 reportedly did not comply with the law as no transport permits were issued (Shepherd and Ibarrondo, 2005). It is unclear whether the parental stock of the recent F exports was legally obtained within Indonesia or whether they originate from adults from Timor-Leste.

Table 9 Trade in live reptiles from Southeast Asia as reported by exporters and importers (2008-2012).

Order	Total exports (2008-2012) (reported by exporters)	Total exports (2008-2012) (reported by importers)	Most common source codes (reported by exporters)	Most common species (reported by exporters)
Crocodiles	219 201	161 124	D (219 148)	*Crocodylus siamensis* (219 012; all App. I bred in captivity)
Lizards	106 277	115 643	W (84 908), F (11 355)	*Varanus salvator* (76 685; 74 222 wild)
Snakes	186 963	138 149	C (107 073), W (52 211)	*Ptyas mucosus* (74 167; 63 000 captive-bred)
Turtles and tortoises	200 810	307 084	W (182 031)	*Amyda cartilaginea* (101 065; 100 465 wild)

				Cuora amboinensis (73 535; 68 533 wild)
Total	**713 251**	**722 000**		

Data from some years may not be complete.

Additional information on non-native chameleons from Equatorial Guinea

The Four-horned Chameleon is currently included in the Review of Significant Trade for Cameroon (Possible Concern) and Nigeria (Least Concern). The European Union has suspended imports from Cameroon of Mount Lefo Chameleons since 2001, and of Pfeffer's Chameleon from 2001 to 2010. Neither Nigeria nor Cameroon has reported exporting any of the three non-native species to Equatorial Guinea between 1990 and 2012. The Four-horned Chameleons has a life span of five years[34], and it is likely that the Mount Lefo Chameleon and Pfeffer's Chameleon have a similar life span (based on data for other West Africa chameleon species). Consequently, it is not possible that the specimens reportedly exported from Equatorial Guinea between 2008 and 2012 were imported by Equatorial Guinea before 1992 and remained there until being re-exported, and therefore must have been imported from range States and not declared.

In April 2011, the US authorities became aware that the three species do not occur in Equatorial Guinea so they contacted CITES authorities in Equatorial Guinea and alerted the US law enforcement program. As no response was received from Equatorial Guinea, the country was contacted again in June 2011. It appears that no response has been received. Following seizures of these animals (all three species) from Equatorial Guinea in 2011, the US received no further exports from the country[35].

Table 10 Exports of live Chamaeleonidae from Equatorial Guinea as reported by importers (2008 to 2012).

Species	Total imports 2008-2012	Range
Four-horned Chameleon (*Trioceros quadricornis*)	1,608	**Non-native** (Cameroon, Nigeria[36])
Bioko Hornless Chameleon (*Trioceros feae*)	1,519	**Native** (Equatorial Guinea[37])
Mount Lefo Chameleon (*Trioceros wiedersheimi*)	1,179	**Non-native** (Cameroon; Nigeria[38])
Crested Chameleon (*Trioceros cristatus*)	1,123	**Native** (Cameroon, Central African Republic, Congo, the Democratic Republic of the Congo, Equatorial Guinea, Gabon, Nigeria[39])
Pfeffer's Chameleon (*Trioceros pfefferi*)	205	**Non-native** (Cameroon[40])

Does not include re-exports. Data from some years may not be complete.

[34] LeBerre, F. & Bartlett, R.D. (2009) *Chameleon Handbook*. Barron's, New York.

[35] *Bruce Weissgold, US FWS in litt. to K. Kecse-Nagy, February 2014*

[36] *http://www.speciesplus.net/*

[37] *Carpenter, A.I. 2011. Trioceros feae. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.2.*

[38] *Luiselli, L. & Chirio, L. 2013. Trioceros wiedersheimi. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.2*

[39] *LeBreton, M., Carpenter, A.I. & Luiselli, L. 2011. Trioceros cristatus. In: IUCN 2013. IUCN Red List of Threatened Species*

[40] *http://www.speciesplus.net/*

Table 11 Exports of live birds from the Solomon Islands as reported by the Solomon Islands and importers (2008 to 2012).

Taxon	Family	Total exports declared by Solomon Islands *(number declared as C)*	Total imports reported from Solomon Islands *(number declared as C)*	Range[41]
Lorius chlorocercus	Psittacidae	1780 *(715)*	620 *(600)*	Solomon Islands
Cacatua ducorpsii	Psittacidae	1576 *(665)*	615 *(565)*	Papua New Guinea, Solomon Islands
Eclectus roratus	Psittacidae	1011 *(300)*	420 *(400)*	Australia, Indonesia, Papua New Guinea, Solomon Islands
Chalcopsitta cardinalis	Psittacidae	915 *(190)*	680 *(600)*	Papua New Guinea, Solomon Islands
Trichoglossus haematodus	Psittacidae	660 *(110)*	110 *(90)*	Australia, Indonesia, New Caledonia, Papua New Guinea, Solomon Islands, Timor-Leste, Vanuatu
Lorius spp.	Psittacidae	135 *(65)*	-	-
*Rhyticeros plicatus**	Bucerotidae	44 *(14)*	50 *(50)*	Indonesia, Papua New Guinea, Solomon Islands

Does not include re-exports. Data from some years may not be complete.
**Considered as Aceros plicatus by the IUCN RedList*

Table 12 CITES export quotas for caiman skins communicated by Colombia to the CITES Secretariat (2005-2012)

Year	Quota	Notes
2005	599 000	skins of less than 125 cm from captive-bred animals (parts and products) - species level
2006	20 470	skins of more than 125 cm from captive-bred animals
2007	**-**	
2008	**-**	
2009	28 831	skins from captive-bred specimens of more than 1.25 m
2010	-	
2011	161 271	skins of more than 125 cm from captive-bred animals
2012	91 676	skins of more than 1.25 m from captive-bred specimens

Source: CITES website (www.cites.org)

[41] According to the IUCN RedList http://www.iucnredlist.org/

UNEP-WCMC **technical report**

CITES source codes:

Review of CITES Annual Report data for specimens recorded using source codes C, D, F and R

UNEP WCMC

CITES Source Codes

Prepared for
The CITES Secretariat

Published February 2014

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Contents

Executive Summary

This report was produced at the request of the Secretariat to aid in the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in relation to the use of source codes C, D, F and R in CITES trade data. The report focuses on trade in live animals for commercial purposes, with an emphasis on shifts in the use of source codes and identification of any issues with CITES implementation.

Reporting:

Despite the recognised caveats of CITES trade data (including differences in the basis on which trade is reported by different Parties and differences in the way Parties apply source codes), overall reporting of source codes for trade transactions has improved considerably over time; whilst >95% of trade in live animals was of unspecified source 1975-1989, by the period 2000-2012 <1% of live animals were traded without a source, with wild-sourced and captive-bred (source C) specimens each accounting for 42% of the total trade for commercial purposes. The reporting of captive-bred and captive born (source F) live animals increased during the 1990s and has outnumbered that from the wild since 2001.

Main findings by Source:

- Captive-bred specimens (source code C) represented roughly 42% of commercial trade in live animals 2000-2012. By volume, birds and reptiles were the taxonomic groups most highly traded as captive-bred live animals for commercial purposes 2000-2012. Notable discrepancies in reporting source code C by countries of export and countries of import were detected through this analysis, with exporters regularly reporting higher levels of trade in source C.
- Source code D (Appendix-I species bred in captivity for commercial purposes) was primarily applied to trade in relation to fish and birds, and to a lesser extent reptiles. Use of source code D may merit further action, as it is erroneously used for Appendix II specimens by some Parties. There also appear to be instances where Parties are using this code for commercial trade in Appendix I listed species, but have not included a breeding operation in the CITES register.
- Source code F (born in captivity) was reported for 8% of commercial trade in live animals 2000-2012. High levels of trade in corals were recorded, representing trade in maricultured corals. An increase in trade in fish recorded as source F in recent years was also noted. As with source C, a notable discrepancy between importer- and exporter-reported quantities was noted, with exporters consistently reporting higher trade volumes.
- Ranched specimens (source code R) represented approximately 6% of commercial trade in live animals 2000-2012 and were predominantly reptiles. Use of source code R for ranching purposes is associated with exports from non-range states, according to the data analysis, and this may require further consideration and follow-up action.

Changes in use of source codes for individual taxa can be identified by developing new analytical procedures to semi-automate review of the data. Initial testing indicates that such methods do identify known problem species and so the method may be worth further exploration and refinement to support regular review of the data and early detection of potential implementation problems.

Introduction

This report presents the results of a study on the use of CITES trade data to identify instances where sudden changes in the use of source codes may be associated with issues with CITES implementation.

The report contributes to the study mandated in CITES Decision 16.63 a) ii and iii (see Box 1), as called for by the 16th meeting of the Conference of Parties to CITES, to produce a written document that can be tabled at the 27th meeting of the CITES Animals Committee, in association with the CITES Secretariat's report required under Decision 16.63 a) vi and b).

Potential problems with implementation of the Convention in relation to source codes have been highlighted for various taxonomic groups from particular countries or regions in a number of previous reports. Examples include the use of source code 'R' for birdwing butterflies from Southeast Asia[42] and source 'C' for Southeast Asian python skins[43] and other Indonesian reptiles (including Frillneck Lizard *Chlamydosaurus kingii,* Emerald Monitor *Varanus prasinus*, Timor Monitor *Varanus timorensis*, Burmese Python *Python bivittatus* and Spiny Turtle *Heosemys spinosa*)[44]. This report aims to identify additional potential implementation problems through an analysis of CITES trade data.

