UNEP-WCMC **technical report**

World trade in crocodilian skins 2013-2015

Prepared as part of the International Alligator and Crocodile Trade Study

by John Caldwell

UN environment WCMC

World trade in crocodilian skins 2013-2015

Prepared for
The Louisiana Alligator Advisory Council, Louisiana, United States of America

Published September 2017

Copyright
2017 UN Environment

Citation
John Caldwell. 2017 *World trade in crocodilian skins 2013-2015.* UNEP-WCMC, Cambridge.

The UN Environment World Conservation Monitoring Centre (UNEP-WCMC) is the specialist biodiversity assessment centre of the UN Environment, the world's foremost intergovernmental environmental organisation. The Centre has been in operation for over 35 years, combining scientific research with practical policy advice.

This publication may be reproduced for educational or non-profit purposes without special permission, provided acknowledgement to the source is made. Reuse of any figures is subject to permission from the original rights holders. No use of this publication may be made for resale or any other commercial purpose without permission in writing from UN Environment. Applications for permission, with a statement of purpose and extent of reproduction, should be sent to the Director, UNEP-WCMC, 219 Huntingdon Road, Cambridge, CB3 0DL, UK.

The contents of this report do not necessarily reflect the views or policies of UN Environment, contributory organisations or editors. The designations employed and the presentations of material in this report do not imply the expression of any opinion whatsoever on the part of UN Environment, the European Commission or contributory organisations, editors or publishers concerning the legal status of any country, territory, city area or its authorities, or concerning the delimitation of its frontiers or boundaries or the designation of its name, frontiers or boundaries. The mention of a commercial entity or product in this publication does not imply endorsement by UN Environment.

UN Environment World Conservation Monitoring Centre (UNEP-WCMC)
219 Huntingdon Road,
Cambridge CB3 0DL, UK
Tel: +44 1223 277314
www.unep-wcmc.org

UN Environment promotes environmentally sound practices globally and in its own activities. Printing on paper from environmentally sustainable forests and recycled fibre is encouraged.

Contents

Executive summary 5
Introduction 6
Data included 6
Limitations of data 7
Overview of global trade in crocodilian skins 10
Species accounts 12
Crocodylus acutus American Crocodile 12
Crocodylus johnstoni Australian Freshwater Crocodile 12
Crocodylus moreletii Morelet's Crocodile 12
Crocodylus niloticus Nile Crocodile 13
Crocodylus novaeguineae New Guinea Crocodile 16
Crocodylus porosus Saltwater Crocodile 17
Crocodylus siamensis Siamese Crocodile 18
Alligator mississippiensis American Alligator 19
Caiman crocodilus crocodilus Spectacled Caiman 20
Caiman crocodilus fuscus Brown Caiman 21
Caiman latirostris Broad-snouted Caiman 22
Caiman yacare Yacaré 23
Melanosuchus niger Black Caiman 24
All other crocodilian species 24
Trade in live animals 24
Trade in other by-products 27
Meat 27
Teeth 28
Declared dollar value 29
Reported seizures 30
Recommendations 30
Acknowledgements 31
Annex: Purpose and source codes 32

List of figures

Figure 1. Direct, commercial global exports of crocodilian skins, 2006-2015 11
Figure 2. Direct, commercial exports of *Crocodylus moreletii* skins reported by Mexico, 2006–2015 13
Figure 3. Direct, commercial exports of *Alligator mississippiensis* skins reported by the United States, 2006-2015 20
Figure 4. Direct, commercial exports of *Caiman crocodilus crocodilus* skins reported by Venezuela, 2006-2015 21
Figure 5. Direct, commercial exports of *Caiman crocodilus fuscus* skins reported by Colombia, 2006-2015 22
Figure 6. Direct, commercial global exports of crocodilian meat, 2006–2015 28

List of tables

Table 1. CITES annual reports for 2013-2015 available for analysis as of June 2017 8
Table 2. Direct, commercial global exports of crocodilian skins from the main taxa, 2006-2015 10
Table 3. Direct, commercial exports of *Crocodylus niloticus* skins from producer countries, 2006-2015 14
Table 4. Direct, commercial exports of *Crocodylus novaeguineae* skins from producer countries, 2006-2015 16
Table 5. Direct, commercial exports of *Crocodylus porosus* skins from range States, 2006-2015 17
Table 6. Direct, commercial exports of *Crocodylus siamensis* skins from range States, 2006-2015 19
Table 7. Direct, commercial exports of *Alligator mississippiensis* skins reported by the United States, 2006-2015 19
Table 8. Direct, commercial exports of *Caiman crocodilus fuscus* skins from Colombia and Panama, 2006-2015 21
Table 9. Direct, commercial exports of *Caiman yacare* skins from producer countries, 2006-2015 23
Table 10. Direct, commercial exports of live *Crocodylus siamensis* to China reported by the exporting countries, 2006-2015 26
Table 11. Reported US dollar value of *Alligator mississippiensis* skins (per skin) exported and re-imported by the United States, 2006-2015 29
Table 12. Reported US dollar value of *Caiman crocodilus fuscus* skins (per skin) originating in Colombia and imported by the United States, 2006-2015 29
Table 13. Codes for purpose of trade 32
Table 14. Codes for source of specimens in trade 32

Executive summary

All crocodilians are listed in either Appendix I or Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and many are found in international trade for the leather and fashion industry, for meat, and as live animals for breeding operations, food, the pet industry and zoos. This report shows the changing trends in the species involved in this trade since 2006 with special emphasis on the years 2013 to 2015, the most recent three-year period for which there are reasonably complete data.

The species involved in the skin trade are the 'classics' such as *Alligator mississippiensis*, *Crocodylus acutus*, *C. moreletii*, *C. niloticus*, *C. novaeguineae*, *C. porosus* and *C. siamensis*, and the caimans such as *Caiman crocodilus crocodilus*, *C. c. fuscus*, *C. latirostris* and *C. yacare*. More recently, Black Caiman *Melanosuchus niger* has entered the skin trade. In the years since 2009 the skin trade has increased year on year reaching a peak of 1.9 million skins in 2013. The increase was across several species particularly American Alligator from the United States, Nile Crocodile from Southern Africa, Saltwater Crocodile from Australia, Indonesia and Papua New Guinea, Brown Caiman from Colombia and Yacaré from Bolivia, Brazil and Paraguay. In total, over 5.2 million skins of crocodilians were reported in trade over the three-year period 2013-2015.

Live animal trade involves relatively few individuals except for the Far Eastern trade in Siamese Crocodile *Crocodylus siamensis*. These animals are bred in captivity in Cambodia, Thailand and Viet Nam, and exported in large numbers to China where they are consumed as food. In the period 2013-2015, almost 75,000 live *C. siamensis* were involved in this trade.

Crocodilian meat is traded widely but is particularly favoured in the Far East, especially China and Hong Kong, Special Administrative Region of China (hereafter referred to as Hong Kong, SAR); the top species in trade in the period 2013-2015 were *C. niloticus* and *C. siamensis*. Trade peaked at nearly 1,000 t in 2006 and 2007 before falling back in 2008. Trade has been slowly increasing since then.

Introduction

This report, the twenty-third produced by UNEP-WCMC for the International Alligator and Crocodile Trade Study (IACTS), examines the international trade in crocodilian skins, with a particular focus on the years 2013 to 2015, but also refers to trends since 2006. It also attempts to identify and highlight problem areas such as apparent discrepancies in reporting and to recommend, where possible, workable solutions. The data used have been obtained from the CITES Trade Database maintained by UNEP-WCMC on behalf of the CITES Secretariat, with additional information provided by the Crocodile Farmers Association of Zimbabwe, the Ethiopian Wildlife Conservation Organisation and the United Nations Food and Agriculture Organisation (FAO).

As in previous IACTS reports, this report presents an overview of global trade levels in classic skins (alligators and true crocodiles) and caimans, and a detailed species-by-species analysis of the trade in skins and also of trade in other products such as live animals and meat. All species within the order Crocodylia are listed in either Appendix I or II of CITES. Of those species specifically mentioned in this report as being in commercial trade, the following are listed in Appendix I: *Crocodylus acutus*, *C. moreletii*, *C. niloticus*, *C. porosus*, *C. rhombifer*, *C. siamensis*, *Osteolaemus tetraspis*, *Caiman latirostris* and *Melanosuchus niger*; although some of these species have populations listed in Appendix II.

Data included

This report is based on an analysis of the annual reports submitted by the Parties to CITES for 2006 to 2015 and, where appropriate, data outside of this time-frame are presented to provide historical context. A list of annual reports for 2013-2015 that were included in the CITES Trade Database at the time of analysis (May 2017) is provided (Table 1). Additional data provided by FAO and the Crocodile Farmers Association of Zimbabwe (CFAZ) has been used where the annual report data are missing or thought to be incomplete.

All direct, commercial trade in whole skins and sides, live animals, meat and teeth of crocodilian species has been analysed, with two sides being considered to be equivalent to one skin; trade in skins reported in other sub-units, such as 'tails', or in units of weight, area or length, have been excluded. Re-export trade has not been included in the estimation of annual production. The figures and tables contain information on trade from all sources, including captive-bred, ranched and wild specimens, unless otherwise specified. Wherever possible, data reported by the producer countries have been used in preference to that reported by importing countries. This is because there may be a time lag between when the export and the import are reported, which could lead to the same skins being counted in different years and thus an overestimation of trade volume. However, where producer countries have failed to submit annual reports, or where exporter-reported trade volumes are substantially less than those reported by importers, importers' data have been used. Many of the transactions have been analysed at the export permit level, and, where possible, importer-reported data have been corrected for year-end trade through permit analysis. The report discusses the key species in trade in taxonomic order, reviewing global trade trends before focussing on trends in trade from individual exporting countries.

Limitations of data

Incomplete data due to late submission of, or failure to submit, CITES annual reports remains an impediment to conducting trade studies using CITES trade data. Measures have been taken by the CITES Standing Committee to improve compliance with the reporting provisions of the Convention. These include reminders being sent by the Secretariat on behalf of the Standing Committee and a recommendation to suspend trade in CITES-listed species should a Party fail, without providing sufficient justification, to submit reports for three consecutive years (Resolution Conf. 11.17 (Rev. CoP17)). Despite these efforts, some Parties fail to submit annual reports on a regular basis.

According to Resolution Conf. 11.17 (Rev. CoP17), annual reports for trade in 2015 should have been submitted by 31 October 2016. However, at the time of analysis (June 2017), several reports that might contain important crocodilian data had not been received by the CITES Secretariat. These include Argentina (2014), Australia (2015), Bolivia (2015), Cambodia (2015), Egypt (2015), Ethiopia (2013), Israel (2015), Mauritius (2015), Panama (2015), Papua New Guinea (2015), Paraguay (2015), Suriname (2015), Uganda (2015), Bolivarian Republic of Venezuela (2015) and Zambia (2013).