The first section of the report reviews information from a number of recent studies that have examined temporal changes in the use of source codes in CITES reported data. The second section provides more detail for each of the four source codes under review, based on data submitted by Parties in their annual reports to CITES and recorded within the CITES Trade Database. The final chapter explores the use of a semi-automated method for identifying sudden shifts in source codes using CITES reported data. Such a method could use CITES reported data to highlight instances where there are inconsistencies or discrepancies in the use of source codes, including potential inappropriate uses of source codes.

Box 1: Decision 16.63: Implementation of the Convention relating to captive-bred and ranched specimens

The Secretariat shall:

a) contingent on the availability of external funds, contract an appropriate expert or experts to:

   i. evaluate the concerns identified in the examples in document SC62 Doc.26, Annex, regarding trade in specimens claimed to be described from captive breeding or ranching;

   ii. **review CITES annual report data for specimens recorded using source codes C, D, F and R**;

   iii. **identify problems with CITES implementation associated with these examples**;

   [...]

[42] *UNEP-WCMC (2012). Review of trade in ranched birdwing butterflies. Prepared for the European Commission. UNEP-WCMC, Cambridge.*

[43] *ITC, TRAFFIC and IUCN (2012). The trade in Southeast Asian python skins. International Trade Centre,*

TRAFFIC International and World Conservation Union. Geneva, Switzerland.

[44] *Nijman, V. and Shepherd, C. R. (2009). Wildlife trade from ASEAN to the EU: Issues with the trade in captive-bred reptiles from Indonesia. TRAFFIC Europe Report for the European Commission, Brussels, Belgium.*

Chapter 1

Review of trends in source codes

This chapter outlines broad findings on the use of source codes that may be associated with problems in CITES implementation for captive-bred and ranched specimens. The report includes information from recent reports that examined CITES trade data to assess trends over time and provides new analyses of trade by source for recent years (2000-2012).

Variability in reporting of CITES Data

The CITES Trade Database is a unique and valuable resource to assist Parties in the regulation, management and review of international trade in CITES-listed plants and animals.[45] However, the use of CITES data to identify problems with implementation of the Convention can be complicated by the non-submission or late submission of CITES annual reports by Parties. Submission rates are variable – with many Parties continuing to submit reports after the deadline. In addition, the official annual report submission deadline may be 18 months after the trade takes place, by which time it may be difficult to implement action, even if potential difficulties with implementation of the Convention are identified.

Differences in reporting practices between countries of import and countries of export also mean that quantities reported in trade may differ depending on whether reporting is on the basis of permits issued or actual trade, and this may influence the importance of any discrepancies identified.

Interpretation of the provisions of the Convention may also differ between Parties and this may be reflected in their use of and reporting of source codes (see Case Study 1 in Chapter 2). A full list of source codes and their definitions are provided in Annex 2.

Reporting of source codes does appear to have improved over time since the start of the Convention. For instance, a comparison of source code reporting for commercial trade in live animals across three time periods (the early years of the Convention 1975-1989, mid period 1990-1999 and recent years 2000-2012) indicates that reporting has improved considerably (Figure 1). In recent years (2000-2012), wild-sourced and captive-bred (source C) specimens each accounted for 42% of the total trade in live animals traded for commercial purposes, whereas < 1% of live animals were traded without a source specified.

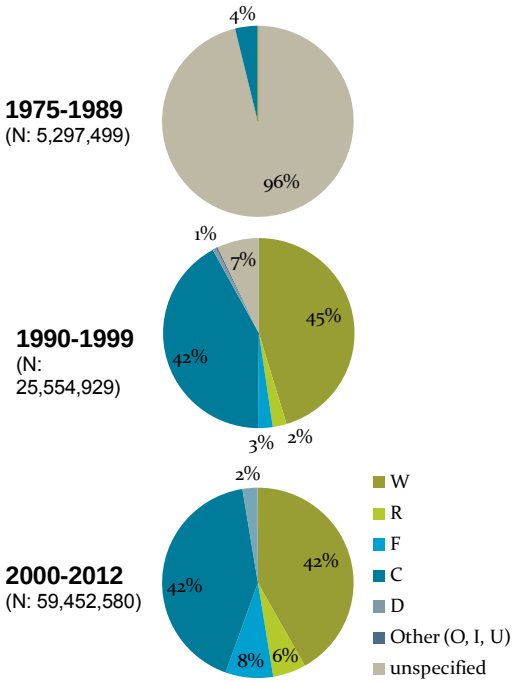


Figure 1: Proportion of commercial trade in live animals (all Appendices) by source, reported by countries of export over three time periods.

Trends in sources of specimens over time

The sources reported in trade for both Appendix I and Appendix II animals have changed over time. In the early years of the Convention, the majority of live animals in trade were either wild-sourced or

[45] *See McGough in CITES at 40: Perspectives, trade patterns and future prospects. CITES CoP16 Inf. 35.*

transactions were reported without a source specified. The reporting of captive-bred and captive born specimens increased during the 1990s and now outnumbers that from the wild (Figure 2).

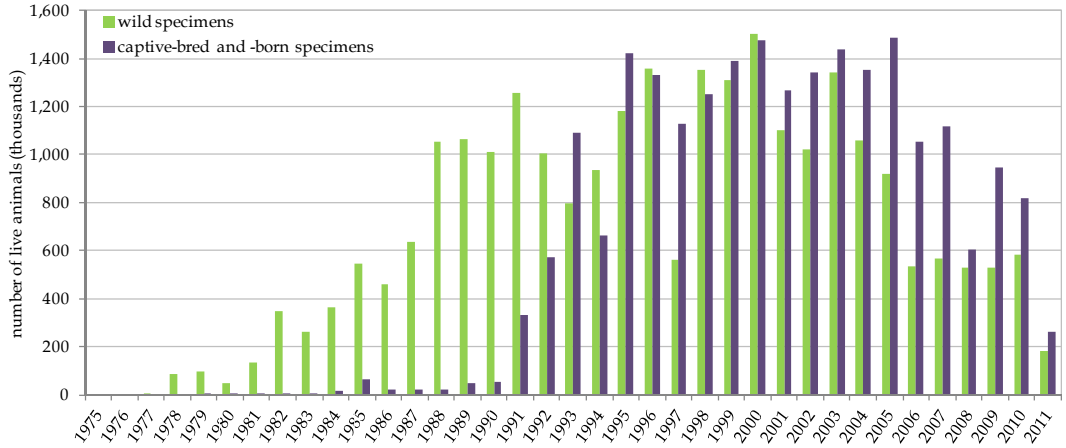
A more detailed analysis of data on global trade in Appendix II listed birds (1996-2010) indicates that a general shift in the source of live birds from wild exports to captive production since the mid 2000's coincided with a change in the geographic distribution of exporters.[46] In 1996, 23 countries reported commercial exports of ≥50 live wild birds; a wide range of countries were involved in the trade, with clusters in West Africa, South America and South East Asia (Figure 3). In 2010, only eight countries reported commercial exports of ≥50 live wild birds. In comparison, commercial exports of ≥50 source C birds were reported by 19 Parties in 1996; in 2010, this remained relatively constant (18 Parties), with many facilities located in consumer countries in Europe and North America (Figure 3).

In an analysis of Appendix I trade[47], the following was found in relation to recording of source codes:

- Source C specimens accounted for the majority of trade in Appendix I species. Trade in captive-produced (sources C, D and F) live birds, reptiles and fish increased over time, with the majority of trade dominated by relatively few taxa.
- There appeared to be inconsistencies with the use of source code D: twelve Parties issued permits for direct trade in animal species using source code D that did not have an operation included within the CITES register for the species concerned.
- There are inconsistencies in reporting between exporter- and importer reported data. For instance, whilst importer data would suggest that 70% of trade (1128 individuals) over the period 1996-2010 was in wild-sourced amphibians, exporter data suggested that > 90% of trade (332 individuals) was from captive sources.