The accuracy of the data is a further limitation to analysis of the trade. The quality of some annual reports was poor as evidenced by comparisons of exporter- and importer-reported data and data obtained from other sources; occasionally skins have been misreported as live animals, while skin pieces, such as back strips, necks, flanks and tails, have often been reported as whole skins. Since the majority of countries trading in crocodilian skins report on a shipment-by-shipment basis, and many importers' reports include the exporters' permit numbers, importer-reported data can be cross-referenced with the original export permit information in order to reduce reporting or typographical errors to a minimum. This type of checking is also useful for cross-referencing end-of-year trade, where an export may be reported in one year and the import of the same shipment reported the following year.

Analysing annual reports is also complicated by the inconsistent way in which the reports are compiled. According to CITES Notification to the Parties No. 2011/019 of 17 February 2011 (now replaced by Notification to the Parties No. 2017/006 of 16 January 2017), Parties may report on the basis of the permits and certificates that have been issued if they are unable to report on the actual number of specimens that entered or left the country. However, reporting on the basis of permits issued may lead to overestimates of trade volume as permits are frequently issued for quantities in excess of those actually traded and indeed, some of the permits may expire without being used. The majority of Parties still do not provide any details concerning the basis on which their annual reports are compiled.

Significant improvement in the reporting of crocodilian trade continues; however, the absence of annual reports from certain key producer countries continues to be a hindrance to timely analysis of the trade.

Table 1. CITES annual reports for 2013-2015 available for analysis as of June 2017

Country	2013	2014	2015
Afghanistan	–	–	–
Albania	✓	✓	–
Algeria	✓	✓	–
Antigua and Barbuda	✓	✓	–
Argentina	✓	–	✓
Armenia	–	–	✓
Aruba	✓	✓	✓
Australia	✓	✓	–
Austria	✓	✓	✓
Azerbaijan	✓	✓	–
Bahamas	✓	✓	✓
Bahrain	-	–	–
Bangladesh	✓	–	–
Barbados	✓	✓	✓
Belarus	✓	✓	✓
Belgium	✓	✓	✓
Belize	✓	✓	✓
Benin	✓	✓	✓
Bhutan	✓	✓	✓
Bolivia	✓	✓	–
Bosnia and Herzegovina	✓	✓	✓
Botswana	✓	✓	–
Brazil	✓	✓	–
Brunei Darussalam	–	–	–
Bulgaria	✓	✓	✓
Burkina Faso	✓	✓	–
Burundi	✓	✓	✓
Cambodia	✓	✓	–
Cameroon	–	–	–
Canada	✓	✓	✓
Cabo Verde	✓	✓	–
Central African Republic	✓	✓	✓
Chad	–	–	–
Chile	✓	✓	✓
China	✓	✓	✓
Colombia	✓	✓	✓
Comoros	-	–	–
Congo	✓	✓	–
Costa Rica	✓	✓	–
Côte d'Ivoire	✓	✓	✓
Croatia	✓	✓	✓
Cuba	✓	✓	–
Cyprus	✓	✓	✓
Czech Republic	✓	✓	✓
Democratic Republic of the Congo	✓	✓	✓
Denmark	✓	✓	✓
Djibouti	-	–	–

Country	2013	2014	2015
Dominica	-	–	–
Dominican Republic	✓	✓	✓
Ecuador	✓	✓	–
Egypt	✓	✓	–
El Salvador	–	✓	✓
Equatorial Guinea	-	–	–
Eritrea	-	–	–
Estonia	✓	✓	✓
Ethiopia	-	✓	✓
Fiji	✓	✓	–
Finland	✓	✓	✓
France	✓	✓	✓
Gabon	✓	✓	✓
Gambia	-	–	–
Georgia	✓	✓	✓
Germany	✓	✓	✓
Ghana	✓	✓	✓
Greece	✓	✓	✓
Grenada	-	–	–
Guatemala	✓	✓	–
Guinea	✓	✓	-
Guinea Bissau	✓	✓	-
Guyana	✓	✓	✓
Honduras	✓	✓	✓
Hong Kong, SAR	✓	✓	✓
Hungary	✓	✓	✓
Iceland	✓	✓	-
India	✓	✓	✓
Indonesia	✓	✓	✓
Iran, Islamic Republic of	✓	✓	✓
Iraq		✓	✓
Ireland	✓	✓	✓
Israel	✓	✓	-
Italy	✓	✓	✓
Jamaica	✓	✓	-
Japan	✓	✓	✓
Jordan	✓	✓	✓
Kazakhstan	✓	-	✓
Kenya	✓	✓	✓
Kuwait	✓	✓	✓
Kyrgyzstan	✓	✓	-
Lao P.D.R.	✓	✓	✓
Latvia	✓	✓	✓
Lebanon	-	–	–
Lesotho	–	-	-
Liberia	✓	✓	✓
Libya	✓	✓	✓
Liechtenstein	✓	✓	✓

Country	2013	2014	2015
Lithuania	✓	✓	✓
Luxembourg	✓	✓	✓
Macao, SAR	✓	✓	✓
Macedonia, Former Yugoslav Republic of	✓	✓	-
Madagascar	✓	✓	✓
Malawi	✓	✓	✓
Malaysia	✓	✓	✓
Maldives	–	-	-
Mali	✓	✓	-
Malta	✓	✓	✓
Mauritania	✓	✓	-
Mauritius	✓	✓	-
Mexico	✓	✓	✓
Moldova	✓	✓	-
Monaco	✓	-	-
Mongolia	✓	✓	✓
Montenegro	✓	✓	✓
Morocco	✓	-	✓
Mozambique	✓	✓	✓
Myanmar	✓	✓	✓
Namibia	✓	✓	✓
Nepal	✓	✓	✓
Netherlands	✓	✓	✓
New Zealand	✓	✓	✓
Nicaragua	✓	✓	✓
Niger	✓	✓	✓
Nigeria	-	-	-
Norway	✓	✓	✓
Oman	✓	✓	✓
Pakistan	✓	✓	✓
Palau	✓	✓	-
Panama	✓	✓	-
Papua New Guinea	✓	✓	-
Paraguay	✓	✓	-
Peru	✓	✓	✓
Philippines	✓	✓	✓
Poland	✓	✓	✓
Portugal	✓	✓	✓
Qatar	✓	✓	✓
Republic of Korea	✓	✓	✓
Romania	✓	✓	✓
Russian Federation	✓	✓	-
Rwanda	✓	✓	-
Saint Kitts and Nevis	✓	✓	-
Saint Lucia	✓	-	-
Saint Vincent and the Grenadines	✓	✓	-
Samoa	✓	✓	-
San Marino	✓	✓	✓
Sao Tome and Principe	✓	✓	✓
Saudi Arabia	✓	✓	-

Country	2013	2014	2015
Senegal	✓	✓	-
Serbia	✓	✓	✓
Seychelles	✓	-	-
Sierra Leone	✓	✓	✓
Singapore	✓	✓	✓
Slovakia	✓	✓	✓
Slovenia	✓	✓	✓
Solomon Islands	✓	✓	-
Somalia	✓	✓	-
South Africa	✓	✓	✓
Spain	✓	✓	✓
Sri Lanka	✓	✓	✓
Sudan	✓	✓	-
Suriname	✓	✓	-
Swaziland	✓	✓	✓
Sweden	✓	✓	✓
Switzerland	✓	✓	✓
Syria	–	-	-
Thailand	✓	✓	✓
Togo	✓	✓	✓
Trinidad and Tobago	✓	-	-
Tunisia	✓	✓	✓
Turkey	✓	✓	✓
Uganda	✓	✓	-
Ukraine	✓	✓	-
United Arab Emirates	✓	✓	✓
United Kingdom	✓	✓	✓
United Republic of Tanzania	✓	✓	✓
United States of America	✓	✓	✓
Uruguay	✓	✓	✓
Uzbekistan	✓	✓	✓
Vanuatu	✓	✓	✓
Venezuela, Bolivarian Republic of	✓	✓	-
Viet Nam	✓	✓	✓
Yemen	✓	✓	-
Zambia	-	✓	✓
Zimbabwe	✓	✓	✓

Key: ✓= report available; - = report not received

Overview of global trade in crocodilian skins

The overall volume of world trade in classic crocodilian and caiman skins has been variable over the ten-year period 2006 to 2015, with an average of 1.47 million skins[1] exported annually (Table 2; Figure 1). Apart from a peak in 2006, a trough in 2009, and another peak in 2013 overall global trade appeared to have been remarkably stable over the decade. The total number of skins entering international trade in 2013 was approximately 1.9 million, an increase of 33 per cent over the previous year. Trade in skins of *Alligator mississippiensis* from the United States of America (hereafter referred to as the United States) increased by nearly 50 per cent over the figure for 2012 and *Crocodylus niloticus* skins from southern Africa increased by 26 per cent. Exports of *Caiman crocodilus fuscus* from Colombia increased by 37 per cent compared to the previous year while *Caiman yacare* exports from Bolivia, Brazil and Paraguay showed an increase of 30 per cent. The number of skins in trade fell in 2014 despite increased numbers of 'classic' skins', while 2015 saw decreases in trade, particularly in Alligator, Nile Crocodile and Brown Caiman.

Some diversification of the species in trade began in the early 2000s with two different species entering the market: captive-bred *Crocodylus acutus* from Colombia and Honduras and *Caiman latirostris* from Argentina and Brazil. Trade in these species continues, but in relatively small quantities. The first exports in recent years of wild *Caiman crocodilus crocodilus* skins from Guyana began in 2001 and continued through 2015, while 2005 saw the first exports of ranched *Caiman yacare* from Argentina.

Crocodylus novaeguineae production continued to be steady with the number of skins in 2015 being similar to 2006. The steady increase in trade in *C. porosus* seen up to 2012 showed a slight decrease in 2013 but then began to increase again in 2014 and 2015. Trade in *C. siamensis* averaged 46,000 skins over the decade peaking at over 63,000 in 2008, with most of the skins being produced in Thailand and a smaller proportion in Viet Nam.

The following sections provide a more detailed review of each species and the primary exporter countries involved in the skin trade.

Table 2. Direct, commercial global exports of crocodilian skins from the main taxa, 2006-2015

Taxon	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Alligator mississippiensis	422,931	262,127	230,464	297,187	369,731	312,542	326,538	481,341	485,916	428,557
Crocodylus acutus	120	404	1,371	1,460	200	1,392	1,968	1,905	2,262	3,403
Crocodylus johnstoni	0	0	0	0	0	0	0	0	0	0
Crocodylus moreletii	158	11	724	485	0	184	679	1,300	2,031	1,291
Crocodylus niloticus	156,221	148,342	161,698	149,084	167,825	212,796	205,489	275,288	282,846	251,596
Crocodylus novaeguineae	38,645	28,663	25,638	26,212	24,480	16,632	23,461	26,046	24,982	38,946

[1] Individual 'Species Accounts' provide details of the source of the data on which the figures for each species and country are based.

Taxon	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Crocodylus porosus	34,152	45,249	52,808	46,089	58,157	63,380	73,263	54,108	63,234	71,142
Crocodylus siamensis	47,972	54,331	63,471	34,373	33,094	38,170	35,450	55,776	48,557	51,258
Subtotal of 'classic' skins	**700,199**	**539,127**	**536,174**	**554,890**	**653,487**	**645,096**	**666,848**	**895,764**	**909,828**	**846,463**
Caiman crocodilus crocodilus	69,574	44,894	36,989	43,638	24,643	44,257	47,130	45,485	35,196	42,715
Caiman crocodilus fuscus	972,041	670,958	533,549	407,116	651,121	634,761	626,452	857,115	738,401	518,202
Caiman latirostris	1,669	1,125	809	394	1,933	2,973	5,755	5,602	8,893	8,610
Caiman yacare	41,883	53,241	50,499	65,452	51,273	48,843	90,874	115,283	94,456	83,430
Melanosuchus niger	0	0	11	6	0	11	275	51	290	0
Subtotal of caiman skins	**1,085,167**	**770,218**	**621,857**	**516,606**	**738,970**	**730,845**	**770,486**	**1,023,536**	**877,236**	**652,951**
Grand total	**1,785,336**	**1,309,305**	**1,158,031**	**1,071,496**	**1,392,457**	**1,375,941**	**1,437,334**	**1,919,300**	**1,787,064**	**1,499,414**

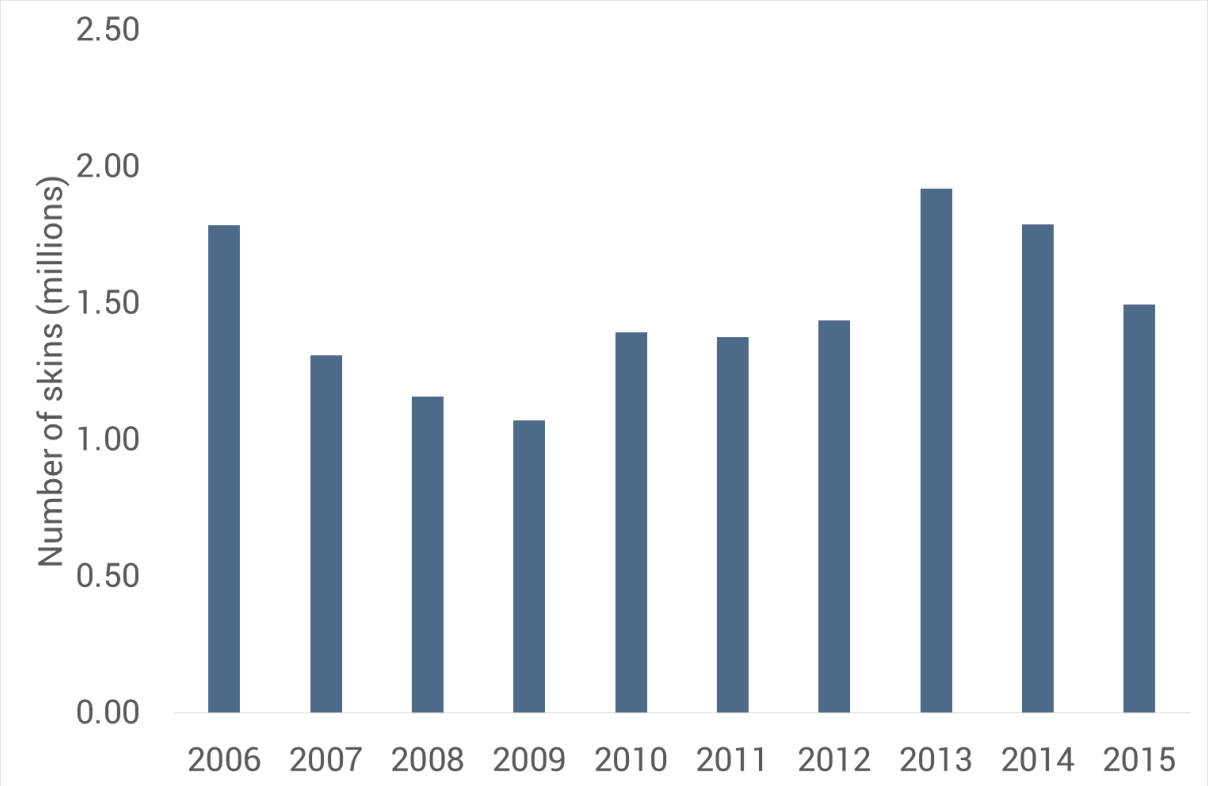


Figure 1. Direct, commercial global exports of crocodilian skins, 2006-2015

Species accounts

Crocodylus acutus American Crocodile

Colombia has seven farms registered with CITES for production of this species, which was listed in Appendix I during the focus period[2]. Skin exports began in 2001 with 100 skins from captive-bred animals going to France. Exports of small numbers of skins have continued, rising to 3,353 captive-bred skins in 2015. The main importer has been Italy with France, Germany, the Republic of Korea and Singapore also importing small quantities.

Honduras has one registered breeding operation for this species and the first reported trade was of 500 skins imported by Japan in 2003. Permits for the export of 1,004 skins were issued in 2008, but these, and a further 86 skins (totalling 1,090 skins) were exported in 2009. In 2012 Honduras reported exporting 350 skins to El Salvador which appear to have been reimported in 2013. Japan reported the import of 50 skins in 2015 but this was not confirmed by Honduras.

Crocodylus johnstoni Australian Freshwater Crocodile

No trade in skins of this species has been reported since 2005. Exports from **Australia**, the only range State, peaked at 3,875 skins in 1993, remained at this level until 1996, and subsequently fell to negligible levels.

Crocodylus moreletii Morelet's Crocodile

Found only in Belize, Guatemala and Mexico, this species was listed in CITES Appendix I until 23 June 2010 when the populations of Belize and Mexico were transferred to Appendix II with a zero quota for wild specimens traded for commercial purposes. Previously Mexico had three captive-breeding operations for this species registered with the CITES Secretariat. Exports of skins from Mexico peaked at 2,430 in 2001 and subsequently decreased, remaining below 1,000 skins per annum from 2003 until 2012, then increased to 1,300 in 2013, 2,031 in 2014 and 1,291 in 2015 (Figure 2). The main importer is France, with smaller quantities of skins exported to Japan, Thailand and the United States.

[2] Following CoP17 the population of the Integrated Management District of Mangroves of the Bay of Cispata, Tinajones, La Balsa and Surrounding Areas, Department of Córdoba, Colombia was transferred to Appendix II. For further details see: https://cites.org/eng/app/appendices.php.

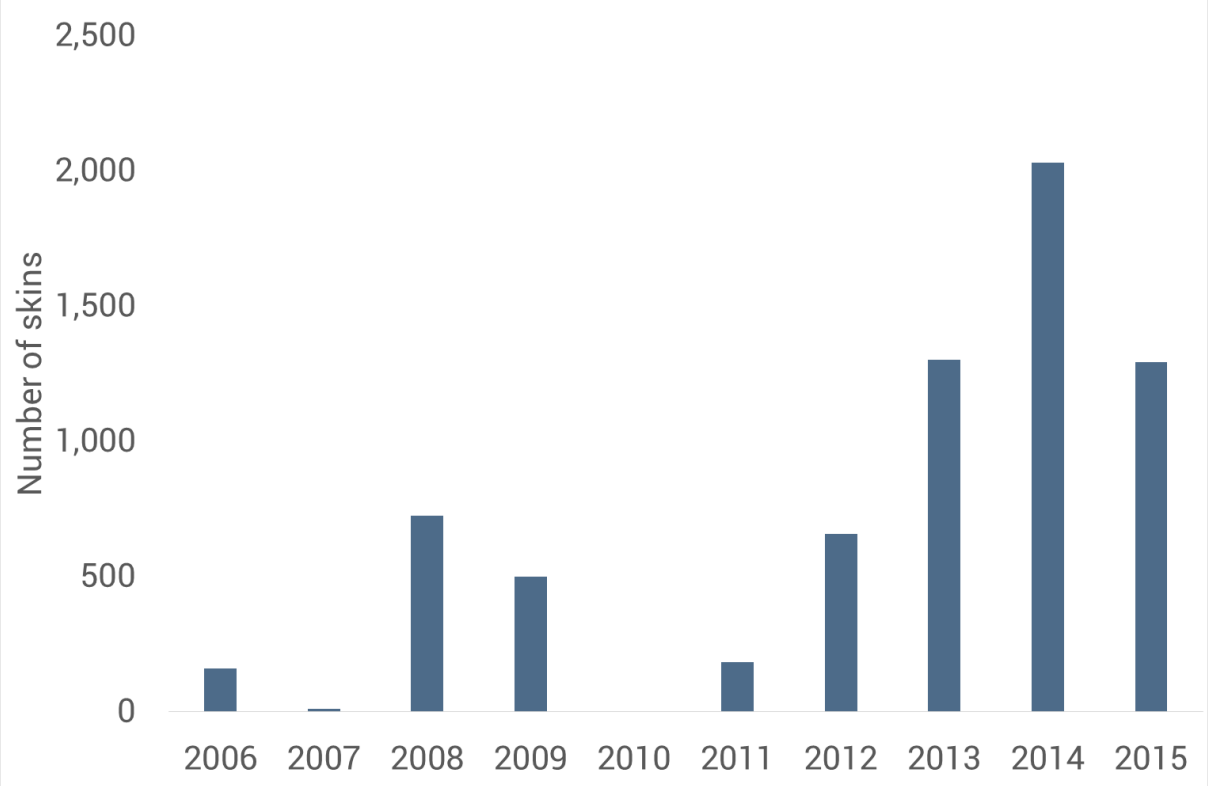


Figure 2. Direct, commercial exports of *Crocodylus moreletii* skins reported by Mexico, 2006–2015

Crocodylus niloticus Nile Crocodile

Over the period 2006-2015, an average of 201,000 *Crocodylus niloticus* skins were exported globally per year, with an increasing trend over the period 2010-2014 (Table 3). The section that follows summarises information on exports by range States and other countries with farms capable of commercial skin production. Currently, only two countries have captive-breeding operations registered with the CITES Secretariat: Mali and Senegal, each with one registered operation. *Crocodylus niloticus* is listed in CITES Appendix I except for the populations of Botswana, Egypt, Ethiopia, Kenya, Madagascar, Malawi, Mozambique, Namibia, South Africa, Uganda, the United Republic of Tanzania (hereafter referred to as Tanzania), Zambia and Zimbabwe, which are included in Appendix II.