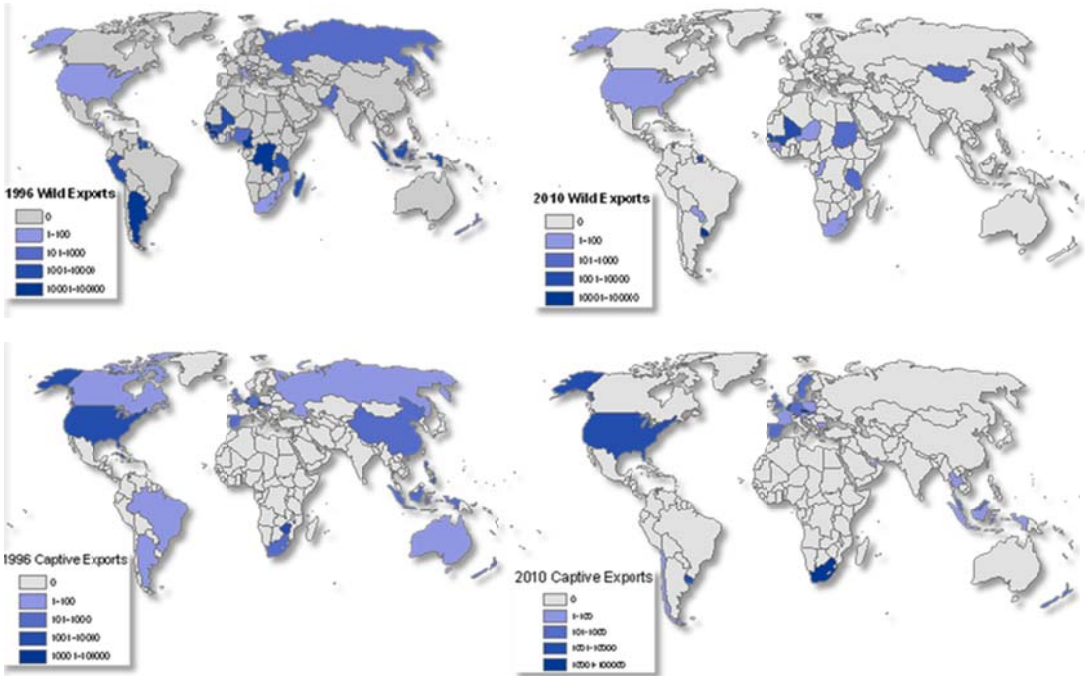
[46] *CITES Secretariat (2012). CITES Trade: Recent trends in international trade in Appendix II-listed species (1996-2010). Prepared by UNEP-WCMC, Cambridge. CoP16 Inf. 32.*

[47] *UNEP-WCMC (2013). CITES Trade – a global analysis of trade in Appendix I-listed species. Prepared for the Bundesamt für Naturschutz BfN. UNEP-WCMC, Cambridge.*



Source: CITES Trade Database (2012). The number of live animals in CITES trade (UNEP Yearbook Figure 19)

Figure 2: Trade in captive-bred and -born specimens versus wild specimens of live, CITES-listed mammals, birds, reptiles, and amphibians, 1975-2011, as reported by exporting countries. (Wild trade includes trade reported as source W, U and no source code specified).



Source: CITES Secretariat (2012). CITES Trade: Recent trends in international trade in Appendix II-listed species (1996-2010). Prepared by UNEP-WCMC, Cambridge. CoP16 Inf. 32

Figure 3: Top exporting countries of live wild-sourced (above) and captive-sourced (below) Appendix II birds in 1996 (left) versus 2010 (right). (Captive exports include trade reported as sources C, D and F).

Chapter 2

Overview of use of source codes

In this chapter an overview of commercial trade in live animals (all Appendices) is provided both at the level of transactions and as quantities in trade, as a means of identifying indications of trends but also potential discrepancies.

An overview of commercial trade transactions in live animals reveals that the use of source codes varies considerably by taxonomic group (Table 1). The patterns of trade from different sources also varies according to whether trade transactions (Table 1) or quantities in trade (Table 2) are considered for birds, reptiles and amphibians. For birds, the majority of transactions are from captive-bred sources, whereas the greatest quantities are from the wild. For reptiles, the opposite pertains, the majority of transactions are from the wild, whereas source C represents the main source code when quantities are analysed. For amphibians, whilst the majority of transactions are wild, quantities are evenly split between captive-bred and wild.

Table 13: Number and proportion of transactions recorded for live mammals, birds, reptiles and amphibians exported for commercial purposes, by source code, as reported by exporters, 2000-2012.

	Mammals		Birds		Reptiles		Amphibians		Total
Source code	No.	%	No.	%	No.	%	No.	%	
C	5878	65%	82,381	64%	27,672	24%	2580	39%	118,511
D	6	~0%	9814	8%	1366	1%			11,186
F	871	10%	3924	3%	7822	7%	296	5%	12,913
I	9	~0%	15	~0%	48	~0%	1	~0%	73
O	2	~0%	18	~0%	8	~0%			28
R	51	1%	573	~0%	7890	7%	49	1%	8563
U			21	~0%	8	~0%	1	~0%	30
W	2140	24%	32,037	25%	68,773	61%	3559	54%	106,509
No source specified	32	~0%	69	0%	62	~0%	63	1%	226
Total	**8989**		**128,852**	**100**	**113,649**	**100**	**6549**	**100**	**258,039**

Table 14: Quantity and proportion of live mammals, birds, reptiles and amphibians exported for commercial purposes, as reported by exporters, 2000-2012.

	Mammals		Birds		Reptiles		Amphibians		Total
Source code	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
C	364,550	74%	2,913,066	35%	9,766,505	53%	239,353	46%	13,283,474
D	9	~0%	15,611	~0%	550,852	3%		~0%	566,472
F	81,748	17%	49,963	1%	374,214	2%	11,206	2%	517,131
I	19	~0%	74	~0%	34,756	~0%	1	~0%	34,850
O	2	~0%	18	~0%	314	~0%		0%	334
R	13,801	3%	24,237	~0%	2,827,254	15%	6580	1%	2,871,872
U		0%	701	~0%	228	~0%	10	~0%	939
W	33,127	7%	5,285,545	64%	4,886,962	26%	250,628	48%	10,456,262
No source specified	912	~0%	3815	~0%	4061	~0%	18,118	3%	26,906
Total	**494,168**		**8,293,030**		**18,445,146**		**525,896**		**27,758,240**

Discrepancies in reporting source – analysis by source code

Trade in source codes C, D, F and R is analysed in turn on the basis of direct trade in live animals recorded in the CITES Trade Database for commercial purposes (purpose code T). The following provides details on discrepancies in reporting by countries of export and countries of import on the basis of a) transactions; b) quantities of live animals exported over time; and c) numbers of species in trade.

1. Source C

In all four taxonomic groups analysed, the number of transactions of source C specimens recorded by countries of export exceeds that recorded by countries of import (Table 3). These differences may be due to trade that did not occur, for instance in cases where the country of export reports on the basis of permits issued as opposed to actual trade, or may reflect non-reporting of imports by some Parties.

Table 15: Number of animal transactions recorded as source C for the four main taxonomic groups in trade, 2000-2012.

Group	Exporter	Importer
Mammals	5878	2962
Birds	82,381	50,048
Reptiles	27,672	20,948
Amphibians	2580	2343
Fish	2229	1293
Corals	780	3134
Other	3715	4629

Over the period 2000-2012, the pattern of exporter-reported values being higher than importer-reported values is again seen when actual quantities in trade are analysed (Figure 4). This pattern is evident in all years with the exception of 2008.

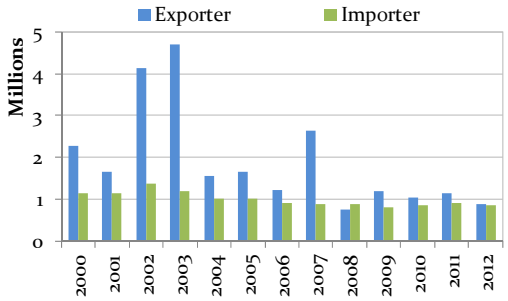


Figure 4: Direct exports of live animals recorded as source code C, 2000-2012.

A difference in the number of taxa recorded in trade by countries of export and import is also apparent from the trade data. Countries of export reported higher numbers of mammal and bird species in trade, whilst countries of import reported higher numbers of reptile and amphibian species in trade (Table 4).

Table 16: Number of animal taxa traded as source code C, 2007-2012.

Group	Exporter	Importer
Mammals	225	165
Birds	2637	1422
Reptiles	866	897
Amphibians	176	185

The species for which exporter- and importer-reported quantities differed most were *Agalychnis callidryas* and *Crocodylus niloticus.* Details of species showing a notable discrepancy are provided in Table 5. Further details on the species most commonly traded as source code C are provided in Table 17, Annex 3 on the "top" species in trade.

Table 17: Live animals traded as source code C for commercial purposes where the importer-reported quantity exceeded 500 live animals and was more than double the exporter-reported value.

Taxon	Exporter	Importer	Difference
Macaca nemestrina	49	1000	-951
Barnardius zonarius	1169	4093	-2924
Chalcopsitta cardinalis	232	1460	-1228
Purpureicephalus spurius	285	845	-560
Gracula religiosa	32	788	-756
Platycercus spp.	40	540	-500
Agapornis spp.	20	500	-480
Crocodylus niloticus	630	28,239	-27,609

Taxon	Exporter	Importer	Difference
Varanus exanthematicus	300	8264	-7964
Heosemys grandis	221	2172	-1951
Heosemys annandalii	208	1850	-1642
Varanus niloticus	100	1760	-1660
Python molurus	9	1634	-1625
Geochelone platynota	239	669	-430
Kinixys homeana	50	705	-655
Agalychnis callidryas	28,991	59,741	-30,750

Countries of import and export both reported trading a number of species which were not reported by the trading partner (see Tables 6 and 7 for the main taxa).

Table 18: Species recorded in trade as source C by importers only (for species traded at volumes ≥100 live). Trade recorded at a higher taxonomic order (e.g. *Iguana* spp.) has been removed.

	Importer		Importer
Paguma larvata	212	*Cuora mouhotii*	230
Chlamydotis undulata	322	*Crocodylus siamensis*	152
Parotia carolae	300	*Calyptocephalella gayi*	300
Estrilda caerulescens	130	*Ranitomeya ventrimaculata*	155
Pionus sordidus	110	*Ranitomeya fantastica*	144
Graptemys ouachitensis	2650	*Ranitomeya imitator*	143
Chamaeleo senegalensis	925		
Rhacodactylus ciliatus	622		
Chamaeleo gracilis	415		

Table 19: Species recorded in trade as source C by exporters only (for species traded at volumes ≥100 live). Trade recorded at a higher taxonomic order (e.g. *Iguana* spp.) has been removed.