Table 3. Direct, commercial exports of *Crocodylus niloticus* skins from producer countries, 2006-2015

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Botswana	0	*320	*374	*1,626	*1,500	1,800	1,000	4,000	4,500	*4,400
Brazil	0	0	0	0	0	0	0	0	0	0
Ethiopia	■727	*594	■492	0	4	*77	*400	0	0	6
Israel	0	0	*1	*2	0	0	100	0	0	*27
Kenya	8,710	6,354	4,504	4,283	4,309	4,180	6,903	6,332	5,300	6,504
Madagascar	6,660	5,500	2,640	2,450	0	0	0	0	*3	154
Malawi	698	*1,350	3,370	2,603	399	1,508	6,063	5,373	2,784	6,246
Mali	0	0	107	0	0	15	0	0	0	0
Mauritius	83	180	189	100	0	338	150	102	100	
Mozambique	2,021	179	566	0	2,449	18,788	7,234	22,700	10,781	11,161
Namibia	305	0	0	600	2	200	800	1,103	1,458	*2,127
Senegal	2	0	1	0	0	0	0	0	0	7
South Africa	23,542	30,514	37,627	25,050	53,329	57,298	77,473	73,032	121,057	59,638
Sudan	0	0	2	0	20	0	0	0	0	7
Tanzania	*1,100	*1,556	*1,784	1,365	601	*475	**1,209	**1,379	**1,287	**1,294
Uganda	*300	0	*290	0	500	0	405	400	515	600
Zambia	*40,457	37,305	28,197	43,655	23,717	37,584	15,331	*45,368	44,233	*43,926
Zimbabwe	80,873	54,810	59,509	939	29,297	22,557	80,348	91,104	38,885	65,429
	♦71,616	♦64,490	♦81,554	♦67,350	♦80,995	♦90,533	♦88,421	♦115,499	♦90,828	♦115,499
Total	**156,221**	**148,342**	**161,698**	**149,084**	**167,825**	**212,796**	**205,489**	**275,288**	**282,846**	**251,596**

Key: * Figure derived from importer-reported data; ** Data supplied by FAO; ■ Data supplied from EWCO (the Ethiopian Wildlife Conservation Organisation, the CITES Management Authority of Ethiopia.)[3]; ♦ Data supplied by CFAZ (the Crocodile Farmers Association of Zimbabwe)[4]: these data have been used for the totals.

Exports by range States

Botswana: No commercial exports of skins were reported by Botswana between 1998 and 2010, however, South Africa reported importing skins from captive-bred individuals in 2008, 2009 and 2010, as well as 320 ranched skins in 2007. Botswana reported exporting 4,000 ranched skins in 2013 and a further 4,500 in 2014. All were destined for South Africa which appears to be the only country importing skins for commercial purposes from Botswana. No report has been received from Botswana for 2015 but South Africa reported importing 4,400 in 2015 of which 2,600 were ranched and the remainder captive-bred.

Central African Republic: No commercial exports of skins from the Central African Republic have been reported since 1986.

Congo: No commercial exports of skins from the Congo have been reported since 1989.

Ethiopia: Ethiopia's sole crocodile ranching operation (Arba Minch Crocodile Ranch) is owned and managed by the Ethiopian Wildlife Conservation Organisation (EWCO) which also acts as both the CITES Management and Scientific Authorities. The ranch, however, is not currently registered with the CITES Secretariat. Production appears to be variable and there are discrepancies between the information contained in Ethiopia's annual reports to CITES, data received directly from EWCO, and information from importing countries. Data provided by EWCO have been used in Table 3 for 2006 and 2008 in preference to Ethiopian annual report data as they are more comparable with data reported by importers; Ethiopia's annual report for 2010 recorded the export of four ranched skins but none were reported in 2011. The import of 77 ranched skins was reported by Japan in 2011 and 400 ranched skins by the Republic of Korea in 2012; Ethiopia has not submitted an annual report for 2013 and reported no exports of skins in 2014 and only six in 2015.

[3] Kumara on behalf of Arbaminch Crocodile Ranch, *pers. comm.* 20-10-2009.
[4] Sue Childes on behalf of CFAZ, *pers. comm.* numerous dates.

Guinea: No trade in skins from Guinea has been reported since 1995.

Kenya: Kenya reported exporting 6,332 skins in 2013, 5,300 in 2014 and 6,504 in 2015 with the main importers being Italy, the Republic of Korea and Singapore. All skins, with the exception of 750 skins reportedly of wild origin exported in 2013, were reported to be from ranching operations.

Liberia: Commercial exports of skins from Liberia have not been reported since 1984.

Madagascar: The situation in Madagascar has long been under review by both the IUCN/SSC Crocodile Specialist Group and the CITES Secretariat. Based on serious concerns raised about the trade, the CITES Standing Committee recommended Parties to suspend trade in *C. niloticus* from Madagascar on 17 June 2010 until further notice (See Notification to the Parties No. 2010/015 and SC63 Doc. 13). This suspension was not lifted until the end of 2014 and Madagascar reported exporting three skins that year and a further 48 in 2015, all from captive-bred animals.

Malawi: Malawi reported exporting 5,373 skins in 2013, 2,784 in 2014 and 6,246 in 2015. All, apart from two wild skins reportedly exported to Australia in 2013, were from ranching operations.

Mali: Mali has one captive-breeding operation registered with the CITES Secretariat (Ets Lassana Diaby Cuirs et Peaux) that was reportedly established in 1978, but was only registered with CITES in May 2008. Mali reported exports of 107 source 'D' skins to France in 2008 and 15 source 'D' skins to the United States in 2011, but no further trade has been reported since.

Mozambique: Mozambique reported exporting a total of 22,700 skins in 2013, 10,781 in 2014 and 11,161 in 2015. Most of the skins were reported to be from ranching operations with the main importers being Japan, Singapore and South Africa.

Namibia: Namibia reported exporting 1,103 captive-bred skins in 2013 and a further 274 from wild-caught animals in 2014. Italy reported importing 1,802 captive-bred skins in 2014 however 1,700 of these were reported by Namibia as back straps. The Republic of Korea reported importing 1,082 leather products that Namibia also reported as skins. Namibia reported 769 captive-bred skins in 2015 while importers reported 710 wild and 1,410 captive-bred skins.

Nigeria: No commercial shipments of skins from Nigeria have been reported since 1983.

Senegal: There is one farm registered with the CITES Secretariat for captive-breeding of this species that was established in 1995. The only reported commercial trade appears to have been two captive-bred skins exported to Ukraine in 2006, one exported to France in 2008 and seven exported to Spain in 2015.

Somalia: No commercial shipments of skins have been reported from Somalia since 1981.

South Africa: South Africa reported exporting 73,032 captive-bred skins in 2013, 121,057 in 2014 and 59,638 in 2015. It is known that South Africa also exports skins of animals imported as hatchlings from ranching operations in Mozambique.

Sudan: No commercial trade in skins originating in Sudan was reported between 1992 and 2009; in 2010, Sudan reported exporting six skins to Turkey and 14 skins to the United Arab Emirates for commercial purposes. No source for the skins was reported and no further commercial trade has been reported subsequently. Sudan has no captive breeding operations registered with the CITES Secretariat.

Tanzania: Data received from FAO suggests that Tanzania has exported about 1,300 skins annually between 2013 and 2015.

Togo: No trade in skins has been reported since the early 1980s.

Uganda: The Uganda annual report for 2013 shows 400 ranched skins being exported to the Republic of Korea. A further 515 ranched skins were reported as exports to the same destination in 2014 and 600 "large leather products" exported, again to the Republic of Korea in 2015. These have been treated as whole skins in Table 3.

Zambia: Although no report from Zambia has been received for 2013, importing countries reported importing 45,368 skins. Zambia reported exporting 44,233 skins in 2014 and importers reported 43,926 skins in 2015. All skins were from ranching operations.

Zimbabwe: Exports of skins of this species reported by Zimbabwe in its annual reports are in most years substantially lower than those reported by importers and also the figures supplied by the Crocodile Farmers Association of Zimbabwe (CFAZ); the CFAZ figures have therefore been used in this analysis as a precautionary measure (see Table 3). However it should be noted that not all skins exported from Zimbabwe are produced by CFAZ members and therefore it is likely that no set of figures accurately represents a complete record of Zimbabwe's skin exports. In 2013 CFAZ reported exports of over 115,000 skins as opposed to the figure of only 91,000 in the CITES annual report. CFAZ reported almost 91,000 skins in 2014 as opposed to the annual report figure of 38,885; again importers reported over 100,000 skins from Zimbabwe in that year. In 2015, Zimbabwe reported 65,429 skins while CFAZ reported over 115,000 and importers 131,000.

Exports from non-range States with commercial crocodile farms

Brazil: No exports of *C. niloticus* skins have been recorded from Brazil since 2004.

Israel: Austria reported importing 27 skins from captive-bred animals in 2015.

Mauritius: Mauritius reported the direct export of 102 skins in 2013 and a further 100 skins in 2014, all of which were captive-bred and all but two destined for Zimbabwe. There are no data on exports of skins in 2015.

Crocodylus novaeguineae New Guinea Crocodile

Over the ten-year period 2006 to 2015, the total number of skins of this species exported by the main producers, Indonesia and Papua New Guinea, was nearly 274,000. Trade decreased to under 17,000 in 2011 but then increased again reaching almost 39,000 in 2015 (Table 4).

Table 4. Direct, commercial exports of *Crocodylus novaeguineae* skins from producer countries, 2006-2015

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Indonesia	16,575	12,759	10,588	7,255	7,450	8,846	11,097	*10,169	11,232	13,083
Papua New Guinea	22,070	15,904	15,050	18,957	17,030	7,786	12,364	15,877	13,750	*25,863
Total	**38,645**	**28,663**	**25,638**	**26,212**	**24,480**	**16,632**	**23,461**	**26,046**	**24,982**	**38,946**

Key: * Figure derived from importer-reported data

Indonesia: Exports decreased steadily from 2006 to 2010, but have increased since then. The proportion of wild-sourced skins increased from approximately 70 per cent in 2008 to 100 per cent in 2013 and only 525

ranched skins have been exported since. The main importers of *C. novaeguineae* skins 2013-2015 were China, Italy, Japan, Republic of Korea and Singapore.

Papua New Guinea: Exports over the decade were highest in 2015 although the data were from importers and may have included skins exported in 2014. Between 2011 and 2012, all of the skins were exported to Japan and Singapore, however Hong Kong, SAR began importing a small numbers in 2013. All skins exported by Papua New Guinea since 2004 have been wild-sourced.

Crocodylus porosus Saltwater Crocodile

During the period under review, *Crocodylus porosus* was listed in CITES Appendix I, except for populations of Australia, Indonesia and Papua New Guinea which were listed in Appendix II[5]. The total number of *C. porosus* skins in trade increased between 2006 and 2012, rising to a peak of 73,263 skins in 2012 with a similar quantity in 2015. Exports of *C. porosus* skins from range States between 2006 and 2015 are presented in Table 5.

Table 5. Direct, commercial exports of *Crocodylus porosus* skins from range States, 2006-2015

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Australia	*16,123	*21,314	*29,353	*27,091	*34,561	*42,068	*43,730	*31,749	*30,758	*34,878
Bangladesh	0	0	0	0	0	0	0	0	430	400
Brunei Darussalam	0	0	0	0	0	0	5	0	0	0
Indonesia	3,825	5,151	5,718	5,967	4,302	7,934	6,763	*4,077	9,076	8,133
Malaysia	*1,684	*1,273	*1,043	*1,010	*1,303	*436	*1,807	*2,033	2,483	3,555
Papua New Guinea	10,208	12,675	12,237	9,900	15,787	9,432	12,753	8,099	8,340	*12,532
Philippines	0	34	*20	892	500	200	3,274	3,273	*4,624	*4,294
Singapore	1,712	1,653	1,877	0	0	0	0	90	15	0
Thailand	600	3,149	2,560	1,229	1,704	3,310	4,931	4,787	7,508	7,350
Total	**34,152**	**45,249**	**52,808**	**46,089**	**58,157**	**63,380**	**73,263**	**54,108**	**63,234**	**71,142**

Key: * Figure derived from importer-reported data

Australia: Comparison of data reported by Australia with that reported by importing countries in certain years suggests that Australia may not have reported the full quantities of skins exported. Given these discrepancies, the data provided in Table 5 have been taken from reports of the importing countries. The destinations of the skins exported 2013-2015 were mainly France and Singapore and the vast majority were reported by the importers as from either captive-bred or ranched individuals.

Bangladesh: This country has one farm registered with the CITES Secretariat in 2007. The stock are from animals bred in captivity in Malaysia. The first reported export was of 430 skins exported to Japan in 2014 with a further 400 exported in 2015.

Brunei Darussalam: This country reported exporting five skins from captive-bred animals to the Republic of Korea in 2012; no other trade in skins from the country has been reported. There are no breeding operations in the country registered with the CITES Secretariat.

Indonesia: Indonesia's exports have shown a relatively steady increase over the last decade, peaking at over 9,000 skins in 2014. The main importers 2013-2015 were Japan, Singapore and Thailand. From 2006 onwards,

[5] Following CoP17 the population of Malaysia was transferred to Appendix II, see https://cites.org/eng/app/appendices.php for further details.

all skins were from either captive-bred or ranched animals, with the proportion from captive-bred sources increasing from less than 20 per cent in 2005 to 85 per cent in 2015.

Malaysia: Data from Malaysia come from at least two separate Management Authorities and appear to have be poorly correlated with data reported by importing countries for the years 2006 to 2013. The figures for those years provided in Table 5 are therefore based on importer-reported data. Trade has shown a steady increase since 2012. There are currently seven CITES-registered captive-breeding operations for this species in Malaysia.

Papua New Guinea: Papua New Guinea's exports peaked at 15,787 skins in 2010, of which 68 per cent were from animals bred in captivity. Exports have since fluctuated between 8,000 and 12,000 annually with the main importers being France, Japan and Singapore. The proportion of captive-source skins rose from 72 per cent in 2011 to 78 per cent in 2012, but has only been around 60-65 per cent in subsequent years.

Philippines: There are two farms registered with the CITES Secretariat to produce this species and small numbers of skins have been exported annually since 2007. In 2013 just over 3,000 skins, all of which were recorded as source 'D', were exported Singapore. Philippines reported exporting 9,369 skins to Singapore in 2014 however Singapore reported importing 4,624 skins and 5,750 skin pieces in 2014. Given the perhaps unlikely almost three-fold increase reported by the Philippines the importer's data have been used in Table 5 for both 2014 and 2015.

Singapore: All of Singapore's reported commercial exports of skins 2006-2015 were captive-bred; there is now only one registered captive-breeding operation in the country. Most of the skins were exported to France, Italy and Japan. No exports were reported between 2008 and 2012 (Table 5), however exports in 2013 were reported to be 11,275. However the neither the 600 skins reportedly going to Hong Kong, SAR and the 10,585 destined for Thailand were reported by the importers so it seems likely that the total export was 90 skins that was confirmed by Japan. Singapore reported exporting 15 skins in 2014 and none in 2015.

Thailand: Thailand's reported exports of skins have increased steadily since 2009 (Table 5). All exports were from animals bred in captivity; there are 14 CITES-registered captive-breeding operations for this species in Thailand. The principal importer 2013-2015 was France.

Crocodylus siamensis Siamese Crocodile

Cambodia: Cambodia has six crocodile farms registered with the CITES Secretariat for the commercial production of this species and in 2013 10,000 skins were reported as exports, all captive-bred. In 2014 7,602 skins were exported and although Cambodia has not yet submitted an annual report for 2015, importers, France, Singapore and Thailand report importing 11,750 skins.

Thailand: There are 24 crocodile farms registered with the CITES Secretariat for commercial production of this species in Thailand; all reported exports of skins were captive-bred. Reported exports have remained steady at over 24,000 skins per year over the decade, peaking at 39,000 skins in 2008 (Table 6). Thailand's annual report for 2013 revealed a large number of cases where Thailand reported exports of skin pieces, which were reported as skins by a number of importing countries. Therefore, importer reported data has been used for Thailand for 2013, to take a precautionary approach. The main importers over the period 2013 to 2015 were Japan and Singapore.

Viet Nam: Since the first reported exports of *C. siamensis* from the country in 2004, exports steadily increased, peaking at 23,062 skins in 2008; however, exports have since decreased (Table 6). Although Viet

Nam submitted a report for 2014 it is thought to contain an error so importers' data have been used instead. China, Japan, Singapore and Thailand were the main destinations of the skins. All skins exported were reported as captive-bred; Viet Nam has nine captive-breeding operations registered with the CITES Secretariat for this species.

Table 6. Direct, commercial exports of *Crocodylus siamensis* skins from range States, 2006-2015

Country	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cambodia	0	100	1,300	300*	0	0	0	10,000	7,602	*11,750
Thailand	31,847	37,041	39,109	24,890	29,809	31,568	29,170	*36,457	26,442	26,914
Viet Nam	16,125	17,190	23,062	9,483	3,285	6,602	6,280	9,319	*14,513	12,594
Total	**47,972**	**54,331**	**63,471**	**34,373**	**33,094**	**38,170**	**35,450**	**55,776**	**48,557**	**51,258**

Key: * Figure derived from importer-reported data

Alligator mississippiensis American Alligator

Reported exports of *A. mississippiensis* from the United States increased from around 31,000 skins in 1986 to 422,931 skins in 2006. However, exports declined the following two years (Table 7; Figure 3). The source of this change is unclear, but it may have been the result of a combination of factors including oversupply of both caiman and alligator skins in 2006, the effect of two hurricanes on alligator habitat, and the general global financial downturn which may have reduced the demand for luxury leather goods. In subsequent years exports rose again reaching a new peak of over 485,000 skins in 2014. Between 2013 and 2015, four countries, France, Germany, Italy and Singapore, together imported 90 per cent of production.

Table 7. Direct, commercial exports of *Alligator mississippiensis* skins reported by the United States, 2006-2015

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
422,931	262,127	230,464	297,187	369,731	312,542	326,538	481,304	485,884	428,521

Since 2005 onwards, source code 'W' (wild taken) appears to have been used for ranched animals derived from eggs collected in the wild and over 99 per cent of the skins exported now are reported as source 'W'. This is the result of the decision by the United States CITES Management Authority that the code 'R' should only be used in the case of crocodilian populations transferred from CITES Appendix I to Appendix II subject to ranching. Between 2013 and 2015 24,936 of the skins exported were reported as source 'I' (seizures/confiscations).

According to data received from FAO the species is bred in captivity in Taiwan, Province of China, and small quantities of skins have been exported every year since 2005[6]. This species is also bred in captivity in Israel, but there have been no reported exports of skins from Israel since 2001.

[6] Luca Garibaldi on behalf of FAO, *pers. comm.* various dates

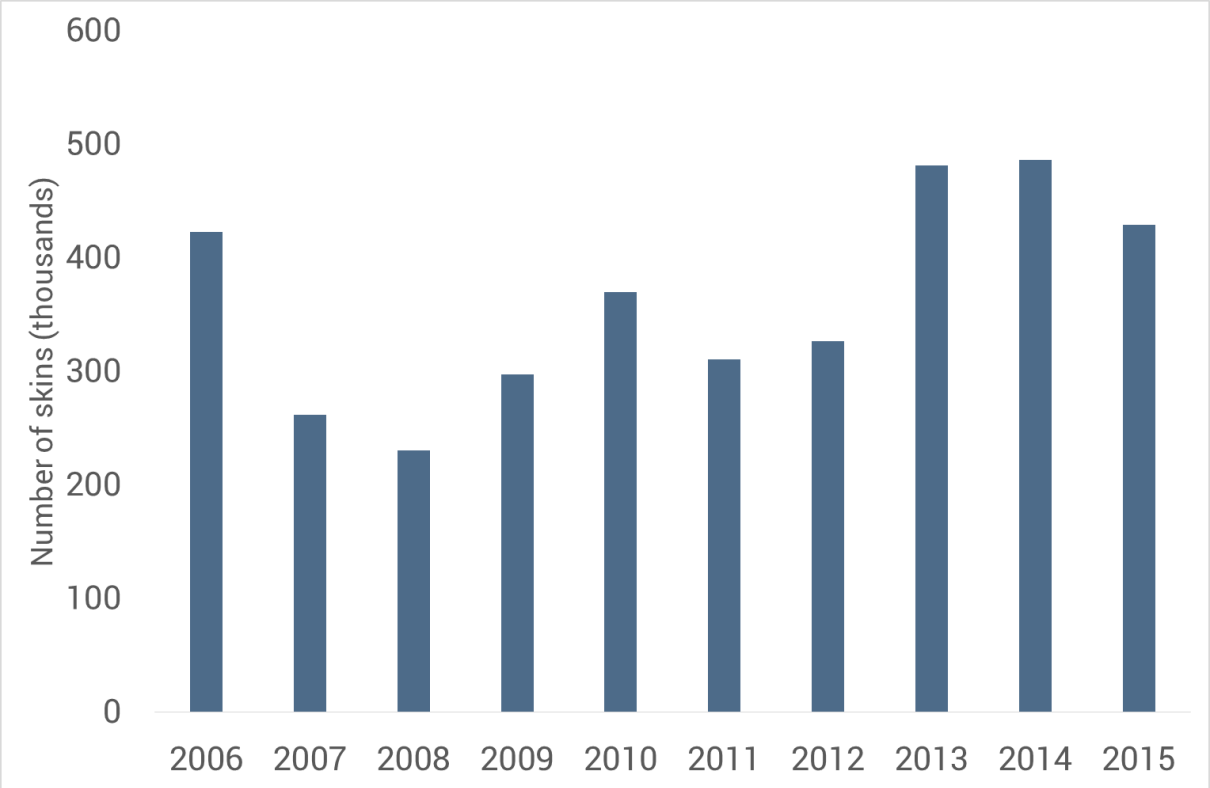


Figure 3. Direct, commercial exports of *Alligator mississippiensis* skins reported by the United States, 2006-2015

Caiman crocodilus Spectacled Caiman

Colombia regularly exports small numbers of skins from this subspecies. Between 3,000 and 6,200 captive-bred skins were reported every year between 2004 and 2008 to Singapore and Thailand; no exports were reported by Colombia between 2009 and 2011 but 3,000 skins were reported as exports to Thailand in 2012 and a further 663 in 2013. None have been reported subsequently.