	Exporter		Exporter
Chlorocebus pygerythrus	200	*Amyda cartilaginea*	650
Chlorocebus aethiops	121	*Ctenosaura quinquecarinata*	604
Pyrrhura egregia	410	*Python bivittatus*	144
Cyanoramphus malherbi	409	*Malayemys subtrijuga*	140
Pyrrhura viridicata	100	*Cordylus depressus*	104
Graptemys hybrid	3000	*Dendrobates mysteriosus*	108

2. *Source D*

For animals, source D is used for Appendix-I species bred in captivity for commercial purposes in operations included in the CITES register (see full source code definitions in Annex 2). Over the period 2000-2012, a small number of mammal transactions, a notable number of bird transactions (9814, based on exporter data) and a small proportion (1%) of the reptile trade transactions were reported as source D (Table 8).

While the number of source D transactions recorded by importers and exporters was equivalent for mammals, the number of transactions recorded by exporters was higher than that reported by importers for birds and reptiles whereas importers reported a higher number of transactions for fish. Again, this could indicate differences in the basis of reporting by trading partners, but

it could also indicate incorrect reporting of source. For example, there were 285 transactions where source D was used for species listed in Appendix II.

When quantities of live animals are analysed over time, exporter-reported values are again higher than importer-reported values (Figure 5).

Table 20: Number of animal transactions recorded as source D, 2000-2012.

	Exporter	Importer
Mammals	6	6
Birds	9814	2665
Reptiles	1366	908
Fish	10,041	11,876
Other	0	15

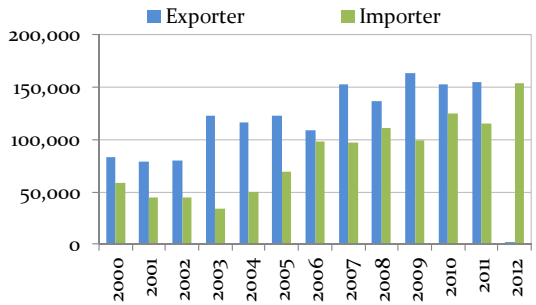


Figure 5: Direct exports of live animals recorded as source code D, 2000-2012.

Relatively few species (mainly birds) were recorded in trade as source code D (Table 9). There was a tendency for exporters to report more species in trade as source D than importers. Further details on the top animal species recorded in trade as source D are provided in Table 18, Annex 3.

Table 21: Number of Appendix-I animal species traded with source code D, 2000-2012.

	Exporter	Importer
Mammals	0	4
Birds	16	11
Reptiles	8	4
Fish	2	2

Some species listed in Appendix II were also recorded as source D: two mammal, eight bird, four reptile and 15 coral species. While the trade in mammals and corals appears to be reporting errors, five of the Appendix II bird species and two reptile species are included within Annex A of the EU Wildlife Trade Regulations. This may indicate a discrepancy in the way EU Member States are applying source code D in terms of Annex A species that are included within CITES Appendix II.

For Appendix I specimens, commercial trade should only occur for specimens bred in captivity where the captive breeding facility is listed in the Secretariat's register (in accordance with Resolution Conf. 12.10 (Rev. CoP15). In an analysis of Appendix I trade data from 2000 to 2010, it was noted that twelve Parties appear to have issued permits for direct trade in animal species using source code D, although the species/country combination did not have an operation included within the CITES register for the species concerned.[48]

A more recent comparison of the species recorded in trade as source D and the species listed on the CITES website as having a CITES register (based on data on http://www.cites.org/eng/common/reg/cb/summary.html as of 6 February 2014), provides details on the species where there may be potential problems with misreporting of source code D for species that do not have CITES registers. In total, two mammal, twelve bird, four reptile and one Appendix I fish species (as well as trade in higher taxa and hybrids) were recorded in trade as source D, but do not have a current CITES registered facility in the exporting country (Table 10).

[48] *UNEP-WCMC (2013). CITES Trade – a global analysis of trade in Appendix I-listed species. Prepared for the Bundesamt für Naturschutz BfN. UNEP-WCMC, Cambridge.*

Table 22: Appendix I animal species recorded in trade as source D over the period 2007-2012 (live, for commercial purposes) for which there is no current CITES registered facility in the exporting country.

Class	Taxon	Exporting Country	Exporter	Importer
Mammals	*Cephalophus* spp.	Nigeria		4
	Neofelis nebulosa	Republic of Korea		100
	Physeter macrocephalus	Denmark		12
Birds	*Amazona auropalliata*	Italy	7	
	Amazona barbadensis	Italy	2	
	Amazona leucocephala	Italy	2	
	Amazona oratrix	Germany	2	
		Italy	2	
	Ara hybrid	Spain		3
	Ara macao	Spain		1
	Cacatua moluccensis	United States		2
	Caloenas nicobarica	South Africa	32	
	Falco hybrid	Austria		12
		Belgium		5
		Kuwait		61
		Saudi Arabia	48	
		Slovenia	7	
		United Arab Emirates		3
	Falco peregrinus	Belgium	4	
		Georgia		1
		Italy	4	
		Peru	30	3
		Qatar	2	
		Slovenia	8	
	Falco rusticolus	Austria		1
		Kuwait		1
		Serbia	5	
	Haliaeetus albicilla	Germany	1	1
	Primolius couloni	Germany	3	
		Peru	12	

Class	Taxon	Exporting Country	Exporter	Importer
	Vultur gryphus	Peru	3	
Reptiles	*Acrantophis dumerili*	Germany	4	
	Crocodylus moreletii	Mexico	23	23
	Sanzinia madagascariensis	Germany	2	
	Tomistoma schlegelii	Malaysia	8	
	Varanidae spp.	Belgium		1
Fishes	*Scleropages formosus*	China		11
		Hong Kong SAR		24
		Japan		8
		Vietnam		200

3. *Source F*

Trade in source code F represents trade in "Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof" (Resolution Conf. 12.3 (Rev. CoP16). Corals were the taxonomic group most highly traded from this source (based on number of transactions) (Table 11). Trade in source F in the context of corals is typically used to refer to maricultured specimens.

Table 23: Number of animal transactions recorded as source F, 2000-2012.

	Exporter	Importer
Mammals	871	666
Birds	3924	2072
Reptiles	7822	6003
Amphibians	296	140
Corals	73,789	40,017
Other	2620	3040

In terms of actual quantities traded, trade in source F has increased over the period 2000-2012, with exporter-reported quantities showing a particular increase in 2010, mainly due to high volumes of live fish being exported (Figure 6). Quantities recorded by countries of export were consistently higher than those reported by countries of import over this period.

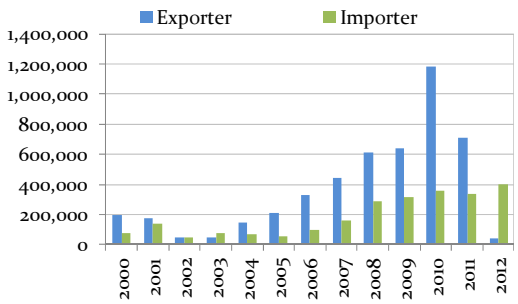


Figure 6: Direct exports of live animals recorded as source code F, 2000-2012.

Trade in source F was recorded for a wide range of taxa (Table 12). Notable numbers of species were recorded for birds, reptiles, fish and corals (Anthozoa). Details on the species most commonly traded as source code F are provided in Table 19, Annex 3.

Table 24: Number of animal species traded with source code F, 2007-2012.

	Exporter	Importer
Mammals	60	45
Birds	431	314
Reptiles	466	565
Amphibians	93	52
Fish	39	53
Arachnida	3	
Annelida	7	6
Mollusca	25	33
Anthozoa	330	711
Hydrozoa	5	4

4. Source R

Ranching generally refers to the collection of eggs or juveniles from the wild, to be then transferred to controlled raising facilities, where the wild-caught specimens are grown for commercial purposes.[49] The CITES definition of ranching is provided in Resolution Conf. 11.16 (CoP15) 'Ranching and trade in ranched specimens of species transferred from Appendix I to Appendix II'. It defines the term 'ranching' as the rearing in a controlled environment of specimens taken from the wild.

Unlike the patterns for source codes C, D and F where exporter-reported transactions regularly exceeded importer-reported transactions, in the case of trade in ranched specimens, importer-reported trade transactions were higher for birds, reptiles and amphibians (Table 13).

Table 25: Number of direct trade transactions recorded as source R, 2000-2012.

	Exporter	Importer
Mammals	51	36
Birds	573	689
Reptiles	7890	8370
Amphibians	49	59
Arthropods	594	740
Other	474	344

The quantity of live animals traded as source R for commercial purposes has been variable over the period 2000-2012 (Figure 7). In several years importer-reported quantities exceed those reported by exporters, indicating a potential discrepancy in reporting source code. This discrepancy could indicate a difference in the way trading partners are recording source R, although in some cases they may be explained by missing annual reports for key exporting countries.