Guyana was a major supplier of this subspecies in the late 1980s, with over 320,000 skins reported by importing countries between 1983 and 1989, but exports dwindled during the 1990s and early 2000s. However, trade has increased in recent years; Guyana reported the export of 16,460 skins in 2011, 18,000 in 2012, 1,500 in 2013, 18,500 in 2014 and 20,000 in 2015. All were wild-sourced with the majority destined for Mexico. Mexican annual report data suggest the real figure may be rather more in 2013, and these data have been used in Table 2.

Venezuela has historically been the main supplier of skins of this subspecies, almost all from wild-collected animals. Between 2004 and 2006, Venezuela exported around 60,000 skins annually; however, exports declined to less than half that level in 2007 and decreased each year since until 2010 (Figure 4). Subsequently, exports reported by Venezuela in 2011 and 2012 show an increase to between 25,000 and 30,000 skins. The Venezuela annual reports for 2013 and 2014 indicate exports of 10,741 skins and 16,696 skins. The importers of skins from Venezuela are Germany and Italy whose data suggest exports may have been higher. In the absence of the Venezuelan annual report for 2015 importers' data have been used (22,715 skins).

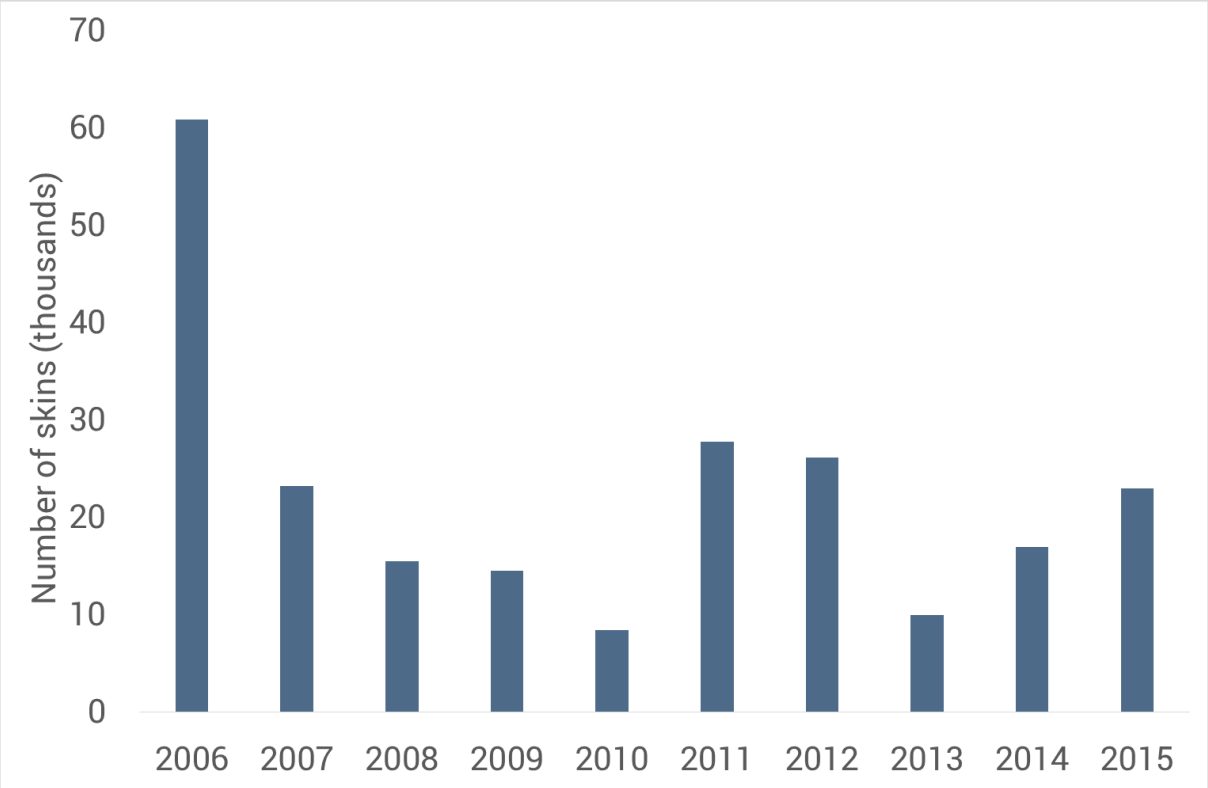


Figure 4. Direct, commercial exports of *Caiman crocodilus* skins reported by Venezuela, 2006-2015

Caiman crocodilus fuscus Brown Caiman

Reported exports of *Caiman crocodilus fuscus* skins from the two principal exporting countries between 2006 and 2015 are provided in Table 7.

Table 8. Direct, commercial exports of *Caiman crocodilus fuscus* skins from Colombia and Panama, 2006-2015

Exporter	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Colombia	969,731	668,076	532,394	405,386	647,565	634,461	625,128	855,791	735,779	516,202
Panama	*2,310	2,882	1,155	1,730	3,556	300	0	1,324	2,622	*2,000
Total	**972,041**	**670,958**	**533,549**	**407,116**	**651,121**	**634,761**	**625,128**	**857,115**	**738,401**	**518,202**

Key: * Figure derived from importer-reported data.

Colombia remains the major exporter of this subspecies. Exports decreased steadily from the 969,731 skins reported in 2006 to 405,386 skins in 2009, the smallest quantity exported since 1992; however exports increased to nearly 650,000 in 2010 and remained at over 600,000 in both 2011 and 2012 (Table 8). In 2013 the figure increased to over 850,000 skins but then decreased over the next two years. Mexico, the Republic of Korea, Singapore, Thailand, and the United States were the primary importers.

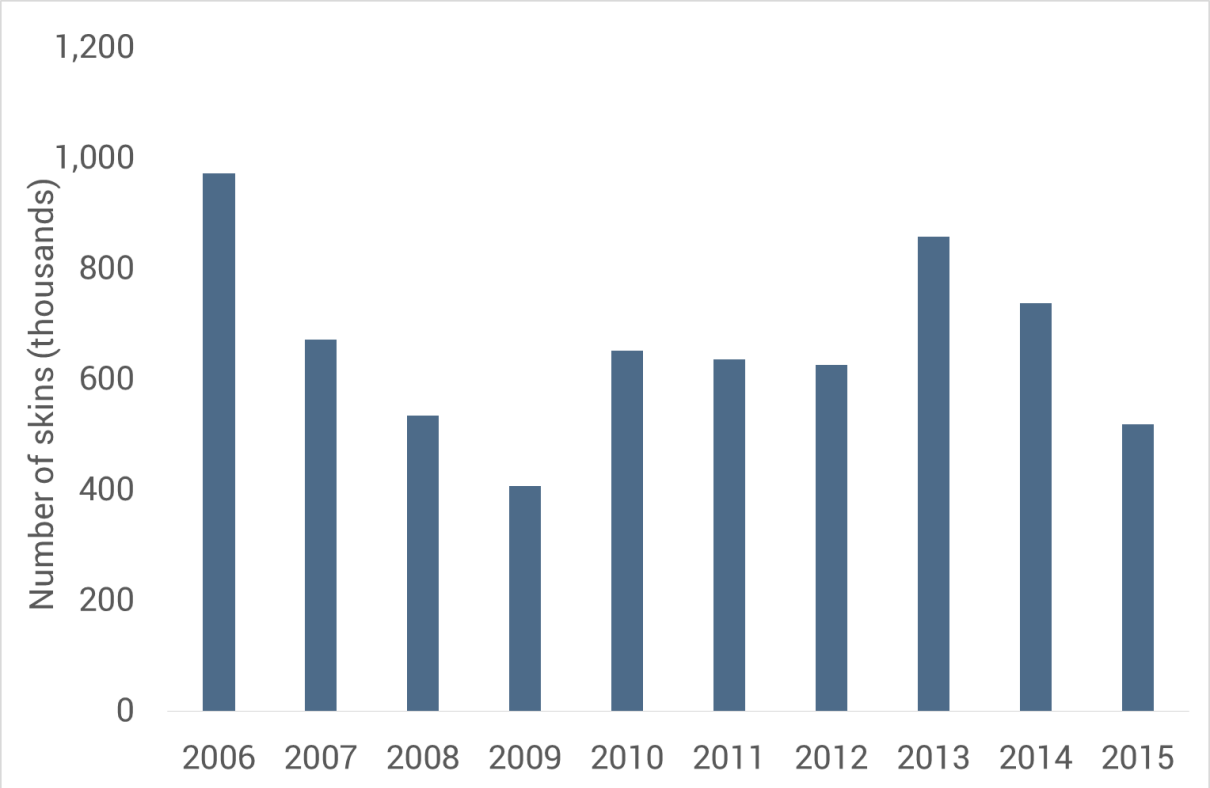


Figure 5. Direct, commercial exports of *Caiman crocodilus fuscus* skins reported by Colombia, 2006-2015

Other range States: No exports have been reported by Honduras since 1998; Nicaragua reported the export of one wild-sourced skin to Italy in 2006, while the United States reported the import of 134 wild-sourced skins from Nicaragua in 2008.

Panama, although an important entrepôt State for skins coming from Colombia, clearly distinguishes between exports and re-exports in its annual reports. The first significant direct export of 10,250 skins was reported in 2000 and trade appears to have peaked in 2003 at 19,840 skins. Export quantities reported by Panama have been considerably less over the decade under review and the main trading partners were Italy, Mexico, Spain, Thailand and the United States.

Caiman latirostris Broad-snouted Caiman

The Argentine population of this species was transferred from CITES Appendix I to Appendix II in 1997, and the first exports of skins from ranched animals were reported by Argentina in 2001. Exports increased subsequently to 2,752 skins in 2005. Exports then decreased every year to 394 skins in 2009, but increased to 1,933 skins in 2010, 2,973 in 2011 and further to 5,755 in 2012. A total of 5,612 skins were exported in 2013 but the annual reports for 2014 and 2015 show no data on whole skins. Importers' data, notably Italy, Spain and the United States indicate that 8,893 skins were imported in 2014 and 8,610 in 2015.

Caiman yacare[7] Yacaré

Exports of *C. yacare* skins from the principal exporter of this species, Bolivia, appear to have decreased notably in 2009 and again in 2010, but apparently increased again each year between 2011 and 2013 the latter figure according to importer-reported data (Table 9).

Table 9. Direct, commercial exports of *Caiman yacare* skins from producer countries, 2006-2015

Exporter	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Argentina	2,883	6,083	3,851	10,194	4,391	3,159	2,037	607	*37	*3105
Bolivia	34,878	51,330	44,443	49,115	41,594	29,535	86,914	69,646	84,970	*67,606
Brazil	7,004	*620	*3,173	10,254	5,828	9,114	19,623	22,280	*4,910	*12,719
Paraguay	0	0	0	0	0	0	0	22,750	4,539	0
Total	**41,883**	**53,241**	**50,499**	**65,452**	**51,273**	**48,843**	**90,874**	**115,283**	**94,456**	**83,430**

Key: * Figure derived from importer data

Argentina: Reported exports peaked at 10,194 skins in 2009; exports then declined to negligible quantities between 2012 and 2014 but importers' data suggest an increase in 2015 (Table 9). The main destination of the skins was the United States and the majority of the skins were reported to be from ranching operations.

Bolivia: Reported exports averaged around 42,000 skins per year between 2006 and 2011 but increased to a yearly average of 77,000 between 2012 and 2015. Bolivia's annual report for 2015 has not yet been received so the data for that year in Table 9 have been taken from the reports of importing countries. The principle importers were Germany, Italy, Mexico and Spain and the source of the skins was from captive breeding, ranching and wild caught. The percentage of wild skins was 54 per cent in 2013, increasing to 74 per cent in 2014 then declining to 47 per cent in 2015.

Brazil: Exports reported by Brazil have fluctuated over the period under review with a peak in 2012 and 2013, however trade appears to have declined since then. While all skins exported in 2010 were captive-bred and primarily destined for Colombia, the majority of the skins traded in subsequent years were ranched and exported more widely with the main importing countries being Mexico and the United States

Paraguay: Paraguay imposed a moratorium on all exports of wildlife in September 2003 as a result of the findings of a technical mission from the CITES Secretariat. This moratorium was partially lifted in 2009 (CITES Notification to the Parties No. 2009/036 of 10 August 2009) and further partially lifted in 2011 (CITES Notification to the Parties No. 2011/009 of 19 January 2011) to allow exports of existing stocks of skins legally acquired in 2001, 2002 or 2003 once the CITES Secretariat, in cooperation with the IUCN/SSC Crocodile Specialist Group, had confirmed their legal origin. No exports of skins were reported in trade until 2012, when Paraguay exported 2,506 skins, mostly to Spain. In 2013 Paraguay exported 22,750 skins, all of which were wild-sourced. The moratorium was fully lifted in 2014 (CITES Notification 2014/009 of 10 February 2014) during which year 4,539 skins were reported by importers (Spain and the United States) but there has been no indication of further exports.

[7] According to CITES Standard nomenclature, which the CITES Trade Database follows, *Caiman yacare* is a synonym of the sub species *Caiman crocodilus yacare*, and as such trade reported as *Caiman crocodilus* may include trade in the subspecies.

Melanosuchus niger Black Caiman

The Brazilian population of this species was transferred from CITES Appendix I to Appendix II in 2007. Brazil reported the export of 11 skins in 2008 and six skins in 2009; no exports were reported in 2010 but 11 skins were exported in 2011, 275 in 2012, 51 skins in 2013 and 290 skins in 2014. All were reported to be wild-sourced, with the majority imported by Argentina, Italy and Thailand. No skins were reported as exports in 2015 but Argentina reported importing 584 skin pieces.

All other crocodilian species

There have been no reported commercial exports from range States between 2006 and 2015 of skins of the following taxa: *Crocodylus cataphractus*, *C. intermedius*, *C. palustris*, *C. rhombifer*, *Alligator sinensis*, *Osteolaemus tetraspis*, *Paleosuchus palpebrosus*, *P. trigonatus*, *Gavialis gangeticus* or *Tomistoma schlegelii*.

Trade in live animals

The commercial export of live crocodilians outside of their range States poses a potential threat to the natural biological diversity of the importing countries, particularly if naturalized populations become established. Indeed Spectacled Caiman, possibly discarded pet animals, can currently be found in Florida and the Everglades National Park where damage to natural fauna is being reported. The continued growth of the crocodilian farming industry means that such threats are likely to continue and should be guarded against.

Live crocodilians are traded for many purposes. Young animals are frequently kept as personal pets; circuses and zoos regularly exhibit such creatures and there are well-established crocodile breeding establishments in countries such as Denmark, France, Morocco, Spain and Thailand. Crocodile farms and ranches import animals to supplement their gene pool and some animals are imported by range States in order to strengthen wild populations. This variety of use, and the limited number of possible purpose codes used in CITES annual reports, means that some conclusions drawn from analysis of CITES data are only tentative. For example, the purpose code 'T', which indicates a commercial transaction, could apply equally if the animals were destined for either the pet trade or the farming industry. Below we consider the reported trade in live animals from range States on a species by species basis.

Alligator mississippiensis

The United States reported exporting six live animals to Spain in 2012 and a total of seven animals to the Czech Republic, France and Spain in 2013. All animals were reportedly source 'F' and the majority of the trade was reported as purpose 'T'.

Alligator sinensis

In 2011, China and the United States each exported two animals to France and Mexico, respectively, and in 2012 China exported three animals to Singapore. All reported exports were captive-bred or captive-born (sources 'C' and 'F') and traded for commercial purposes, breeding or zoos. No trade was reported in 2013 or 2014 but in 2015 Japan reported exporting three captive-bred animals to Taiwan, Province of China.

Caiman crocodilus

Guyana: Guyana reported exports of 1,405 animals in 2013, 413 in 2014 and none in 2015. All were wild-sourced and the principal importer was the Netherlands.

Suriname: This country regularly exports small numbers of wild-caught animals for the pet industry (purpose 'T'); between 2013 and 2015, a total of 428 animals were exported from Suriname.

Venezuela: There have been no reports of live trade from Venezuela since 2009.

Caiman latirostris

In 2012, Malaysia reported importing two captive-bred animals from Argentina (purpose 'Z'); no other trade in live animals of this species has been reported subsequently.

Caiman yacare

In 2006, eight ranched animals were exported from Argentina to Denmark; no live animals have been reported in trade from range States subsequently.

Melanosuchus niger

No trade in live animals from range States was reported between 2013 and 2015.

Paleosuchus palpebrosus

For 2013, Guyana published an annual export quota of 500 live, wild-sourced animals; the quota increased to 604 animals in 2014 but decreased to 500 in 2015. Guyana reported exports of 359 animals in 2013, 490 in 2014 but only 129 in 2015. It should be noted that although the annual reports cover the period January to December, the quota year for Guyana runs from April to April. The majority of animals were likely to be for the pet industry (recorded as purpose 'T'), with the main importing country being the United States.

Paleosuchus trigonatus

For 2013, Guyana published an annual export quota of 1,000 live, wild-sourced animals. This increased to 1,648 animals in 2014 but decreased to 1,000 animals in 2015. Exports reported by Guyana fell well short of this number, with 219, 469 and 710 animals exported in 2013, 2014 and 2015, respectively. The majority were reported as purpose 'T', the main importing country being the United States.

Crocodylus acutus

El Salvador reported the import of two seized/confiscated animals in 2010 from an unknown origin country, while Cuba, Ecuador and the United States exported a total of six captive-bred individuals for zoos in 2010. No further live trade in this species has been reported.

Crocodylus mindorensis

The Czech Republic reported the import of six captive-bred animals from the Philippines in 2011 for zoos; in 2013 Denmark re-exported two animals to Norway that had been bred in captivity in the Philippines, and in 2014 Australia exported seven captive-bred animals to the Philippines.

Crocodylus moreletii

In 2013, the United States reported importing 50 captive bred animals from Mexico that had probably been reported by Mexico in 2012. A further 10 animals were exported by Mexico to the United States in 2015.

Crocodylus niloticus

Mozambique has been exporting hatchlings and juveniles to South Africa since the late 1980s, and more recently to Malawi and Zimbabwe. In 2013 Mozambique reported exporting 150 animals to Malawi and 11,200

to South Africa. A further 699 animals were reported as exported to Singapore but these were not reported by the importer and might possibly have been skins, and maybe not imported until 2014. In 2014 South Africa reported importing 15,000 ranched animals in 2014 and a further 32,000 in 2015. South Africa also reported importing 650 animals from Botswana in 2013. The majority of the trade 2013-2015 was in ranched animals and for purpose 'T'.

Crocodylus palustris

In 2014 Singapore re-exported two animals, captive-bred in India, to Japan.

Crocodylus porosus

Malaysia reported exporting 200 animals to Bangladesh 2013. In 2013 Viet Nam reported exporting 4,800 live animals to China and Cambodia reported exporting 2,000 to Thailand. No further trade occurred in 2014 or 2015. All reported exports were captive-bred and for purpose 'T'.

Crocodylus rhombifer

Cuba reported importing 10 captive-bred animals from Sweden in 2015.

Crocodylus siamensis

China is the principal importer of live specimens of *C. siamensis* and began importing this species from Thailand in 1997, from Cambodia in 2000 and from Viet Nam in 2003. As shown in Table 10, China has imported around 390,000 live specimens from these countries in the ten-year period 2006 to 2015, all of which were captive-bred and the majority for purpose 'T'. Since 2010, imports have fallen with exports from Thailand becoming negligible and those from Viet Nam increasing.

Table 10. Direct, commercial exports of live *Crocodylus siamensis* to China reported by the exporting countries, 2006-2015

Exporter	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Cambodia	0	0	1,500	1,400	0	0	0	0	0	2,000
Thailand	58,793	47,180	23,600	16,600	50,200	10,500	330	15	0	0
Viet Nam	13,000	24,050	41,400	11,137	10,600	12,000	15,000	23,300	23,770	25,870
Total	**71,793**	**71,230**	**66,500**	**29,137**	**60,800**	**22,500**	**15,330**	**23,315**	**23,770**	**27,870**

Trade in other by-products

Meat

Total global commercial exports of crocodilian meat, as reported in CITES annual reports from 2006 to 2015, are provided in Figure 6. Between 1990 and 2002, the quantity traded globally fluctuated at around 400 tonnes per year. Exports began an upward trend in 2003, and in 2007 peaked at just under 1000 t. They subsequently decreased to 400 t in 2009 but have risen each year until 2012 when 672 t was traded. Figures for 2013 and 2014 were slightly lower but 2015 showed an increase to almost 770 t.

Since 1988, there have been major fluctuations in the countries and species involved in the meat trade. Until 1992, the main species in trade was *Alligator mississippiensis* from the United States, particularly to Canada, Japan, Taiwan, Province of China and the United Kingdom. No exports to Taiwan, Province of China have been reported since 1994 and exports of meat from this species have fallen since 1995; the principal importers in 2013-2015 were Canada and Hong Kong, SAR.

Exports of *Crocodylus niloticus* meat, which originate mainly from South Africa, Zambia and Zimbabwe, increased steadily from less than two tonnes in 1992 to over 550 t in 2007, but then decreased to less than 120 t in 2009. Exports subsequently recovered and were around 250 t in both 2011 and 2012. Despite a drop in 2013 to 133 t over 200 t was exported in both 2014 and 2015. As with skin data for Zimbabwe, data provided by CFAZ have been used in preference to the CITES report. Reporting of the crocodile meat trade by southern African countries appears to be of varied quality based on comparisons with importer data. The main destinations for *C. niloticus* meat 2013-2015 were Europe, Hong Kong, SAR and China.