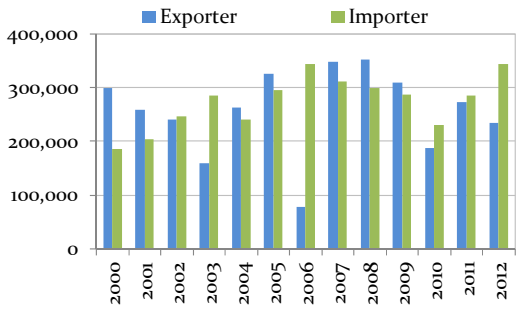


Figure 7: Direct exports of live animals recorded as source code R, 2000-2012.

As indicated above, the source code "R" is used by Parties for a wide range of taxa, but primarily in the context of reptile species (Table 14). Details on the species most commonly traded as source code R are provided in Table 20, Annex 3.

Table 26: Number of species traded with source code R as

[49] *UNEP-WCMC (2007). Review of trade in Ranched Birdwing Butterflies. A report produced for the European Commission. UNEP-WCMC, Cambridge. http://ec.europa.eu/environment/cites/pdf/review_butterflies.pdf*

recorded by exporters and importers, 2007-2012.

	Exporter	Importer
Mammals	9	8
Birds	20	34
Reptiles	131	135
Amphibians	8	1
Fish	4	2
Arachnida	6	7
Insects	12	13
Annelida	1	
Mollusca	1	6
Anthozoa	4	133
Total	**196**	**339**

As “ranching” refers to “specimens taken from the wild for ranching purposes” it might be expected that the species occurs naturally in the wild in the country of export. An analysis of those taxa recorded in trade was conducted to determine if all ranched specimens were native to the countries of export. Species that were recorded as being traded as source R, and where the exporter- or importer- reported quantity was greater than or equal to 100 live animals were checked against distribution information contained in Species+[50] to determine whether the species was indeed native to the exporting country. In total, four bird species, 12 reptiles, three fish and one invertebrate species were recorded as being traded as source R but do not appear to occur in the exporting country in the wild (Table 15).

[50] http://www.speciesplus.net/species

Table 27: Species recorded in trade as source R where the species does not occur in the exporting country[51] (2007-2012, direct trade in live animals traded for commercial purposes, where the exporter- or importer-reported quantity was ≥100).

Class	Taxon[52]	Exporting Country	Exporter	Importer
Birds	*Cyanoramphus novaezelandiae*	Czech Republic		100
	Platycercus eximius	Czech Republic		150
	Psephotus haematonotus	Czech Republic		100
		Russian Federation		100
Reptiles	*Chamaeleo calyptratus*	Syrian Arab Republic	500	300
	Chamaeleo gracilis	Tajikistan		500
	Chamaeleo senegalensis	Tajikistan		850
	Furcifer pardalis	United States		100
	Geochelone elegans	Syrian Arab Republic	200	
	Kinixys homeana	Chad		100
	Python regius	Belgium		150
		Tajikistan		560
		United States		273
	Python reticulatus	Ghana		200
	Uromastyx geyri	Benin	100	215
		Ghana		500
	Uromastyx ocellata	Syrian Arab Republic	200	
	Uromastyx ornata	Syrian Arab Republic	600	400
	Varanus exanthematicus	Tajikistan		250
Fish	*Acipenser baerii*	Italy	20,000	30,000
	Acipenser gueldenstaedtii	Italy	50,000	
	Hippocampus reidi	Sri Lanka		200
Invertebrates	*Pandinus imperator*	Tajikistan		5050

[51] *Based on distribution data in Species+.*

[52] *Trade reported at higher taxon level has not been included.*

Chapter 3

Analysis to identify shifts in source

This chapter describes the results of a preliminary analysis conducted to identify potential shifts in reported source codes and related trends in trade patterns. Case studies emanating from this analysis are provided in Annex 1.

A preliminary analysis was conducted on a subset of CITES trade data comprising direct trade in live reptiles over the period 1996-2012, as reported by exporters. In total, a dataset of 272,520 transactions containing 1226 species/source combinations (e.g. *Iguana iguana*, wild-sourced) was analysed. For this dataset, a cumulative sum analysis (CUSUM) was applied as a means for detecting change. The goal was to identify species/source combinations where a noticeable change in source over time was detected. Species/source combinations with a maximum cumulative sum of over 10,000 were selected for further scrutiny. In total, 73 species/source combinations met the criteria for selection (Maximum CUSUM >10,000 or minimum CUSUM < -10,000), indicating that at some point over the period analysed, a change in source codes occurred.

These 73 species/source combinations were then analysed in more detail, to identify case studies with a potential shift in source codes and related patterns in trade. Case studies providing a more in-depth analysis of seven species are provided within Annex 1. These highlight species where reporting of trade in a particular source rapidly increased or decreased, sometimes associated with a shift or switch from another source code. All case studies relate to direct exports in live reptiles traded for commercial purposes (purpose T).

Examples of species/source combinations where a change in source codes was detected through this process included *Stigmochelys pardalis*, which showed a shift from wild-sourced trade to source C, including a shift to other exporters; and the well-known case of *Testudo horsfieldii*, where a number of shifts in reported source codes are evident over the period analysed.

To identify additional species that may be of concern within other taxonomic groups or traded as other parts and derivatives (e.g. skins, etc.), the methodology applied or similar statistical techniques may merit further exploration.

Annex 1: Case Studies

Case study 1: Trade in live *Stigmochelys pardalis* (Leopard tortoise)

Trade in live *Stigmochelys pardalis* was predominantly wild-sourced until the early 2000's, when there was a notable shift to source C; exports of specimens reported as source C showed a sharp increase from 2005 onwards, with quantities considerably exceeding those of wild-sourced specimens exported during the previous decade (Figures 1a and 1b). The majority of exporting countries traded specimens that were reportedly of primarily one source, therefore the trends observed in Figures 1a and 1b are indicative of a shift in trade between exporting countries.

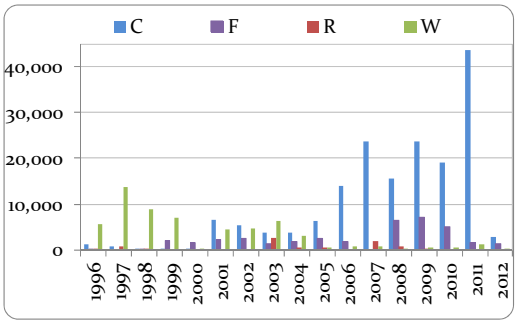


Figure 1a: Direct exports of live *Stigmochelys pardalis* as reported by exporting countries, by source, 1996-2012.

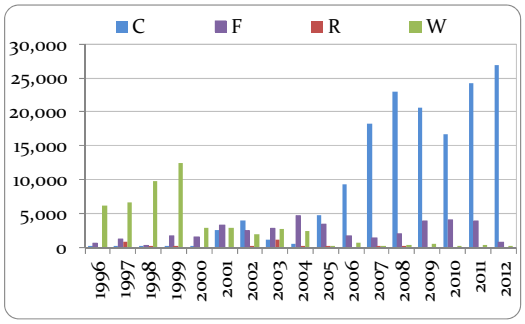


Figure 1b: Direct exports of live *Stigmochelys pardalis* as reported by importing countries, by source, 1996-2012.

Examining trade reported by individual exporting countries reveals that of the 11 countries that reported direct exports of live, wild-sourced *S. pardalis* over the period 1996-2012 (according to exporter-reported data), an apparent shift from wild-sourced to source C trade was observed in three: Kenya, Mozambique and Zambia. Trends in the source of live exports over time from the latter two countries, which together accounted for 58% of live *S. pardalis* exports over the period 1996-2012 (10% and 48%, respectively), are shown in Figures 2a and 2b.

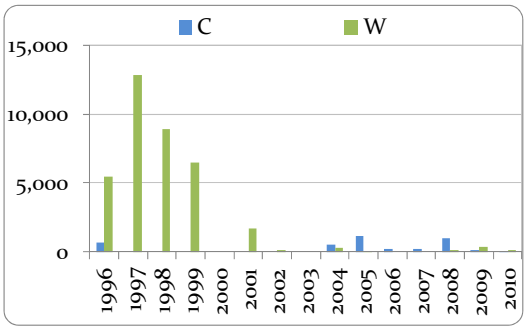


Figure 2a: Exporter-reported direct exports of live *Stigmochelys pardalis* from Mozambique reported as source C and W, 1996-2010 (no annual reports have yet been received for 2011 or 2012).

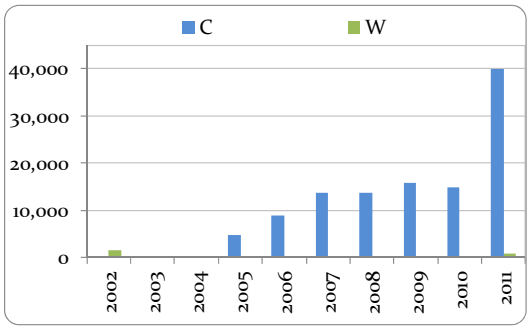


Figure 2b: Exporter-reported direct exports of live *Stigmochelys pardalis* from Zambia reported as source C and W, 1996-2011.

Case study 2: Trade in live *Podocnemis unifilis* (Yellow-spotted sideneck turtle)

The majority of the trade in live *Podocnemis unifilis* over the period 1996-2012 was in source R specimens; trade levels were very low prior to 2006 and both importer- and exporter reported trade increased from 2007-2012 (Figures 1a and b).

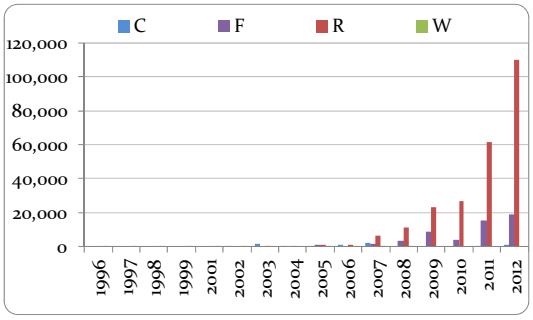


Figure 1a: Direct exports of live *Podocnemis unifilis* as reported by exporting countries, by source, 1996-2012.

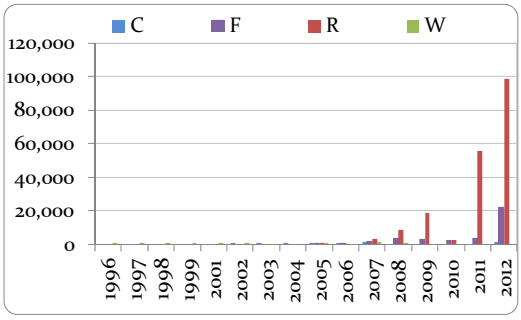


Figure 1b: Direct exports of live *Podocnemis unifilis* as reported by importing countries, by source, 1996-2012.

The main exporter of live *P. unifilis* was Peru; the country's exports accounted for 97% of trade over the period 1996-2012. The species was initially traded in relatively low numbers of source C individuals from 2002 to 2004, with trade in source R rapidly increasing from 2007 onwards. Trade in source F increased too over the same time period, however at a much slower rate (Figure 2).

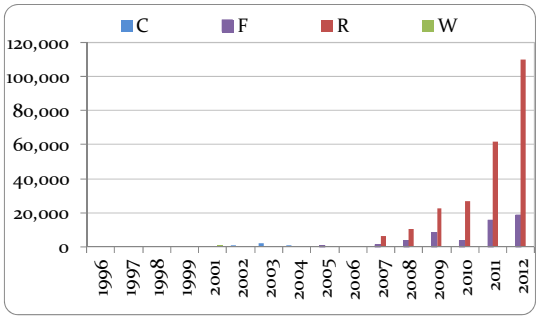


Figure 2: Exporter-reported direct exports of live *Podocnemis unifilis* from Peru, by source, 1996-2012.

Case study 3: Trade in live *Testudo graeca* (Spur-thighed tortoise)

Trade in live *Testudo graeca* from 1996-2012 was dominated by source C individuals, which increased rapidly in the early to mid 2000's, following a couple of years when source F specimens had been reported at higher levels. Some trade in wild-sourced specimens was also reported and trade data shows a sudden increase in source R specimens in 2011 (Figures 1a and b).

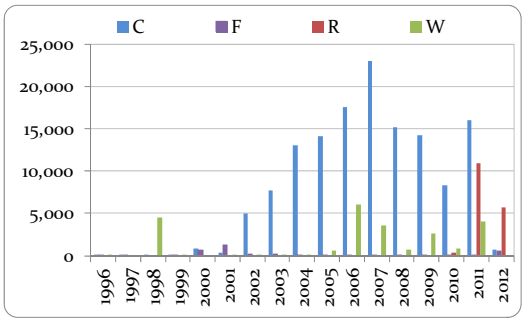


Figure 1a: Direct exports of live *Testudo graeca* as reported by exporting countries, by source, 1996-2012.

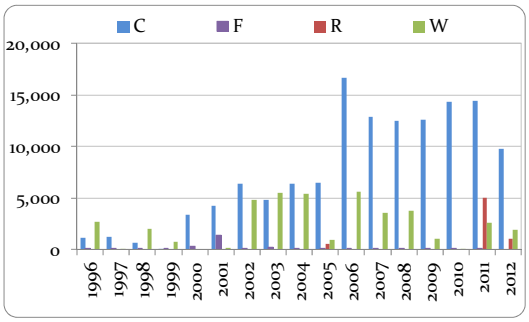


Figure 1b: Direct exports of live *Testudo graeca* as reported by importing countries, by source, 1996-2012.

Syria and Jordan were the main exporters of live *T. graeca* over the period 1996-2012. All trade in source R specimens 2010-2012 was exported from Syria, which had previously reported only small numbers of exports of source C and wild-sourced individuals (Figure 2a). Jordan, the other major exporting country for *T. graeca*, traded mostly captive-bred specimens since the early 2000's, with smaller numbers of wild-sourced specimens also reported in trade (Figure 2b). The source F specimens reported in trade (Figure 1a) were mainly exported by the Ukraine, and in 2012, by Syria.

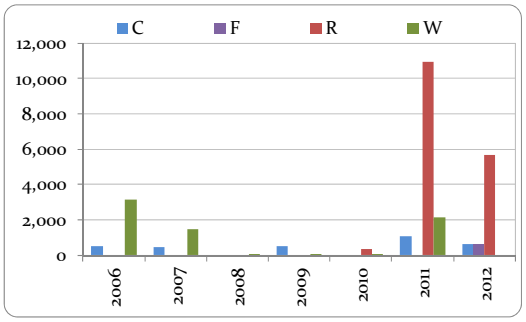


Figure 2a: Exporter-reported direct exports of live *Testudo graeca* from Syria reported as sources C, F, R and W, 1996-2012 (no trade was reported 1996-2005).

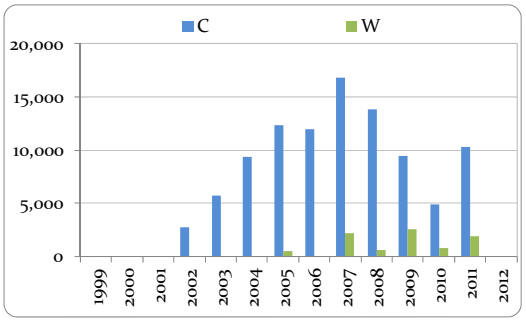


Figure 2b: Exporter-reported direct exports of live *Testudo graeca* from Jordan reported as source C and W, 1999-2012 (no trade was reported 1996-1998).

Case study 4: Trade in live *Testudo horsfieldii* (Afghan tortoise)

A large proportion of the trade in live *Testudo horsfieldii* over the period 1996-2012 was in wild-sourced specimens, with trade in sources F and R gradually increasing since the early 2000's; some source C specimens were also traded (Figures 1a and b).

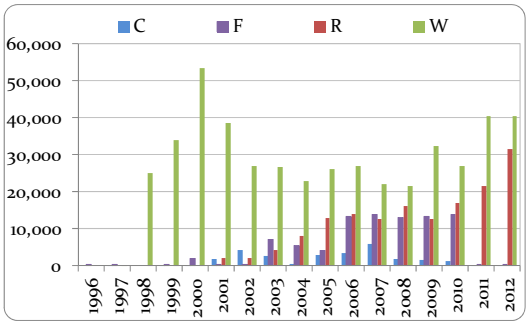


Figure 1a: Direct exports of live *Testudo horsfieldii* as reported by exporting countries, by source, 1996-2012.

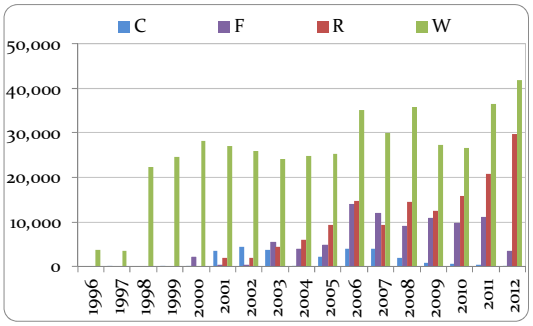


Figure 1b: Direct exports of live *Testudo horsfieldii* as reported by importing countries, by source, 1996-2012.

The main exporters of live *T. horsfieldii* from 1996-2012 were Kazakhstan, Uzbekistan and Ukraine. Kazakhstan exported 35,000 wild-sourced specimens in 2000, and 6000 specimens in 2001, but no notable exports were reported from 2002-2012. Trade from Ukraine consisted mainly of source F and source C specimens; trade in source F specimens increased sharply in 2006 and levels remained high until 2010 (annual reports have not yet been received for 2011 or 2012) (Figure 2a). Ukraine also reported direct exports of wild-sourced specimens, however, as the species is not believed to be native to the country[53], this trade may represent re-exports from other other range states. Exports of *T. horsfieldii* from Uzbekistan were primarily wild-sourced and source R specimens; while trade in both source codes increased over time, exports of source R increased more steeply since the early 2000's than those of wild-sourced specimens (Figure 2b).

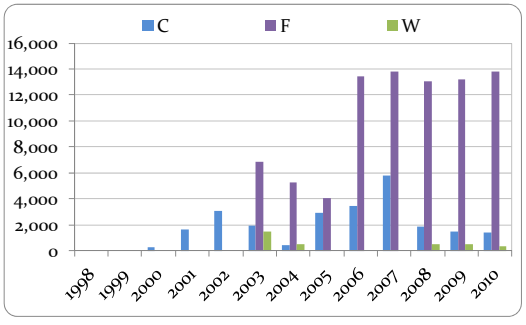


Figure 2a: Exporter-reported direct exports of live *Testudo horsfieldii* from Ukraine reported as sources C, F and W, 1998-2010 (Annual reports for 2011-2012 not yet received).