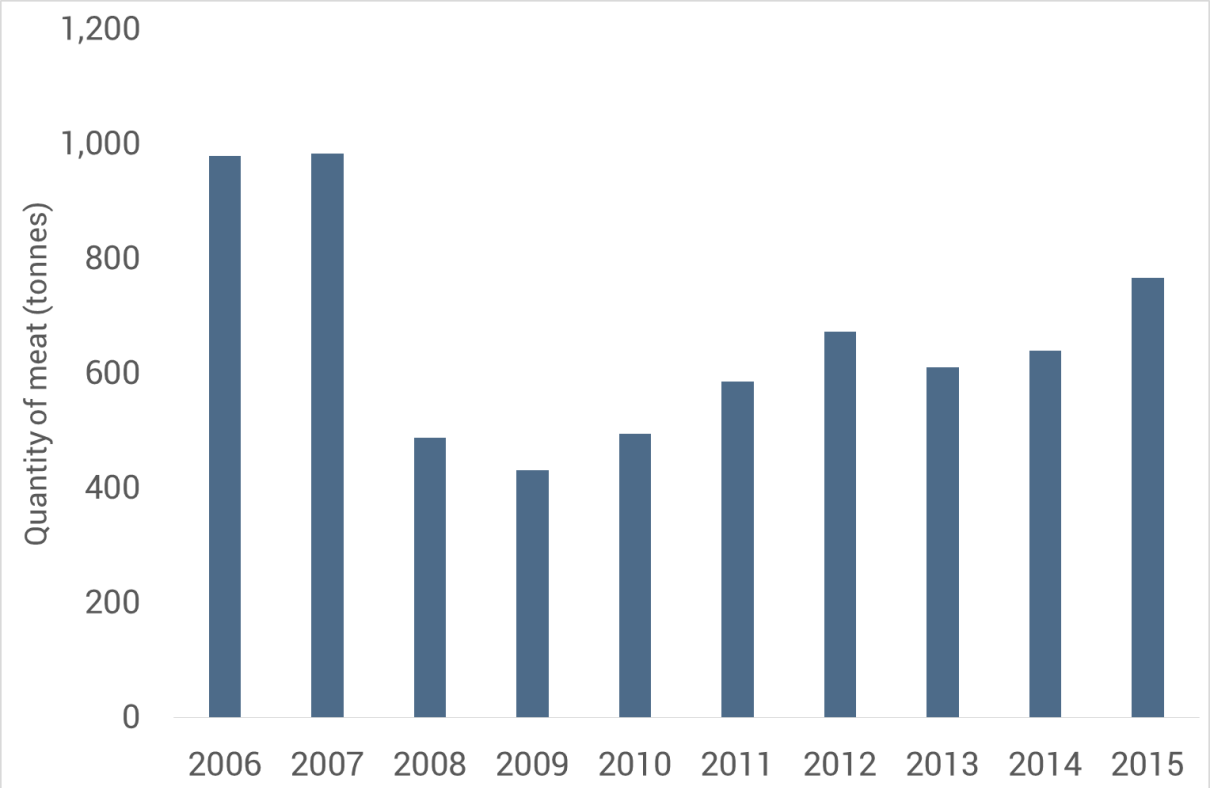


Figure 6. Direct, commercial global exports of crocodilian meat, 2006–2015

Exports of meat of *Crocodylus novaeguineae* are infrequent with under one tonne reported in each of 2010, 2012 and 2015.

C. porosus meat was also traded at relatively low levels from Indonesia with over seven t being exported in both 2014 and 2015. Exports of *C. porosus* meat from Papua New Guinea were also variable with 15 t being imported by Australia in 2009, 12 t in 2011 and 7.65 t in 2014. Australia's exports of *C. porosus* meat increased from 53 t in 2000 to 57 t in both 2001 and 2002, but averaged 16 t yearly over the period under review. The main destination for Australia's production is Japan with some going to Hong Kong SAR.

The biggest change in the crocodilian meat trade in recent years has been the expansion of the trade in *Crocodylus siamensis* since 2003. Until 2005, Thailand was the only exporter of *C. siamensis* meat and exports averaged about 35 t annually between 1999 and 2003. Exports from Thailand increased to almost 400 t in 2006 but declined in the following two years. Exports from the country subsequently increased every year to over 350 t in 2012 and 427 t in 2013. There was a drop to 353 t in 2014 but another increase to 475 t in 2015. The main importers were China, Hong Kong, SAR, Malaysia and Singapore. Exports of *C. siamensis* meat from Viet Nam decreased from 5.5 t in 2008 to under a tonne annually 2013-2015.

Teeth

Australia is the world's foremost importer of crocodile teeth; between 2013 and 2014, exports from Papua New Guinea, Singapore and Thailand to the country amounted to nearly 70,000 teeth. However for 2015 the only trade appears to be an export of 8,750 teeth from Singapore. Most of the teeth were obtained from *Crocodylus porosus*, mostly from captive-breeding operations, although over 12,000 of the teeth exported by Papua New Guinea in 2013 were from wild specimens.

Declared dollar value

Although CITES annual reports do not usually contain information concerning the value of the trade or of individual shipments, the United States has included this information in its annual reports since 1997. There is great fluctuation amongst the reported values and no indication of the size or quality of the skins is provided; furthermore, for caiman species, flanks may have been reported as whole skins which further complicates interpretation of the data. Values that appear erroneous and are likely to have been the result of typographic errors have been ignored in the analysis below. The average declared value per skin (in US$) of exports of *Alligator mississippiensis* skins and the reported value of re-imports of these skins from Europe, Mexico and Asia after tanning are provided in Table 11. Although the value of the original exports fluctuates from year to year, the value of the re-imports has been consistently higher. It should also be noted that the average value of the skins exported has increased year on year since 2010.

Table 11. Reported US dollar value of *Alligator mississippiensis* skins (per skin) exported and re-imported by the United States, 2006-2015

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Exports by USA	177.9	232.9	242.2	193.3	136.0	167.5	194.9	241.1	261.6	275.6
Re-imports by USA	193.5	253.4	254.8	394.7	236.9	245.7	260.1	407.5	444.15	391.5

Source: United States annual reports to CITES

Table 12 compares the average value per skin of Colombian *Caiman crocodilus fuscus* imported directly from Colombia and via third countries, as reported by the United States. The re-exporters of skins vary from year to year, but the majority are imported directly from Colombia or via Singapore. The declared value of the direct imports from Colombia remained at around US$50 per skin between 2006 and 2008 but increased notably in 2009. Following a slight decrease in 2010, the reported value increased year on year to reach US$96.8 per skin in 2014, the highest value recorded over the decade. The value of skins imported from third countries was comparatively lower on average than those imported directly from Colombia, although there is some degree of variation between different re-exporters and different years.

Table 12. Reported US dollar value of *Caiman crocodilus fuscus* skins (per skin) originating in Colombia and imported by the United States, 2006-2015

(Re-)Exporter	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Colombia	50.8	54.4	52.5	72.2	65.3	73.4	76.6	79.1	96.8	93.0
European Union	34.5	-	-	87.3	54.9	71.0	99.9	61.6	58.4	78.4
Mexico	31.2	50.0	36.3	38.0	34.5	33.0	34.0	23.4	23.7	20.7
Singapore	46.7	46.1	44.3	47.3	50.5	46.2	58.1	47.2	70.9	71.4

Source: United States annual reports to CITES

Reported seizures

Information on seizures is reported inconsistently in CITES annual reports. Furthermore, the data recorded by Customs rarely allow the goods to be identified at the species level. Most of the seizures that are reported are of tourist items such as dried heads, whole stuffed baby crocodiles, etc., and personal imports of manufactured leather goods. Many of the items seized on import are subsequently released to the importer when adequate permits have been obtained. It should be noted that source code 'I' not only covers seizures but the further re-exportation or repatriation of the seized material.

Of the more important seizures reported in the period 2013-2015, the United States reported a seizure of 455 kg of *Crocodylus porosus* meat from Australia in 2013 and 3,002 *Caiman crocodilus fuscus* skins from Colombia in 2014. In 2015 no notable seizures were reported but it is worth pointing out that the United States reported exporting a total of 21,864 *A. mississippiensis* skins for commercial purposes with source code 'I' in 2013, 2,092 in 2014 and a further 981 in 2015.

Recommendations

The following recommendations made in previous IACTS reports remain valid:

- Countries should, where possible, adopt the CITES standard permit number format which identifies both the exporting country and the year of permit issuance (see CITES Resolution Conf. 12.3 (Rev. CoP17) on Permits and certificates). This would allow for more accurate cross matching of shipments.
- Standardisation of the terminology used to describe parts of crocodilian skins would reduce the danger of double-counting and subsequent overestimation of trade levels. In particular, there is confusion between hornbacks and back skins for *Crocodylus niloticus* and between whole skins and sides for caiman.
- As the source of specimens (e.g. wild, captive-bred, etc.) provides critical information for determining the conservation impact of trade, CITES Parties should strive to accurately report the source of crocodilian material as defined in the *Guidelines for the preparation and submission of CITES annual reports* (see CITES Notification No. 2017/006).
- Countries with large-scale farming operations should establish strict monitoring and management programmes for their wild crocodilian populations, and any farming of non-native species should be strictly regulated to ensure there are no escapes into the wild. Although breeding in captivity can alleviate pressure on wild populations, it can also remove the incentive to preserve them.
- It is recommended that the CITES Secretariat and the Chairman of the Standing Committee contact Parties in June of each year to remind them of their reporting obligations under Article VIII, paragraphs 6 and 7 of the Convention.
- Wherever possible, Parties should report the actual quantities of skins being traded, and should specify whether their annual reports are compiled on the basis of actual trade or permits issued.

Acknowledgements

The compiler would like to thank the Louisiana Department of Wildlife and Fisheries and the Alligator Advisory Council for funding the IACTS reports since the 1980s. A special acknowledgment goes out to Ted Joanen for his historical contributions to research and development of crocodilian conservation and his role in initiating the IACTS project. Also Sue Worsley of the Crocodile Farmers Association of Zimbabwe, Luca Garibaldi of FAO and Eric Langelet and the staff of Mainland Holdings, Papua New Guinea for assistance with obtaining data, and Becky Price of UNEP-WCMC for reviewing the report. A special thank you to the late Don Ashley and his wife Pamela for coordinating the report for so many years.

Annex: Purpose and source codes

Table 13. Codes for purpose of trade

Code	Description
B	Breeding in captivity or artificial propagation
E	Educational
G	Botanical gardens
H	Hunting trophies
L	Law enforcement/judicial/forensic
M	Medical (including biomedical research)
N	Reintroduction or introduction into the wild
P	Personal
Q	Circuses and travelling exhibitions
S	Scientific
T	Commercial / Trade
Z	Zoos

Table 14. Codes for source of specimens in trade

Code	Description
A	Plants that are artificially propagated in accordance with Resolution Conf. 11.11 (Rev. CoP17), 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
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[8]
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 (must be justified)
W	Specimens taken from the wild
X	Specimens taken in 'the marine environment not under the jurisdiction of any State'

[8] To be used only in conjunction with another source code.