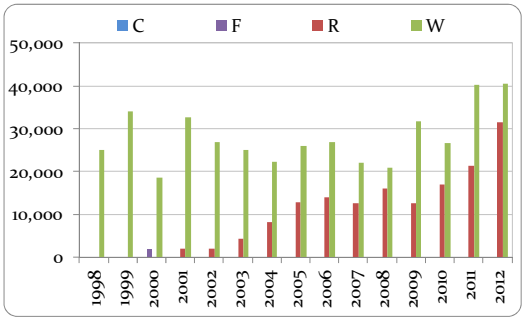


Figure 2b: Exporter-reported direct exports of live *Testudo graeca* from Uzbekistan reported as sources C, F, R and W, 1998-2012.

[53] *Bonin, F., Devaux, B., & Dupré, A. (2006). Turtles of the world. London, UK: A&C Black.*

Case study 5: Trade in live *Graptemys pseudogeographica* (False map turtle)

The majority of trade in live *Graptemys pseudogeographica* over the period 2006-2012 was in wild-sourced specimens, with some trade in source C specimens. According to exporter-reported data, there was a decline in wild-sourced trade from 2007 to 2012; importers reported an increase in source C trade over the period 2010-2012 (Figures 1a and b).

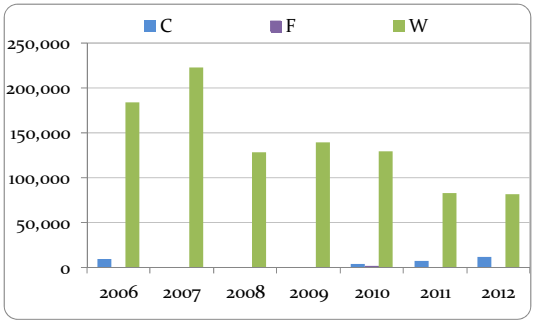


Figure 1a: Direct exports of live *Graptemys pseudogeographica* as reported by exporting countries, by source, 2006-2012 (no trade was reported 1996-2005).

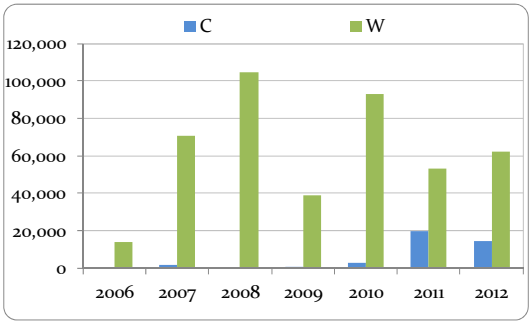


Figure 1b: Direct exports of live *Graptemys pseudogeographica* as reported by importing countries, by source, 1996-2012 (no trade was reported 1996-2005).

The two main exporters of live *G. pseudogeographica* over the period 2006-2012 were China and the United States. China only exported source C specimens (it is not a range state) and trade increased every year from 2009 to 2012 (Figure 2a). The United States exported primarily wild-sourced individuals and exports declined 2009-2012 (Figure 2b). These data may highlight a potential shift both in exporter and source code, although the volumes traded by the two main exporters are different orders of magnitude.

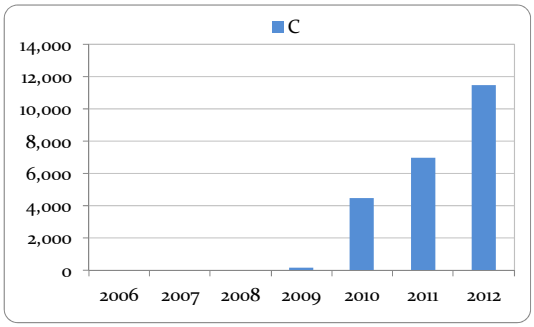


Figure 2a: Exporter-reported direct exports of live *Graptemys pseudogeographica* from China reported as source C, 2006-2012 (no trade was reported 1996-2005).

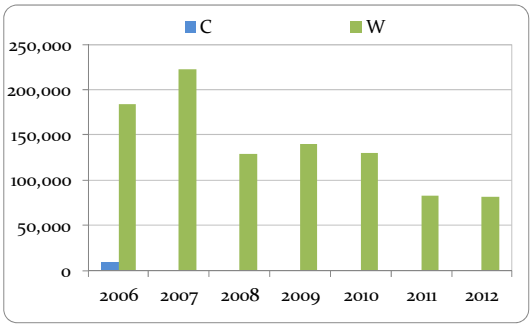


Figure 2b: Exporter-reported direct exports of live *Graptemys pseudogeographica* from United States reported as sources C and W, 2006-2012 (no trade was reported 1996-2005).

Case study 6: Trade in live *Ptyas mucosus* (Common rat snake)

Trade in live *Ptyas mucosus* over the period 1996-2012 was in wild-sourced, source C and R specimens. There was a large spike in source C trade in 2011, according to both importer and exporter reported data; importers reported even higher figures for 2012 (Figures 1a and b).

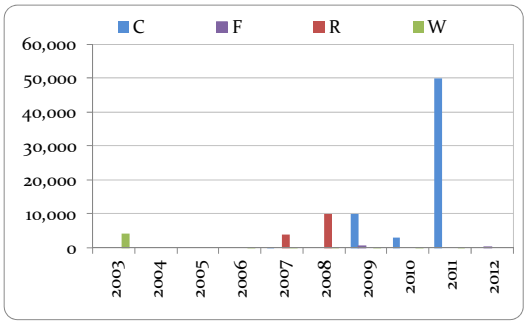


Figure 1a: Direct exports of live *Ptyas mucosus* as reported by exporting countries, by source, 2003-2012 (no trade was reported 1996-2002).

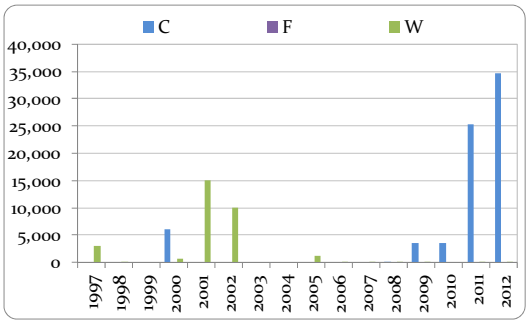


Figure 1b: Direct exports of live *Ptyas mucosus* as reported by importing countries, by source, 1996-2012 (no trade was reported in source R specimens).

The two main exporters of live *P. mucosus* were Lao People's Democratic Republic (Lao PDR) and Indonesia. Lao PDR reported exports for this species 2007-2009 and there was an apparent change in source code, with 4000 and 10,000 source R specimens exported in 2007 and 2008, respectively, but then 10,000 source C specimens exported in 2009 (annual reports from Lao PDR 2010-2012 have not yet been received) (Figure 2a). Exports of *P. mucosus* from Indonesia began in 2009 and were recorded as source F, then switched to source C and increased sharply from 3000 specimens in 2010 to 50,000 in 2011 (Figure 2b).

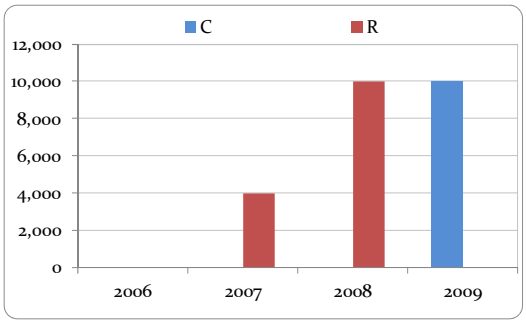


Figure 2a: Exporter-reported direct exports of live *Ptyas mucosus* from Lao People's Democratic Republic reported as sources C and R, 2007-2012 (Lao PDR became a Party to CITES in 2004; annual reports have not yet been received for 2010-2012).

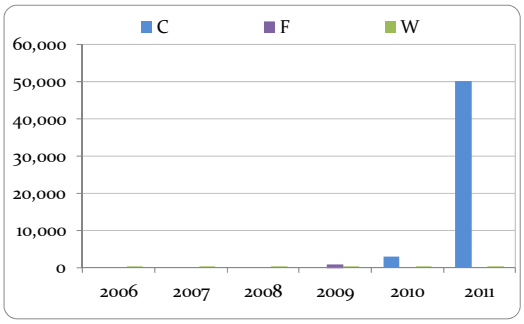


Figure 2b: Exporter-reported direct exports of live *Ptyas mucosus* from Indonesia reported as sources C, F and W, 2006-2011 (no trade in this species was reported 1996-2005; annual report has not been received for 2012).

Case study 7: Trade in live *Crocodylus niloticus* (Nile crocodile)

Trade in live *Crocodylus niloticus* over the period 1996-2012 consisted mainly of source R individuals. Based on exporter reported figures, trade in source R specimens began to increase in 2004 and peaked in 2008, before declining again. Some trade in source C specimens was also reported, although importer and exporter reported figures differ particularly in more recent years, where importers reported an increase in source C. Importer and exporter figures also differ in terms of volume, with importers reporting approximately half the volume of exports in most years (Figures 1a and b).

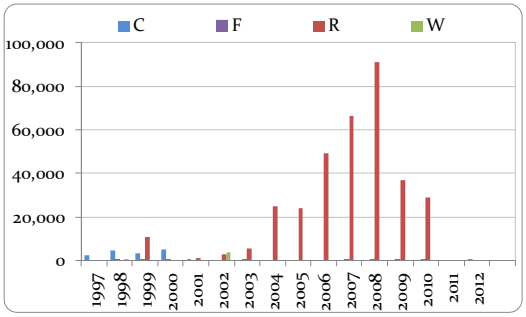


Figure 1a: Direct exports of live *Crocodylus niloticus* as reported by exporting countries, by source, 1996-2012.

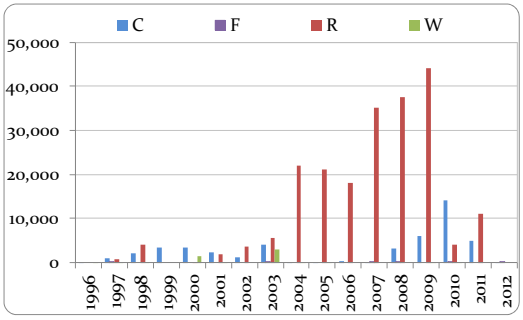


Figure 1b: Direct exports of live *Crocodylus niloticus* as reported by importing countries, by source, 1996-2012.

Mozambique was the main exporter of live *C. niloticus* (exports accounted for 92% of trade over the period 1996-2011) and exported mainly source R and a small number of wild-sourced individuals (Figure 2a). Small numbers of source R specimens of *C. niloticus* were also exported from Kenya, Namibia and Zimbabwe from 1996-2012. The trade in source C specimens, as reported by exporters in the 1990's, was exported primarily by Botswana, Madagascar and South Africa. There were no further exports reported by Botswana after 2000 and only small numbers of exports from Madagascar and South Africa (Figure 2b).

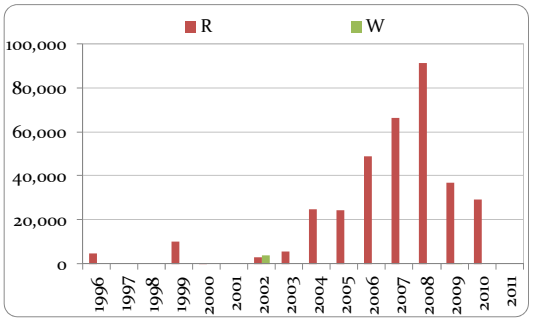


Figure 2a: Exporter-reported direct exports of live *Crocodylus niloticus* from Mozambique reported as sources R and W, 1996-2011 (no annual reports have yet been received for 2011 or 2012).

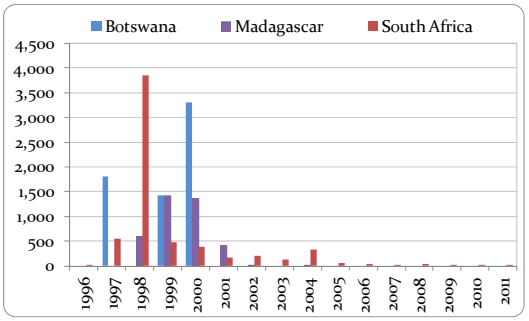


Figure 2b: Exporter-reported direct exports of live, source C *Crocodylus niloticus* from Botswana, Madagascar and South Africa, 1996-2011.

Table 28: Source Codes

Source Code	Description
W	Specimens taken from the wild
R	Ranched specimens: specimens of animals reared in a controlled environment, taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood
D	Appendix-I animals bred in captivity for commercial purposes in operations included in the Secretariat's Register, in accordance with Resolution Conf. 12.10 (Rev. CoP15), and Appendix-I plants artificially propagated for commercial purposes, as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 4, of the Convention
A	Plants that are artificially propagated in accordance with Resolution Conf. 11.11 (Rev. CoP15), as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 5 (specimens of species included in Appendix I that have been propagated artificially for non-commercial purposes and specimens of species included in Appendices II and III)
C	Animals bred in captivity in accordance with Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof, exported under the provisions of Article VII, paragraph 5
F	Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof
U	Source unknown (must be justified)
I	Confiscated or seized specimens (may be used with another code)
O	Pre-Convention specimens

Source: Resolution Conf. 12.3 (Rev. CoP16)

Table 29: Top five animal taxa, by class, directly exported as captive-bred (source C) live animals for commercial purposes (quantities ≥10 000) based on exporter reported data, 2007-2012.

Class	Taxon	Exporter	Importer
Mammals	*Macaca fascicularis*	165,244	113,281
	Macaca mulatta	12,497	6054
Birds	*Agapornis fischeri*	163,840	66,501
	Lonchura oryzivora	81,166	148,934
	Agapornis personatus	156,587	70,127
	Psittacus erithacus	78,864	67,031
	Myiopsitta monachus	65,882	7887
Reptiles	*Iguana iguana*	1,860,592	1,956,416
	Stigmochelys pardalis	128,424	129,421
	Boa constrictor	95,882	82,352
	Mauremys reevesii	109,715	57,099
	Mauremys sinensis	91,798	66,679
Amphibians	*Agalychnis callidryas*	28,991	59,741
	Dendrobates auratus	32,015	32,466
	Dendrobates pumilio	15,201	23,905
Fish	*Arapaima gigas*	118,508	68,582
	Hippocampus reidi	126,108	53,358
	Acipenser baerii	93,935	69,634
	Acipenser gueldenstaedtii	58,032	80,335
	Polyodon spathula	100,100	5600
Arachnida	*Brachypelma smithi*	11,825	9891
Insects	*Troides rhadamantus*	75,523	25,523
	Ornithoptera priamus	10,639	3498
Annelida	*Hirudo medicinalis*	1,397,546	900,042
Mollusca	*Haliotis midae*	1,151,930	420
	Tridacna maxima	62,013	86,018

Table 30: Top five animal species, by class, directly exported as source D live animals for commercial purpose (quantities ≥100) based on exporter reported data, 2007-2012.

Class	Taxon	Exporter	Importer
Birds	*Falco hybrid*	3753	501
	Falco rusticolus	2446	838
	Falco peregrinus (incl. ssp. *pealei)*	460	280
	Cacatua moluccensis	193	121
	Falco cherrug	222	30
Reptiles	*Crocodylus siamensis*	295,651	195,385
	Testudo hermanni	5064	3746

Class	Taxon	Exporter	Importer
	Testudo marginata	1144	1267
	Crocodylus porosus	145	106
	Alligator sinensis	100	62
Fish	*Scleropages formosus*	451,017	496,420
	Pangasianodon gigas	236	30

Table 31: Top five animal taxa, by class, directly exported as source F live animals for commercial purposes (quantities ≥100) based on exporter reported data, 2007-2012.

Class	Taxon	Exporter	Importer
Mammals	*Macaca fascicularis*	56,474	53,189
Birds	*Psittacus erithacus*	7379	2588
Reptiles	*Testudo horsfieldii*	53,902	55,726
	Podocnemis unifilis	50,367	36,670
	Geochelone sulcata	18,073	21,300
	Stigmochelys pardalis	21,409	16,089
	Naja sputatrix	12249	300
Amphibians	*Ambystoma mexicanum*	4000	4000
Fish	*Acipenser oxyrinchus*	811,400	77,200
	Hippocampus kuda	298,470	214,922
	Hippocampus comes	24,700	17,290
	Acipenser stellatus	10,012	10,000
	Arapaima gigas	3355	3693
Annelida	*Hirudo medicinalis*	83,989	134,583
Mollusca	*Tridacna maxima*	36,383	109,027
	Tridacna derasa	5314	30,722
	Tridacna crocea	5066	17,526
	Tridacna squamosa	7433	12,012
	Hippopus hippopus	1841	5507
Anthozoa	*Acropora* spp.	1,057,433	455,583
	Montipora spp.	224,972	103,008
	Euphyllia glabrescens	146,680	71,929
	Pocillopora verrucosa	62,383	25,813
	Seriatopora hystrix	56,001	22,733

Table 32: Top five animal taxa, by class, directly exported as ranched (source R) live animals for commercial purposes (quantities ≥100) based on exporter reported data, 2007-2012.

Class	Taxon	Exporter	Importer
Mammals	*Macaca fascicularis*	13,480	6220
Birds	*Amazona aestiva*	1470	861
	Phoenicopterus ruber	1334	494
	Cairina moschata	622	
Reptiles	*Python regius*	695,776	839,299
	Podocnemis unifilis	238,933	187,845
	Crocodylus niloticus	220,530	131,702
	Testudo horsfieldii	110,979	102,943
	Varanus exanthematicus	50,150	67,047
Amphibians	*Dendrobates variabilis*	187	
	Dendrobates imitator	166	
Fish	*Acipenser baerii*	20,000	30,000
	Acipenser gueldenstaedtii	50,000	
	Anguilla anguilla	4258	
Aranchnida	*Pandinus imperator*	86,863	161,788
Insects	*Troides helena*	11,900	200
	Ornithoptera priamus	11,801	80
Annelida	*Hirudo medicinalis*	1000	
Mollusca	*Tridacna maxima*	400	4623
Anthozoa	*Scleractinia* spp.	8275	252